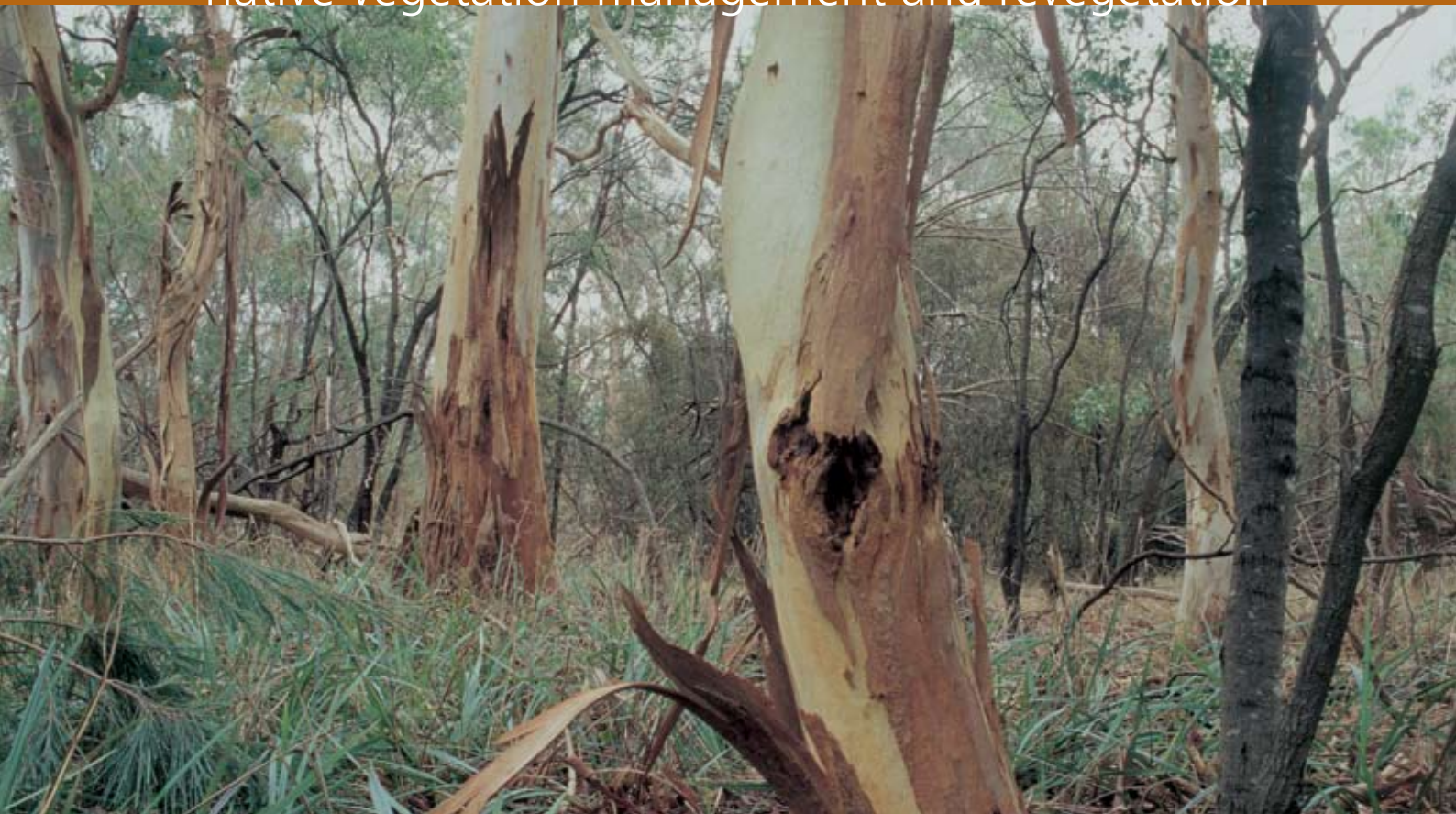


# Native Vegetation

Vegetation Gain Approach –  
Technical basis for calculating gains through improved  
native vegetation management and revegetation





# Native Vegetation

## Vegetation Gain Approach – technical basis for calculating gains

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# through improved native vegetation management and revegetation

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# Native Vegetation

## Vegetation Gain Approach – technical basis for calculating gains

### 1 Glossary

Benchmark	A standard vegetation-quality reference point relevant to the vegetation type that is applied in habitat hectare assessments. Represents the average characteristics of a mature and apparently long-undisturbed state of the same vegetation type.
Crown Land	Land without title. Land that has been surrendered to the Crown. Includes Parks, Forests and Crown Reserves.
Ecological Vegetation Class (EVC)	A type of native vegetation classification that is described through a combination of its floristics, life form and ecological characteristics, and through an inferred fidelity to particular environment attributes. Each EVC includes a collection of floristic communities (i.e. lower level in the classification that is based solely on groups in the same species) that occur across a biogeographic range, and although differing in species, have similar habitat and ecological processes operating.
Entitled Use	A private land use that does not require a planning permit under the <i>Planning and Environment Act 1987</i> or local planning regulations. May include removal of standing timber for personal use, grazing by domestic stock and collection of fallen timber.
Freehold Land	Land in which title is held in Fee Simple. It may include land owned in freehold title by municipalities and public authorities.
Habitat Hectare	A site based measure of quality and quantity of native vegetation that is assessed in the context of the relevant native vegetation type.
Habitat Score	The score assigned to a <i>habitat zone</i> that indicates the quality of the vegetation relative to the Ecological Vegetation Class (EVC) <i>benchmark</i> – sum of the <i>site condition score</i> and <i>landscape context score</i> usually expressed as a percentage or on a scale of zero to 1.
Habitat Zone	A discrete area of native vegetation consisting of a single vegetation type (EVC) with an assumed similar averaged quality. This is the base spatial unit for conducting a habitat hectare assessment and for scoring gains from improved management.
High Threat Weed	Introduced species (including non-indigenous 'natives') with the ability to out-compete and substantially reduce one or more indigenous life forms in the longer term assuming on-going current site characteristics and disturbance regime.
Improvement Gain	This is gain resulting from management commitments beyond existing obligations under legislation to improve the current vegetation quality. Achieving improvement gain is predicated on maintenance commitments being already in place. For example, control of any threats such as grazing that could otherwise damage the native vegetation must already be agreed. Typical actions leading to an improvement gain include reducing or eliminating environmental weeds, enhancement planting or revegetation over a 10-year management period. If the vegetation is to be used as an offset, a commitment to then maintain the improvement gain (i.e. no subsequent decline in quality) will be required in perpetuity.
Landscape Context	Measure of the viability and functionality of a patch of vegetation in relation to its size and position in the landscape in relation to surrounding vegetation, and assessed as part of determining the habit score.
Maintenance Gain	This is gain from commitments that contribute to the maintenance of the current vegetation quality over time (i.e. avoiding any decline). Includes foregoing certain entitled activities that could otherwise damage or remove native vegetation, such as grazing or firewood collection. Also typically requires a commitment to ensure no further spread of environmental weeds that may otherwise result in the loss of vegetation quality over time. If the vegetation is to be used as an offset, a commitment to maintain the vegetation quality will be required in perpetuity.



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Native Understorey	All indigenous native vegetation other than mature native trees – includes immature trees, shrubs, grasses and grass-like plants, herbs, mosses, lichens and soil crust. It does not include dead plant material that is not attached to a living plant.
Nature Conservation Reserve	Reserves designated as Nature Conservation Reserves, Flora and Fauna Reserves, Flora Reserves and Wildlife Reserves (no hunting).
Natural Features Reserve	Reserves designated as Bushland Reserves, Wildlife Reserves (hunting), Natural Features Reserves, Scenic Reserves, Natural & Scenic Features Reserves, Cave Reserves, Geological & Geomorphological Features Reserves, Streamside Reserves and the River Murray Reserve.
Prior Management Gain	This gain acknowledges actions to manage a freehold site since State-wide planning permit controls for native vegetation removal were introduced in 1989.
Private Land	Freehold land, but not including land held by municipalities or public authorities.
Public Land	Crown land, as well as freehold land held by a municipality or public authority and managed for a public purpose.
Recruitment	The production of new generations of plants, either by allowing natural ecological processes to occur (regeneration etc.), by facilitating such processes as regeneration to occur, or by actively revegetating (replanting, reseeding).
Relevant Authority	Organisation with the authority to enter into a native vegetation or revegetation management agreement with a landholder / land manager.
Revegetation	Establishment of native vegetation to a minimum standard in formerly cleared areas, outside a remnant patch.
Security Gain	This is gain from actions to enhance security of the on-going management and protection of native vegetation at the offset site, either by entering into an on-title agreement (for example under Section 173 of the <i>Planning and Environment Act 1987</i> ), or by locating the offset on land that has greater security than the clearing site, or by transferring private land to a secure public conservation reserve.
Site Condition	Measure of the 'naturalness' or 'intactness' of a patch of vegetation using a number of site-based attributes assessed against a defined benchmark, and assessed as part of determining the habitat score.
Site	An area of interest that may contain contiguous or discrete <i>patches</i> of native vegetation on private or public land, requiring a habitat hectare assessment.
Supplementary Planting	Establishment of overstorey and/or understorey plants within a remnant patch. Typically includes the planting or direct-seeding of understorey life forms.
Tree Canopy	Uppermost stratum of woody vegetation usually consisting of trees greater than 5 m tall that relative to the vegetation type (refer EVC benchmark) contributes to or forms the vegetation 'canopy'.
Vegetation Quality	Measure of the intactness and viability of vegetation in relation to its <i>site condition and landscape context</i> .

# Native Vegetation

## Vegetation Gain Approach – technical basis for calculating gains

### 2 Introduction

This report describes the approach for calculating gains in native vegetation quality and quantity from improved protection and management of native vegetation patches and revegetation of formerly cleared areas. Calculated gains are combined with a range of other information used to assess native vegetation in Victoria and are a key component of the implementation of the Victorian Government's policy to increase the quality and extent of native vegetation leading to a 'net gain'.

This approach has been developed to assist decision-makers with calculating appropriate native vegetation gains to inform investment or planning decisions as set out under *Victoria's Native Vegetation Management Framework: A Framework for Action* (NRE 2002). Note that in the case of proposals under the planning system, the approach only applies to native vegetation offsets required to mitigate losses of native vegetation patches assessed under the Department of Sustainability and Environment (DSE)-referred assessment path (see DSE 2006a) and does not need to be applied to offset losses of scattered trees nor native vegetation losses assessed under the Local Government (non-referred) assessment path (refer to relevant Planning Practice Notes for further clarification of assessment pathways).

The scoring approach outlined in this document is closely linked to the habitat hectares method for assessing native vegetation quality (DSE 2004) and users of this approach are expected to have a working knowledge of the habitat hectares method in order to adequately score gains through improved management. In most cases, scoring gains will require that the current vegetation quality of the site is assessed (or a default score used) and the score for the various habitat components then used as the basis by which gains are estimated depending on the land manager commitments. It is recommended that decision-makers use this approach in combination with the *Vegetation Quality Assessment Manual* (DSE 2004) or vegetation quality field sheet (Appendix 5) to better understand how gains are calculated through improved management.

It should be noted that additional tools are also available to assist with the calculation of gains as part of assessments for offsets or investment decisions (e.g. BushTender). In particular, DSE has developed a *Gain Calculator* to be used for rapid assessment of the amount of gain achievable from a proposed offset based on land manager commitments and the current vegetation quality score. There are several issues relating to measurement precision and consistency that are addressed by the various DSE gain-scoring products and tools. See Section 5 for advice on the standards that will typically apply when accounting for and reporting on native vegetation losses and gains under the planning system. Refer to the DSE website [[www.dse.vic.gov.au/](http://www.dse.vic.gov.au/)] for further information on the DSE Gain Calculator and its use.

The gain scoring approach in this document is set out to enable the calculation of gains through either improved management of existing native vegetation or revegetation of formerly cleared areas. Revegetation will be required to meet minimum standards relating to species selection and target plant numbers in order to qualify as a native vegetation gain. Refer to *Revegetation Planting Standards: A guide for establishing native vegetation for net gain accounting* (DSE 2006b) for further information.

The method described enables the user to estimate gains over a 10-year time frame from agreed land manager commitments. This approach assumes that the site will receive the required management for this period in order for the gains to have the maximum chance of being realised. In general, this will require the use of an appropriate management agreement that sets out the land management commitments for the ten year period to achieve the estimated gains (see Appendices 6 and 7).

Note that in the case of offsets for permitted clearing of native vegetation, it is a requirement that the offset be secure and on-going (NRE 2002). In such cases, certain landholder commitments will be required in perpetuity to qualify as an offset gain. In other cases, sites may be subject to voluntary permanent agreements placed on title or part of Victoria's public reserve system that help secure the gain in perpetuity. In such cases, security gains may also be applicable. This document also details the amount of gain that may be possible under different arrangements including any *prior-management gain and security gain* that may apply beyond the 10-year management period.

It is possible that using the approach outlined here, that gains for shorter periods of management could also be proportionally calculated. It is also possible that there may be non-standard actions proposed in particular cases that are not addressed in this document (Refer to Section 8 for more typical non-standard scenarios). Advice should be sought from the DSE for calculating gains arising from shorter periods and/or non-standard management actions.

To ensure that decisions concerning native vegetation are made in an appropriate and consistent manner, it is important that the gain scoring method is applied consistently by all decision-makers. The approach explained in this document has been designed to assist in that process.



## through improved native vegetation management and revegetation

### 3 Types of gain

Four types of Gain are recognised:

#### 1. Prior management gain

This gain acknowledges actions to manage a freehold site since State-wide planning permit controls for native vegetation removal were introduced in 1989.

#### 2. Security gain

This is gain resulting from actions to enhance security of the on-going management and protection of native vegetation at the offset site, either by entering into an on-title agreement (for example under Section 173 of the *Planning and Environment Act 1987*), or by locating the offset on land that has greater security than the clearing site, or by transferring private land to a secure public conservation reserve.

#### 3. Maintenance gain

This is gain from commitments that contribute to the maintenance of the current vegetation quality over time (i.e. avoiding any decline). Includes foregoing certain entitled activities that could otherwise damage or remove native vegetation, such as grazing or firewood collection. Also typically requires a commitment to ensure no further spread of environmental weeds that may otherwise result in the loss of vegetation quality over time. If the vegetation is to be used as an offset, a commitment to maintain the vegetation quality will be required in perpetuity.

#### 4. Improvement gain

This is gain resulting from management commitments beyond existing obligations under legislation to improve the current vegetation quality. Achieving improvement gain is predicated on maintenance commitments being already in place. For example, control of any threats such as grazing that could otherwise damage the native vegetation must already be agreed. Typical actions leading to an improvement gain include reducing or eliminating environmental weeds, enhancement planting or revegetation over a 10-year management period. If the vegetation is to be used as an offset, a commitment to then maintain the improvement gain (i.e. no subsequent decline in quality) will be required in perpetuity.

Not all types of Gain are available for all offset scenarios. Table 1 summarises the four types of gain as they apply to various offset options as well as the typical range of gain points available per hectare for each type of gain.

Table 2 describes the circumstances in which the various types of gain can be credited, and the minimum requirements for calculating gains under such circumstances. Public Land can be used for offsets in the circumstances described. Note that clearing in a park or reserve category with a primary objective of nature conservation (ie. National Parks, Wilderness Parks, State Parks, Coastal Parks reserved under the *National Parks Act (1975)* and Nature Conservation Reserves (either Government-approved recommendations of the Land Conservation Council / Environment Conservation Council / Victorian Environment Assessment Council) or reserved under the *Crown Land (Reserves) Act 1978*), can only be offset in the same park or reserve.

# Native Vegetation

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**Table 1a: Overview of types of gain arising from various native vegetation offset commitments and arrangements and their typical range of gain points per hectare**

Types of gain and typical commitments	Offset areas located on current Private Land	Offset areas located on current Public Land	Typical range of gain points available per hectare (score out of 1)*
<b>Prior Management Gain</b> 10% of current habitat score	Available	Not available	0.02-0.08
<b>Security Gain</b> <i>Based on proposed security arrangements of offset</i> <ul style="list-style-type: none"> <li>• Entering into an on-title agreement (e.g. s173 agreements under <i>Planning &amp; Environment Act 1987</i>, s69 agreement under <i>Conservation Forests and Lands Act 1987</i> or conservation covenant under <i>Victorian Conservation Trust Act 1972</i>) or where there is an existing voluntary on-title agreement** or for Crown Land, equivalent agreement between relevant public agencies (eg. VicRoads and DSE) – 10% of current habitat score for remnant patch offsets or 10% of improvement gain for revegetation offsets</li> <li>• Located on public land where conservation is one of the objectives (e.g. State Forest, Regional Park, secure Municipal Reserve managed for conservation) or on public freehold land, on sites where there is an existing on-title agreement – 20% of the improvement gain that is achieved through the offset works</li> <li>• DSE-approved transfer of freehold land to Crown Land for reservation for a purpose consistent with a Natural Features Reserve, Historic and Cultural Features Reserve, Regional Park or Special Protection Zone in State Forest or a secure Municipal Reserve for conservation purposes approved by the relevant authority, since 28 August 2002 – 20% of current habitat score</li> <li>• DSE-approved transfer of freehold to Crown Land for reservation in a park or reserve category with a primary objective of nature conservation. This includes National, State and other parks (reserved under the <i>National Parks Act 1975</i>) or Nature Conservation Reserves (reserved under the <i>Crown Land (Reserves) Act 1978</i>), since 28 August 2002 – 40% of current habitat score</li> </ul>	Available	May be available under certain circumstances (see Table 2)	0.02-0.08  0.01-0.03  0.04-0.16  0.08-0.32
<b>Maintenance Gain</b> <i>Based on commitments in perpetuity that maintain the current vegetation quality over time</i> <ul style="list-style-type: none"> <li>• Foregoing entitlement to cut trees for personal use</li> <li>• Foregoing entitlement to graze domestic stock (or restrict grazing in some grasslands) and ensure no further spread of weeds</li> <li>• Foregoing entitlement to collect fallen timber</li> </ul>	Available (unless entitlement removed, such as by a planning overlay)	Not available	0-0.03 0.01-0.04  0-0.05
<b>Improvement Gain</b> <i>Based on actions to improve the vegetation quality over a ten year management period</i> <ul style="list-style-type: none"> <li>• Higher level environmental weed / pest animal control</li> <li>• Canopy and understorey supplementary planting</li> <li>• Introduction of logs</li> </ul>	Available	May be available under certain circumstances (see Table 2)	0.07-0.14 0.03-0.05 0.01-0.05

\* Gain scores lower or higher than the typical range indicated may apply in particular cases.

\*\* Can only be applied once and does not include on-title agreements established as part of a previous planning decision.





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**Table 1b: Overview of types of gain arising from various native vegetation offset commitments and arrangements and their typical range of gain points per hectare**

Types of gain and typical commitments	Offset areas located on current Private Land	Offset areas located on current Public Land	Typical range of gain points available per hectare (score out of 1)*
<b>Examples of other more common maintenance and improvement gain options</b> <ul style="list-style-type: none"> <li>• Ecological thinning</li> <li>• Ecological burning/flooding</li> <li>• Revegetation (of cleared areas)</li> <li>• Surface water drainage scheme (to avoid waterlogging of terrestrial vegetation)</li> <li>• Foregoing entitlement to harvest timber</li> </ul>	Available	May be available under certain circumstances (see Table 2)	0.02 0.05-0.10 0.10-0.25 0.05-0.35 0.05-0.35

\* Gain scores lower or higher than the typical range indicated may apply in particular cases.

**Table 2a: Summary of types of gain available for offsets located on private land**

Offset type	Types of gain available and minimum requirements
1. Protection and management of remnant native vegetation patch on private land	<ul style="list-style-type: none"> <li>• Offset Plan required.</li> <li>• Prior management gain is available.</li> <li>• Maintenance gain unless entitlement removed, such as by a planning overlay.</li> <li>• Improvement gain subject to Offset Plan.</li> <li>• Security gain subject to security arrangement (an on-title agreement is required if the offset and the clearing are not on land in the same ownership).</li> </ul>
2. Revegetation or regeneration of denuded areas on private land (i.e. not within a remnant native vegetation patch)	<ul style="list-style-type: none"> <li>• Offset Plan required.</li> <li>• No prior management gain is available.</li> <li>• Improvement gain is available – must comply with minimum DSE Revegetation Planting Standards (DSE 2006b).</li> <li>• Security gain subject to security arrangement (an on-title agreement is required if the offset and the clearing are not on land in the same ownership).</li> </ul>
3. Transfer of freehold land to the Crown for a Park or Nature Conservation Reserve or secure Municipal Reserve managed for conservation	<ul style="list-style-type: none"> <li>• The land and the nature and funding of the proposed management must be acceptable to DSE (refer to DSE Public Land Management – Parks Branch for advice), or where relevant local council, for inclusion in the reserve system.</li> <li>• Prior management gain is available.</li> <li>• Maintenance gain is available.</li> <li>• Improvement gain subject to the applicant funding an Offset Plan.</li> <li>• Security gain is available.</li> </ul>

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**Table 2b: Summary of types of gain available for offsets located on public land**

Offset type	Types of gain available and minimum requirements
1. Protection and management of remnant native vegetation patch on public land	<ul style="list-style-type: none"> <li>• Offset Plan required and the offset area must be unlikely to be required for another purpose that would involve future vegetation loss.</li> <li>• Must have approval of relevant land manager and form part of reserve management plan where one exists.</li> <li>• No prior management gain is available.</li> <li>• No maintenance gain is available.</li> <li>• If the clearing is in a reserve with a lesser reservation category or on private land, improvement gain may only be achieved from understorey supplementary planting and only when the understorey score is less than 10 (out of 25) and DSE agrees that it is required. Note that this option is not available in a park or reserve category with a primary objective of nature conservation, that is National Parks, Wilderness Parks, State Parks, Coastal Parks reserved under the <i>National Parks Act (1975)</i> and Nature Conservation Reserves (either Government-approved recommendations of the Land Conservation Council / Environment Conservation Council / Victorian Environment Assessment Council or reserved under the <i>Crown Land (Reserves) Act 1978</i>)*.</li> <li>• If the clearing is in the same reserve or reserve category then improvement gain is available from actions to improve the vegetation quality in addition to understorey supplementary planting.</li> <li>• Security gain is only available if the offset is to be located in a more secure conservation reserve or (less common) where the legal security of the offset area can effectively be raised (i.e. Security gain is not available where clearing occurs on land with an equivalent security to the offset site).</li> </ul>
2. Revegetation of denuded areas (e.g. not within a remnant native vegetation patch) on public land	<ul style="list-style-type: none"> <li>• Offset Plan required and the offset area must be unlikely to be required for another purpose that would involve future vegetation loss.</li> <li>• Must have approval of relevant land manager and form part of reserve management plan where one exists.</li> <li>• No prior management gain is available.</li> <li>• No maintenance gain is available.</li> <li>• If the clearing is in a reserve with a lesser reservation category or on private land then improvement gain (from revegetation) is available. Note that this option is not available in a park or reserve category with a primary objective of nature conservation, that is National Parks, Wilderness Parks, State Parks, Coastal Parks reserved under the <i>National Parks Act (1975)</i> and Nature Conservation Reserves (either Government-approved recommendations of the Land Conservation Council / Environment Conservation Council / Victorian Environment Assessment Council or reserved under the <i>Crown Land (Reserves) Act 1978</i>)*.</li> <li>• If the clearing is in the same reserve or reserve category then improvement gain (from revegetation) is available.</li> <li>• Revegetation– must comply with minimum DSE Revegetation Planting Standards to qualify for improvement gain.</li> <li>• Security gain is only available if the offset is to be located in a more secure conservation reserve than the clearing site or (less common) where the legal security of the offset area can effectively be raised (i.e. Security gain is not available where clearing occurs on land with an equivalent security to the offset site).</li> </ul>

\* Permitted clearing within Alpine Resorts e.g. ski field development, occurs on leased public land and in many cases offsets will need to be found in an adjoining park or reserve as few alternatives on-site may be available, particularly for treeless alpine EVCs. Alpine Resort Vegetation Management Plans (where available) should be used to guide the location and configuration of offsets for permitted clearing within these areas.



## through improved native vegetation management and revegetation

It should be noted that the amount of maintenance and improvement gain achievable on a site will be dependent on the current vegetation quality as well as the agreed land manager commitments. For example, higher quality sites will generally have a greater capacity to score maintenance gains than lower quality sites and hence will generally score closer to the maximum end of the range for this type of gain. Conversely, lower quality sites will have more opportunity to score improvement gains in comparison to high quality sites.

Note that for very low quality sites, there will be limited capacity to score improvement gains in comparison to some higher quality sites. This is to manage the risk of over-estimating outcomes resulting from management actions in degraded areas that are generally subject to a larger range of threatening processes and lower recovery capacity.

The DSE Gain Calculator identifies the circumstances in which the various types of gain can be credited, and how these gains are calculated. The following sections of this document explain the approach for scoring maintenance and improvement gains from an offset plan or 10-year management agreement.

### 4 Identifying the type of gain proposal

#### 4.1 Native vegetation management or revegetation?

One of the first decisions required in order to calculate the gain from any changed management is to identify whether the investment, offset or land management proposal relates to improved management of a remnant patch of native vegetation or whether it involves revegetation (re-establishment of native vegetation) of formerly cleared areas.

The document *Native vegetation – Guide for assessment of referred planning permit applications* (DSE 2006a) defines a **remnant patch** as:

- an area of vegetation, with or without trees, where less than 75% of the total understorey plant cover is weeds or non-native plants (bare ground is not included). That is at least 25% of the understorey cover is native; or,
- a group (ie. at least 3) of trees where the tree canopy cover is at least 20%

Any site that meets the above definition should be treated as a remnant patch and apply the appropriate gain scoring approach (see Section 5 – Calculating gains from improved native vegetation management). Sites that do not meet the above definition should be treated as revegetation sites and apply the appropriate gain scoring approach (see Section 7 – Calculating gains from revegetation).

### 5 Calculating gains from improved native vegetation management

#### 5.1 Introduction

Improved management of existing vegetation that is designed to maintain and enhance the condition of the native vegetation can qualify for gains (measured in habitat hectares). Gains from an area of remnant vegetation can be achieved from a range of protection and management actions agreed for the area. In all cases, gains are calculated according to those land manager commitments that are beyond current obligations under legislation.

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### Maintenance Gains

Land managers who agree to forego certain entitled activities and control major threats that may otherwise be contributing to the decline in the condition of the native vegetation over time will be able to achieve maintenance gains<sup>1</sup>. To qualify, land managers must agree to forego entitled activities and control the spread of weeds over the 10-year management period<sup>2</sup> or in the case of native vegetation offsets, meet these requirements in perpetuity.

Entitled activities are defined as those uses that can be carried out without a planning permit<sup>3</sup> while weed control must be beyond the land manager's current obligations under legislation. The commitments will generally be reflected in a 10-year management plan and/or planning permit or on-title agreement and will typically include an agreement to:

- exclude domestic stock from the offset area (unless this is required as part of the ecological management of the area) and ensure that weed cover does not increase beyond current levels;
- not collect fallen timber or organic litter; and
- not fell live or dead trees.

### Improvement Gains

Where land managers agree to positive actions to achieve an improvement in the condition of the vegetation, they will qualify for an improvement gain where these actions are beyond their current obligations under legislation. The commitments will generally be reflected in a 10-year management plan and may include an agreement to:

- Eliminate and control high threat environmental weeds beyond legal duty of care or that are not prescribed weeds under the *Catchment and Land Protection Act 1994*.
- Control vermin beyond legal duty of care.
- Ensure that perimeter fencing (if regarded as necessary) is established and/or maintained.
- Plant canopy and/or understorey species as required.

On a case-by-case basis<sup>4</sup> land managers may also commit to:

- Reinstating the natural hydrological regime.
- Ecological burning or ecological grazing.
- Ecological thinning of overstorey trees.
- Other non-standard management actions (see Section 8 for some more common examples).

1 Note that in some vegetation types (e.g. Grasslands), avoiding further decline in vegetation quality may require some form of grazing (see Section 6 – *Calculating gains in treeless vegetation*).

2 Note that maintenance gains from a 10-year management agreement should be discounted when compared to a permanent agreement while some investment approaches may choose to apply a shorter management period. Seek advice from DSE Biodiversity and Natural Resources Division on how to score maintenance gains from such proposals.

3 Note that in the case of voluntary on-title agreements, entitled activities are determined with reference to the municipal planning scheme and not the voluntary agreement. In the case of on-title agreements established as part of a previous planning decision, entitled activities are determined with reference to the on-title agreement.

4 DSE can offer advice on the appropriateness of such activities on the basis of the vegetation type, the site characteristics and capacity of the land manager to implement the activity. In some cases (e.g. ecological thinning), a permit may be required to undertake such activities.



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### 5.2 Maintenance and improvement commitments

This section provides a step-by-step approach to calculating gains for the various habitat components applied in the 'habitat hectares' method for both maintenance and improvement commitments over the 10-year management period *only*.

Tables 3 to 14 following take the form of decision-making trees that help explain the gain scoring approach as it relates to the current site condition and the land manager commitments<sup>5</sup>. Appendices 1 and 2 provide a summary of the maintenance and improvement gain scoring decision-making process for quick reference. It should be noted that the tables do not include any "null" pathways, which may be triggered either where the current site condition is below an identified threshold score for a particular attribute or where a land manager does not agree to the required maintenance or improvement commitments. These "null" pathways score zero gain where they occur.

The gain scoring approach allows some flexibility to score a range of land manager commitments. However, in some circumstances a "package" of commitments will be required in order to score gains in one or more habitat components. This may be particularly the case with management of grazing threats where in most cases stock exclusion and pest herbivore control will be required to achieve improvement gains (although stock exclusion on its own will attract maintenance gains where domestic stock grazing is an entitled use).

In other examples, single management actions may warrant gains across a number of different habitat components. For example, control of 'high threat' weeds may not only result in improvement gains for the lack of weeds component but also potentially improvement gains for the understorey and recruitment components depending on how other threats to these habitat components are being managed.

### 5.3 Current vegetation quality

For patches of native vegetation, scoring gains through improved management will require that the current vegetation quality of the site be assessed or known. In some circumstances, this may involve use of a DSE default score (refer to DSE 2006a for guidance on the use of default scores). The score for the various habitat components is then used as the basis by which gains are estimated according to the agreed land manager commitments. It is recommended that users follow the approach in combination with the *Vegetation Quality Assessment Manual* (DSE 2004) or vegetation quality field sheet (Appendix 5) to better understand how gains are calculated through improved management.

In all cases, maintenance commitments must be agreed to before improvement gains can be calculated. For each habitat component, the total amount of gain possible is the sum of the maintenance gain and the improvement gain where applicable. The total gain/ha for the habitat zone<sup>6</sup> over the 10-year management period is the sum of gain for each of the habitat components.

### 5.4 Reporting on native vegetation losses and gains – precision and measurement consistency

The total amount of gain attributable (in habitat hectares) to the habitat zone through the agreed landholder commitments will be the gain/ha multiplied by the area of the habitat zone. Note that the following standards will typically apply when accounting for and reporting on native vegetation losses and gains under the planning system.

- Losses of habitat hectares within habitat zones should be rounded to 2 decimal places.
- Offset targets and total offset gains (in HHa) for habitat zones should be rounded to one decimal place. As such, habitat zones with an offset target or offset gain score of less than 0.05 HHa should either be rounded to zero or where possible incorporated with an adjoining habitat zone to create an averaged gain score for the combined habitat zone. Depending on the like-for-like criteria this may only be possible for offsets with adjoining habitat zones containing the same EVC. Note that the DSE Gain Calculator automatically calculates the total offset gain for a habitat zone to one decimal place.

<sup>5</sup> For the purposes of presentation and alignment with the habitat hectares approach described in DSE (2004), the scores provided in the tables identify the amount of gain from various commitments on the basis of points per hectare on a scale of 0–100. These scores can be divided by 100 to create a score out of '1' and then combined with the hectares offered to determine a gain score in habitat hectares (HHa).

<sup>6</sup> A discrete area of native vegetation consisting of a single vegetation type (EVC) with an assumed similar averaged quality. This is the base spatial unit for conducting a habitat hectare assessment and for scoring gains from improved management (see: *Vegetation Quality Assessment Manual*, DSE 2004 – for further information).

# Native Vegetation

## Vegetation Gain Approach – technical basis for calculating gains

### 5.5 Scoring gain within native vegetation habitat components

#### Large Trees

Maintenance gains can be scored for large trees where a land manager is currently entitled to remove large trees for personal use and where the land manager is prepared to forego this entitlement for the 10-year management period or in the case of offsets, where this entitlement is permanently surrendered.

The maintenance gain scoring for large trees reflects the risk to the large tree asset from a 'rate of entitled use' and recognises that the risk of loss is greatest where there are fewer large trees within smaller areas. For scoring large tree maintenance gains, the area under consideration is the 'whole of offset / investment patch' that includes the habitat zone being assessed and any other contiguous habitat zones (i.e. EVC x quality combinations) that form part of the same remnant patch. As such, each habitat zone within the same patch receives the same 'patch size class' rating, that is one of < 5ha, 5 < 20ha or ≥ 20ha. This is then used in combination with the current large tree score for the habitat zone to determine the maintenance gain score (see Table 3 below) from a land manager commitment to retain all standing large trees, whether dead or alive.

Due to the time taken to 'grow a large tree', improvement gains are generally not possible for large trees over the 10-year management period. However, in some cases improvement in the large tree health could be scored where the current large tree health is 'poor' and the threat(s) impacting on the health of the large trees can be adequately addressed<sup>7</sup>. In such cases, score "+1" for large tree improvement gain.

**Table 3: Calculating maintenance gain for large trees**

	Commitment required to score maintenance gain for Habitat Zone		Maintenance gain score/ha		
	Current Large Tree Score	Size of offset / investment patch			
		< 5ha	5 < 20ha	≥ 20ha	
Retain all standing large trees (dead or alive)	0	0	0	0	
	1	1	0.5	0.25	
	2	2	1	0.5	
	3	3	1.5	0.75	
	4-6	2.5	1.25	0.625	
	7-10	2	1	0.5	

#### Tree Canopy Cover

Maintenance gains can be scored for tree canopy cover where a land manager is currently entitled to remove trees for personal use and where the land manager is prepared to forego this entitlement for the 10-year management period or in the case of offsets, where this entitlement is permanently surrendered.

Similar to large trees, the maintenance gain scoring for tree canopy cover reflects the risk to the tree canopy asset from a 'rate of entitled use' across the offset / investment patch and recognises that the risk of loss is greatest within smaller areas. For scoring tree canopy cover maintenance gains, the area under consideration includes the habitat zone being assessed and any other contiguous habitat zones (i.e. EVC x quality combinations) that form part of the same remnant patch. As such, each habitat zone within the same patch receives the same 'patch size class' rating, that is one of < 5ha, 5 < 20ha or ≥ 20ha. This is then used in combination with the current tree canopy cover score for the habitat zone to determine the maintenance gain score (see Table 4 below) from a land manager commitment to retain all standing canopy trees, whether dead or alive.

<sup>7</sup> Note that 'poor' tree health may often be due to a number of threats operating in parallel (e.g. increased nutrients, stock-rubbing and defoliation by insects) and addressing all these threats will be required to score gain from improved tree health.

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**Table 4: Calculating maintenance gains for tree canopy cover**

	Commitment required to score maintenance gain for Habitat Zone	Maintenance gain score/ha		
	Current Tree Canopy Cover Score	Size of offset / investment patch		
		< 5ha	5 < 20ha	≥ 20ha
Retain all standing canopy trees (dead or alive)	1	0.2	0.1	0.05
	2	0.4	0.2	0.1
	3	0.6	0.3	0.15
	4	0.8	0.4	0.2
	5	1	0.5	0.25

Unlike large trees, management of grazing threats can also result in improvement gains for the tree canopy cover (Table 5). This recognises that 10 years of threat management may result in partial recovery of the tree canopy cover where this is currently below benchmark cover. In some circumstances, supplementary planting of canopy species in accordance with a defined DSE standard (DSE 2006b) may be required and this will also result in improvement gains for the tree canopy cover component. In situations where the tree canopy cover is above the benchmark cover, ecological thinning may be appropriate and improvement gains for the tree canopy cover can also be calculated. Under such circumstances, the land manager must agree to retain all those standing trees identified by DSE for protection and the gain score is calculated as the difference between the current and final (post-thinning) tree canopy cover score (typically, a score of "+2").

Improvement in the tree canopy cover health can be scored where the current tree canopy health is 'poor' and the threat(s) impacting on the health of the large trees can be adequately addressed<sup>8</sup>. In such cases, score "+1" for tree canopy cover improvement gain.

**Table 5: Calculating improvement gains for tree canopy cover**

Commitment required to score improvement gain for Habitat Zone*		Improvement gain score/ha*
Control <i>all</i> on-site grazing threats (e.g. stock, rabbits, other pest herbivores, other threats as identified)	If <i>current tree canopy cover</i> score = 1-3	0.4
	If <i>current tree canopy cover</i> score = 0	Supplementary planting <sup>#</sup> (or predicted recruitment of canopy tree species from on-site or adjoining areas)

\* Improvement gain is only possible where habitat maintenance commitments have been agreed and the tree canopy cover score is below the maximum score.

<sup>#</sup> Using an establishment approach agreed by DSE (or relevant authority).

**Note:** For habitat zones with over-abundance of tree canopy cover, this may include DSE-approved ecological thinning to achieve gain – score as difference to estimated final Tree Canopy Cover score. Management of threats contributing to poor tree canopy health may be scored on a case-by-case basis.

<sup>8</sup> Note that 'poor' tree health may often be due to a number of threats operating in parallel (e.g. increased nutrients, stock-rubbing and defoliation by insects) and addressing all these threats will be required to score gain from improved tree health.

# Native Vegetation

## Vegetation Gain Approach – technical basis for calculating gains

### Understorey

Maintenance gain can be scored for understorey where a land manager is currently entitled to graze the area with domestic stock and where they are prepared to forego this entitlement for the 10-year management period or in the case of offsets, where this entitlement is permanently surrendered. Land managers will also need to ensure that the weed cover does not increase beyond current levels following grazing control in order to qualify for understorey maintenance gain (Table 6).

**Table 6: Calculating maintenance gains for understorey**

Commitment required to score maintenance gain for Habitat Zone	Maintenance gain score/ha						
	Current Understorey Score	0	5	10	15	20	25
Exclude stock and ensure that weed cover does not increase beyond current levels*	Gain score/ha	0	0.5	1	1.5	2	2.5

\* Stock exclusion is desirable in all non-grassy and most grassy ecosystems with woody overstorey or understorey life forms.

Note that for some treeless grassy EVCs (e.g. Plains Grassland), periodic grazing (or an alternative biomass management strategy) may be required to maintain understorey condition – see Section 6 – Calculating gains in treeless vegetation.

Management of grazing threats (from non-domestic animals) and targeted control of high threat weeds<sup>9</sup> beyond current obligations under existing legislation can also result in improvement gain for the understorey (Table 7). Note that the amount of understorey improvement gain achievable is dependent on the current Lack of Weeds score. For habitat zones with a Lack of Weeds score of 7 to 15 there are opportunities for the land manager to either eliminate (i.e. reduce to < 1% cover) all identified high threat weeds or eliminate all woody weeds while controlling the spread of other high threat weeds. The decision as to whether reduction to negligible levels will be feasible needs to take account of the predicted response of the weed(s) to known control methods, the likely impact of these methods on the native life forms/species and the capacity of the land manager to effectively implement the preferred method.

For habitat zones with a Lack of Weeds score of less than seven, there is little likelihood of eliminating all high threat weeds. In such cases the amount of gain achievable is reduced and to qualify for understorey improvement gain, land managers must commit to eliminate high threat woody weeds and control the spread of other identified high threat weed species.

There is also some opportunity to achieve understorey improvement gain through supplementary planting of understorey life forms/species in accordance with a defined DSE standard<sup>10</sup> (DSE 2006b). An understorey score threshold of five is used to define when supplementary planting will typically be required to achieve understorey improvement gain (understorey score of five or zero) and when management of the on-site threats is likely to be sufficient to recover the understorey component to achieve an understorey improvement gain (understorey score of 10 or greater). Note that in some cases, it may be decided that management of threats in habitat zones with an understorey score of zero or five may also result in improved understorey without the need for supplementary planting. This may be particularly the case where heavy grazing has resulted in taller life forms being recorded as “effectively absent” (i.e. taller life forms reduced to stunted individuals due to grazing), rather than absence of understorey species. In other cases, the habitat zone may adjoin an existing area of higher quality vegetation from which recruitment is expected. Refer to Table 7 for how such situations can be scored.

In some cases, it may be considered desirable to introduce key missing life forms and/or species into higher quality sites (ie those with an understorey score > 5). In reaching such a decision, DSE or the relevant authority should be confident that the life form/species would have occurred at the site and consider the risk of collateral damage to any desirable assets (e.g. high quality understorey, native ground covers, other sensitive areas) resulting from the proposed planting. If the planting proceeds on this basis, then the understorey improvement gain would score an additional 2.5 or 5 points / ha depending on the proposed

9 Introduced species (including non-indigenous ‘natives’) with the ability to out-compete and substantially reduce one or more indigenous life forms in the longer term assuming on-going current site characteristics and disturbance regime. Refer to DSE (2004) for further information.

10 In general, this will require the use of species within woody life forms such as small shrubs, medium shrubs, understorey trees or large shrubs and overstorey trees. As decided by the relevant authority, the use of other understorey life form species (e.g. herbs, graminoids) may be appropriate in some cases.





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supplementary planting (i.e. life forms, species) and the agreed level of weed control (see Table 7).

Note that in some circumstances ecological burning or reinstatement of a preferred flooding regime may be required to achieve understorey improvement gain, particularly in EVCs that rely on periodic fire or flooding for recruitment. DSE can offer advice on the appropriateness of such activities on the basis of the EVC, the site characteristics and capacity of the land manager to implement the activity. Gain-scoring under such circumstances will generally be in line with the approach outlined in Table 7 (ignoring requirement for supplementary planting in lower quality areas) unless there is evidence to suggest otherwise (e.g. predicted greater recovery of understorey in long-unburnt vegetation).

Any additional management actions that assist in understorey recovery should be scored according to the appropriate pathway in Table 7. Note that there may be certain land use requirements under the local planning scheme that limit understorey recovery, for example, a wildfire management overlay that requires understorey fuel to be reduced on an annual basis. In such cases, the site could either be excluded from further consideration or the understorey improvement gain calculated on the basis of an existing uncontrolled threat (i.e. fuel reduction) resulting in an improvement gain of zero.

**Table 7: Calculating improvement gains for understorey**

Commitment required to score improvement gain for Habitat Zone			Improvement gain score/ha*
Control <i>all</i> high threats  (e.g. rabbits, other pest herbivores, high threat weeds, inappropriate fire regime, inappropriate flooding regime, other threats as identified)	If <i>current understorey score</i> = 10-20	If <i>current lack of weeds score</i> = 7-15 Eliminate all high threat environmental weeds (<1% cover)	5
		If <i>current lack of weeds score</i> = 7-15 Eliminate high threat woody environmental weeds (<1% cover) and ensure that cover of other high threat weeds does not increase beyond current levels	2.5
		If <i>current lack of weeds score</i> < 7 Eliminate high threat woody environmental weeds (<1% cover) and ensure that cover of other high threat weeds does not increase beyond current levels	2.5
	If <i>current understorey score</i> = 0 or 5	If <i>current lack of weeds score</i> = 7-15 Eliminate all high threat environmental weeds (<1% cover)	Supplementary planting# (or predicted recruitment of understorey species from on-site or adjoining areas)  5
		If <i>current lack of weeds score</i> = 7-15 Eliminate high threat woody environmental weeds (<1% cover) and ensure that cover of other high threat weeds does not increase beyond current levels	Supplementary planting# (or predicted recruitment of understorey species from on-site or adjoining areas)  2.5
		If <i>current lack of weeds score</i> < 7 Eliminate high threat woody environmental weeds (<1% cover) and ensure that cover of other high threat weeds does not increase beyond current levels	Supplementary planting# (or predicted recruitment of understorey species from on-site or adjoining areas)  2.5

\* Improvement gain is only possible where habitat maintenance commitments have been agreed and the understorey score is below the maximum score.

# Using an establishment approach agreed by DSE (or relevant authority).

# Native Vegetation

## Vegetation Gain Approach – technical basis for calculating gains

### Lack of Weeds

Maintenance gain is not applicable to the 'lack of weeds' component although ensuring that weed cover does not increase beyond current levels is a requirement to qualify for maintenance gains for other habitat components – i.e. understorey, recruitment, organic litter. Land managers are expected to meet their obligations under the *Catchment and Land Protection Act 1994* with respect to eradicating regionally prohibited weeds and preventing the growth and spread of regionally controlled weeds.

Land manager commitments to reduce the cover of regionally controlled weeds to negligible levels (< 1% cover) and control of non-listed environmental weeds can result in an improvement gain for the lack of weeds component (Table 8). As with the understorey component, the amount of Lack of Weeds improvement gain is dependent on the current Lack of Weeds score. For habitat zones with a Lack of Weeds score of 7 to 15 there are opportunities for the land manager to either eliminate (i.e. reduce to < 1% cover) all identified high threat weeds or eliminate all woody weeds while controlling the spread of other high threat weeds. The decision as to whether reduction to negligible levels will be feasible needs to take account of the predicted response of the weed(s) to known control methods, the likely impact of these methods on the native life forms/species and the capacity of the land manager to effectively implement the preferred method.

For habitat zones with a Lack of Weeds score of less than seven, there is little likelihood of eliminating all high threat weeds. In such cases the amount of gain achievable is reduced and to qualify for lack of weeds improvement gain, land managers must commit to eliminate high threat woody weeds and control the spread of other identified high threat weed species.

**Table 8: Calculating improvement gains for lack of weeds**

Commitment required to score improvement gain for Habitat Zone			Improvement gain score/ha
Control or eliminate all high threat weeds	If current lack of weeds score = 7-15	Eliminate all high threat environmental weeds (<1% cover)	4
		Eliminate high threat woody environmental weeds (<1% cover) and ensure that cover of other high threat weeds does not increase beyond current levels	2
	If current lack of weeds score < 7	Eliminate high threat woody environmental weeds (<1% cover) and ensure that cover of other high threat weeds does not increase beyond current levels	2

### Recruitment

Maintenance gain can be scored for recruitment where a land manager is currently entitled to graze the area with domestic stock and where the land manager is prepared to forego this entitlement for the 10-year management period or in the case of offsets, where this entitlement is permanently surrendered. Land managers will also need to ensure that the weed cover does not increase beyond current levels following grazing control in order to qualify for recruitment maintenance gain (Table 9).

**Table 9: Calculating maintenance gains for recruitment**

Commitment required to score maintenance gain for Habitat Zone		Maintenance gain score/ha					
Exclude stock and ensure that weed cover does not increase beyond current level*	<b>Current Recruitment Score</b>	0	1	3	5	6	10
	<b>Gain score/ha</b>	0	0.1	0.3	0.5	0.6	1

\* Stock exclusion is desirable in all non-grassy and most grassy ecosystems with woody overstorey or understorey life forms. Note that for some treeless grassy EVCs (e.g. Plains Grassland), periodic grazing (or an alternative biomass management strategy) may be required to maintain recruitment – see Section 6 – Calculating gains in treeless vegetation.



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Management of grazing threats (from non-domestic animals) and targeted control of high threat weeds can also result in improvement gains for recruitment (Table 10). The amount of recruitment improvement gain achievable is dependent on the current Understorey and Lack of Weeds scores. Note that in some cases, it may be decided that management of threats in habitat zones with a low understorey score may also result in improved recruitment gain. This may be particularly the case where heavy grazing has resulted in taller life forms being recorded as “effectively absent” (i.e. taller life forms reduced to stunted individuals due to grazing), rather than absence of understorey species. In other cases, the habitat zone may adjoin an existing area of higher quality vegetation from which recruitment is expected. Such cases should be scored in line with the approach outlined in Table 10 (ignoring the current understorey score threshold) depending on the agreed level of weed control.

There is no recruitment improvement gain possible for supplementary planting of native life forms as recruitment response from supplementary planting has shown to be generally very poor over the initial ten-year period.

Note that in some circumstances ecological burning or reinstatement of a preferred flooding regime may be required to achieve recruitment improvement gain, particularly in EVCs that rely on periodic fire or flooding for recruitment. DSE can offer advice on the appropriateness of such activities on the basis of the EVC, the site characteristics and capacity of the land manager to implement the activity.

Any additional management actions that assist recruitment should be scored according to the appropriate pathway in Table 10. Note that there may be certain land use requirements under the local planning scheme that limit recruitment, for example, a wildfire management overlay that requires fuel reduction on an annual basis. In such cases, the site could either be excluded from further consideration as an offset or the recruitment improvement gain calculated on the basis of an existing uncontrolled threat (i.e. fuel reduction) resulting in an improvement gain of zero.

**Table 10: Calculating improvement gains for recruitment**

Commitment required to score improvement gain for Habitat Zone			Improvement gain score/ha*
Control <i>all</i> high threats  (e.g. rabbits, other pest herbivores, high threat weeds, inappropriate fire regime, inappropriate flooding regime, other threats as identified)	If <i>current understorey score</i> > 5	If <i>current lack of weeds score</i> = 7-15 Eliminate all high threat environmental weeds (<1% cover)	4
		If <i>current lack of weeds score</i> = 7-15 Eliminate high threat woody environmental weeds (<1% cover) and ensure that cover of other high threat weeds does not increase beyond current levels	2
		If <i>current lack of weeds score</i> < 7 Eliminate high threat woody environmental weeds (<1% cover) and ensure that cover of other high threat weeds does not increase beyond current levels	2

\* Improvement gain is only possible where habitat maintenance commitments have been agreed and the recruitment score is below the maximum score.

**Note:** where the current recruitment score is ‘5’ (i.e. no evidence of recruitment in an EVC relying on episodic disturbance – see DSE 2004) and ecological burning or reinstatement of a preferred flooding regime is proposed then gain score = 5.

### Organic Litter

Maintenance gain can be scored for organic litter where a land manager is currently entitled to graze the area with domestic stock and where the land manager is prepared to forego this entitlement for the 10-year management period **and** where a land manager is entitled to remove fallen branches/twigs/leaf litter and agrees to forego this entitlement and retain them on the ground for the 10-year management period or in the case of offsets, where these entitlements are permanently surrendered. Land managers will also need to ensure that the weed cover does not increase beyond current levels following grazing control in order to qualify for organic litter maintenance gain (Table 11).

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## Vegetation Gain Approach – technical basis for calculating gains

**Table 11: Calculating maintenance gains for organic litter**

Commitment required to score maintenance gain for Habitat Zone	Maintenance gain score/ha					
Exclude stock and ensure that weed cover does not increase beyond current level* and retain fallen branches and leaf litter	<b>Current Organic Litter Score</b>	0	2	3	4	5
	<b>Gain score/ha</b>	0	0.2	0.3	0.4	0.5

\* Stock exclusion is desirable in all non-grassy and most grassy ecosystems with woody overstorey or understorey life forms. Note that for some treeless grassy EVCs (e.g. Plains Grassland), periodic grazing (or an alternative biomass management strategy) may be required to *maintain* organic litter condition – see Section 6 – Calculating gains in treeless vegetation.

Management of grazing threats from non-domestic animals and ecological burning (where the organic litter cover is too high) can also result in improvement gain for organic litter (Table 12).

**Table 12: Calculating improvement gains for organic litter**

Commitment required to score improvement gain for Habitat Zone	Improvement gain score/ha*	
Control <i>all</i> high threats (e.g. rabbits, inappropriate fire regime, other threats as identified)	If <i>current organic litter score</i> = 0-3	2
	If <i>current organic litter score</i> = 4	1

\* Improvement gain is only possible where habitat maintenance commitments have been agreed and the organic litter score is below the maximum score.

### Logs

Maintenance gains can be scored for the logs component where a land manager is currently entitled to remove fallen timber and is prepared to forego this entitlement for the 10-year management period or in the case of offsets, where this entitlement is permanently surrendered (Table 13). In the case of offsets, the area needs to be appropriately secured from the risk of illegal collection of firewood to qualify for maintenance gain. Under such circumstances the land manager qualifies for 100% of the current log score as a gain.

It should also be noted that where the current log length score is less than the benchmark score (i.e. < 5), then some gains may also be attributable to a land manager agreeing to retain any fallen timber that may accumulate in the future during the 10-year management period (except where the current Tree Canopy Cover score is zero where it is assumed that no future source of fallen logs exists).

**Table 13: Calculating maintenance gains for logs**

Commitment required to score maintenance gain for Habitat Zone	Maintenance gain score/ha					
Retain all logs	<b>Current Logs Score</b>	0	2	3	4	5
	<b>Gain score/ha</b>	0 + 0.4*	2 + 0.4*	3 + 0.4*	4 + 0.4*	5

\* Add 0.4 *only* when Current Tree Canopy Cover > 0.

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Under some offset circumstances, introduction of logs (from the permitted clearing site) may be allowed into areas with low understorey diversity/cover and hence where the expected disturbance will have minimal effect on the native vegetation quality. Only logs from tree genera, including understorey trees, applicable to the offset area should be introduced. Under such situations improvement gain for the logs component can be calculated based on the final estimate of the length and size of logs introduced to the habitat zone (Table 14).

**Table 14: Calculating improvement gains for logs** (applies to offset sites only)

Commitment required to score improvement gain for Habitat Zone		Improvement gain score/ha
Introduce logs removed / felled from impact site	If <i>current Understorey score</i> < 10	0-5*
	If <i>current Understorey score</i> ≥ 10	na

\* Restricted to logs sourced from the approved clearing site using appropriate canopy and understorey tree genera. Calculated depending on the length and size of logs introduced to the site.

### 5.6 Summary of native vegetation management gain scoring

As a guide for native vegetation management proposals, the combined maintenance and improvement gain per hectare will typically score between 10 and 30% of the current habitat score depending on the current condition for the various habitat components, the current land manager entitlements and the agreed land manager commitments.

Table 15 lists the range of gain scores per hectare for each habitat component over the 10-year management period that could be expected under different circumstances as a guide to decision-makers assessing native vegetation management gain proposals. Note that in most circumstances the potential total gain will not be the sum of the potential maintenance and improvement gains.

**Table 15: Summary of potential gains from native vegetation management**

Habitat Component	Potential Maintenance gain score/ha	Potential Improvement gain score/ha	Potential Total gain score/ha	Notes
Large trees	0-3	not applicable	0-3	Tree health improvement gain may be applicable in some circumstances
Tree canopy cover	0-1	0-0.6	0-1	Tree health improvement gain may be applicable in some circumstances
Understorey	0-2.5	0-5	0-7	Gains may be higher when implementing ecological burning / flooding in some circumstances
Lack of weeds	not applicable	0-4	0-4	
Recruitment	0-1	0-4	0-4.6	Gains may be higher when implementing ecological burning / flooding in some circumstances
Organic litter	0-0.5	0-2	0-2	
Logs	0-5	0-5*	0-5	
<b>Total potential native vegetation management gain / ha range (approx.)</b>	<b>0-13</b>	<b>0-16 (21*)</b>	<b>0-27</b>	Typically 10-20 for the majority of sites

\* Only applicable in some circumstances (e.g. offsets).



# Native Vegetation

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### 6 Calculating gains in treeless vegetation

#### 6.1 Introduction

The Vegetation Quality Assessment Manual (DSE 2004) establishes a different approach for assessing vegetation quality in treeless vegetation types. This is primarily due to the absence of a number of habitat components that are otherwise assessed in treed vegetation and the need to standardise the final site condition score of a patch of treeless vegetation to make it equivalent to other treed vegetation types. The same standardising process is applied to the gain scoring approach for treeless vegetation.

In addition to the above, some grassland vegetation types in particular have a different gain scoring approach to that described previously in Section 5 for treed vegetation. This approach recognises that for some grassland types, entitled uses and uncontrolled threats may result in greater losses of vegetation quality over time in comparison to woody vegetation types. The approach also recognises that there may be less opportunity for vegetation quality gains through improved management in such grasslands because of their susceptibility to disturbance, in particular weed invasions.

One additional issue with some grassland types is that in the absence of periodic biomass removal (e.g. fire, grazing) there is a risk that the native grassy sward becomes over-dominant leading to a loss of the inter-tussock spaces that are important as habitat for a range of flora and fauna species. A lack of biomass removal can ultimately lead to a dramatic decline in overall vegetation quality within a 10-year period. As such, for “high productivity” grassland EVCs, avoiding decline in site condition may require some form of active biomass management to qualify as a maintenance gain.

Table 16 lists those grassland EVCs where periodic biomass management is considered necessary to “maintain” their quality over the 10-year management period. The decision as to the requirement for biomass management and its frequency should be made in consultation with DSE. In some cases, the role of the site as habitat for key fauna species and any related requirements will also need to be considered before a preferred management strategy is adopted.



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**Table 16: Biomass management strategies considered necessary to “maintain” vegetation quality in various grassland EVCs**

EVC or vegetation type	Site characteristics / biomass management requirement	
	“High Productivity” sites	“Low Productivity” sites
	i.e. $\geq$ 500 mm rainfall per annum typical locations: Central Victorian Uplands; Dundas Tablelands; Gippsland Plain; Highlands – Southern Fall; Otway Plain; Victorian Volcanic Plain (excepting Balliang – Melton – Werribee “rainshadow” area) bioregions	i.e. $<$ 500 mm rainfall per annum typical locations: Goldfields; Lowan Mallee; Murray Fans; Murray Mallee; Northern Inland Slopes; Robinvale Plain; Victorian Riverina; Victorian Volcanic Plain (Balliang – Melton – Werribee area); Wimmera bioregions
Dryland grasslands – e.g. Plains Grassland	largely <i>Themeda</i> dominated  <b>Biomass management frequency*:</b> annual or as advised by DSE  <b>Biomass management period:</b> when grazing, late Summer to early Spring (in some cases, it may be possible to graze without controls on frequency/period but there is a requirement to ensure that total vegetation cover does not fall below 70% in such cases – see gain scoring approach following)	including <i>Austrostipa</i> / <i>Austrodanthonia</i> / <i>Enteropogon</i> / <i>Chloris</i> dominated  <b>Biomass management frequency*:</b> generally not required – decided by DSE on a case-by-case basis  <b>Biomass management period:</b> decided by DSE on a case-by-case basis
Seasonally inundated grasslands/herblands – e.g. Plains Grassy Wetland, Creekline Tussock Grassland, other “non-woody” creekline EVCs	including <i>Poa</i> / <i>Amphibromus</i> / <i>Eragrostis</i> dominated  <b>Biomass management frequency:</b> generally not required – decided by DSE on a case-by-case basis  <b>Biomass management period:</b> Summer – Autumn (when grazing, only when soils are dry)	<b>Biomass management:</b> not required
Dryland grassy woodlands – e.g. Plains Grassy Woodland	<b>Biomass management frequency:</b> generally not required – decided by DSE on a case-by-case basis <sup>#</sup>  <b>Biomass management period:</b> decided by DSE on a case-by-case basis	<b>Biomass management:</b> not required
Other “woody” EVCs <sup>^</sup>	<b>Biomass management:</b> not required	<b>Biomass management:</b> not required

Note: sites may require grazing for reasons other than biomass control (e.g. control of herbaceous/grassy weeds under some circumstances)

\* grazing or alternative biomass management strategy (burning, slashing and removal of thatch)

# for example, where tree cover and woody understorey cover is effectively absent (i.e. both are  $<$  10% of benchmark cover)

<sup>^</sup> EVCs that contain woody understorey life forms including forests, woodlands, shrublands, scrubs and heathlands

# Native Vegetation

## Vegetation Gain Approach – technical basis for calculating gains

### 6.2 Maintenance and improvement commitments

For non-grassland treeless EVCs (e.g. heathlands, scrubs, and some shrublands), the maintenance and improvement gains for the 10-year management period are calculated as per Section 5 for treed vegetation.

For grassland EVCs, the following tables provide a step-by-step approach to calculating gains for the various habitat components applied to grassland vegetation in the 'habitat hectares' method for both maintenance and improvement commitments over the 10-year management period. Appendices 3 and 4 provide a summary of the approach for grasslands as a quick reference guide.

In all grasslands, land managers must agree to a range of land use commitments before either maintenance or improvement gains can be calculated. Such commitments for the habitat zone will typically include an agreement to retain all rocks, not apply fertiliser, not disturb the soil with machinery, not sow introduced species, not drain any wetland areas and to not supplementary-feed stock. Some stock hygiene issues (i.e. to prevent weed seeds being introduced / spread) may also need to be considered and other land use commitments may be appropriate on a case-by-case basis as decided by DSE.

In all treeless vegetation, maintenance commitments must be agreed to before improvement gains can be calculated. For each habitat component, the total amount of gain possible will be the sum of the maintenance gain and the improvement gain where applicable. The total gain/ha for the habitat zone over the 10-year management period is the sum of gain for each of the habitat components multiplied by the site condition standardiser relevant to the treeless EVC (see DSE 2004 for further information) according to:

$$\text{Total habitat gain/ha for treeless EVCs} = (\text{maintenance gain/ha} + \text{improvement gain/ha}) \times \text{treeless EVC standardiser}$$

The total amount of gain attributable (in habitat hectares) to the habitat zone through the land manager commitments over the 10-year management period will be the product of the gain/ha multiplied by the area of the habitat zone.

### 6.3 Scoring gain within grassland habitat components

#### Understorey

Maintenance gain can be scored for understorey for grassland EVCs where the land manager agrees to the appropriate biomass management strategy as outlined in Table 16 during the 10-year management period. Land managers will also need to ensure that the weed cover does not increase beyond current levels following adoption of the biomass management strategy in order to qualify for understorey maintenance gain (Table 17).

**Table 17: Calculating maintenance gains for understorey in grasslands**

Maintenance Requirement for Habitat Zone		Maintenance gain score/ha*					
Biomass management and ensure that weed cover does not increase beyond current level*	Periodic biomass reduction at agreed timing/frequency						
	<b>Current Understorey Score</b>	0	5	10	15	20	25
	<b>Gain score/ha</b>	0	2.5	5	7.5	10	12.5
	No control on grazing period/frequency but land manager agreement to ensure that total vegetation cover does not fall below 70%						
	<b>Current Understorey Score</b>	0	5	10	15	20	25
	<b>Gain score/ha</b>	0	1.25	2.5	3.75	5	6.25

\* Note that for some grassland EVCs (e.g. "low productivity" grasslands – see Table 16), no biomass management may be required. In such cases, maintenance gain should be scored according to any foregone grazing entitlements as per maximum gain pathway.





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Management of grazing threats (from non-domestic animals) and targeted control of high threat weeds beyond current obligations under existing legislation can also result in improvement gain for the understorey (Table 18). The approach is in line with the improvement gain approach for treed EVCs presented in Section 5 except there will be very limited opportunities to achieve understorey improvement gain through supplementary planting of understorey life forms/species in grassland EVCs unless agreed by DSE. In general, a decision as to when supplementary planting of understorey species/life forms may be appropriate will consider the proposed establishment methods, the site characteristics and the capacity of the land manager to achieve the desired result. This may require demonstration of past performance in some circumstances. In such cases, understorey improvement gain would score an additional 1.25 or 2.5 points / ha depending on the agreed level of weed control.

Note that in some cases, it may be decided that management of threats in habitat zones with a low understorey score may also result in improved understorey gain. This may be particularly the case where heavy grazing has resulted in taller life forms being recorded as effectively “effectively absent” (i.e. taller life forms reduced to stunted individuals due to grazing), rather than absence of understorey species. In other cases, the habitat zone may adjoin an existing area of higher quality vegetation from which recruitment is expected. Such cases should be scored in line with the approach outlined in Table 18 (ignoring the current understorey score threshold) depending on the agreed level of weed control.

**Table 18: Calculating improvement gains for understorey in grasslands**

Commitment required to score improvement gain for Habitat Zone			Improvement gain score/ha*
Control all high threats (e.g. rabbits, other pest herbivores, high threat herb / grass weeds, other threats as identified)	<i>If current understorey score (non standardised) = 10-20</i>	<i>If current lack of weeds score = 7-15</i> Eliminate all high threat environmental weeds (<1% cover)	2.5
		<i>If current lack of weeds score = 7-15</i> Eliminate high threat woody environmental weeds (<1% cover) and ensure that cover of other high threat weeds does not increase beyond current levels	1.25
	<i>If current understorey score (non standardised) = 0 or 5</i>	<i>If current lack of weeds score &lt; 7</i> Eliminate high threat woody environmental weeds (<1% cover) and ensure that cover of other high threat weeds does not increase beyond current levels	1.25
		<i>If current lack of weeds score = 7-15</i> Eliminate all high threat environmental weeds (<1% cover)	1.25
	<i>If current understorey score (non standardised) = 0 or 5</i>	<i>If current lack of weeds score = 7-15</i> Eliminate high threat woody environmental weeds (<1% cover) and ensure that cover of other high threat weeds does not increase beyond current levels	0.625
		<i>If current lack of weeds score &lt; 7</i> Eliminate high threat woody environmental weeds (<1% cover) and ensure that cover of other high threat weeds does not increase beyond current levels	0.625

\* Improvement gain is only possible where habitat maintenance commitments have been agreed and the understorey score is below the maximum score.

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### Lack of Weeds

Maintenance gain is not applicable to the 'lack of weeds' component for grasslands although ensuring that weed cover does not increase beyond current levels is a requirement to qualify for maintenance gains for other habitat components – i.e. understorey, recruitment, organic litter. Land managers are expected to meet their obligations under the *Catchment and Land Protection Act 1994* with respect to eradicating regionally prohibited weeds and preventing the growth and spread of regionally controlled weeds.

Land manager commitments to reduce the cover of regionally controlled weeds to negligible levels (< 1% cover) and control of non-listed environmental weeds can result in an improvement gain for the lack of weeds component (Table 19) in line with the approach applied to treed vegetation in Section 5.

**Table 19: Calculating improvement gains for lack of weeds in grasslands**

Commitment required to score improvement gain for Habitat Zone			Improvement gain score/ha
Control or eliminate all high threat weeds	If current lack of weeds score (non standardised) = 7-15	Eliminate all high threat environmental weeds (<1% cover)	2
		Eliminate high threat woody environmental weeds (<1% cover) and ensure that cover of other high threat weeds does not increase beyond current levels	1
	If current lack of weeds score (non standardised) < 7	Eliminate high threat woody environmental weeds (<1% cover) and ensure that cover of other high threat weeds does not increase beyond current levels	1

### Recruitment

Maintenance gain can be scored for recruitment for grassland EVCs where the land manager agrees to the appropriate biomass management strategy as outlined in Table 16 during the 10-year management period. Land managers will also need to ensure that the weed cover does not increase beyond current levels following adoption of the biomass management strategy in order to qualify for recruitment maintenance gain (Table 20).

**Table 20: Calculating maintenance gains for recruitment in grasslands**

Maintenance Requirement for Habitat Zone	Maintenance gain score/ha						
Biomass management and ensure that weed cover does not increase beyond current level*	Periodic biomass reduction at agreed timing/frequency						
	<b>Current Recruitment Score</b>	0	1	3	5	6	10
	<b>Gain score/ha</b>	0	0.5	1.5	2.5	3	5
	No control on grazing period/frequency but land manager agreement to ensure that total vegetation cover does not fall below 70%						
	<b>Current Recruitment Score</b>	0	1	3	5	6	10
	<b>Gain score/ha</b>	0	0.25	0.75	1.25	1.5	2.5

\* Note that for some grassland EVCs (e.g. "low productivity" grasslands – see Table 16), no biomass management may be required. In such cases, maintenance gain should be scored according to any foregone grazing entitlements as per the maximum gain pathway.



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Management of grazing threats (from non-domestic animals) and targeted control of high threat weeds beyond current obligations under existing legislation can also result in improvement gain for recruitment (Table 21) and is in line with the improvement gain approach for treed EVCs outlined in Section 5.

Note that in some cases, it may be decided that management of threats in habitat zones with a low understorey score may also result in improved recruitment. This may be particularly the case where heavy grazing has resulted in taller life forms being recorded as “effectively absent” (i.e. taller life forms reduced to stunted individuals due to grazing), rather than absence of understorey species. In other cases, the habitat zone may adjoin an existing area of higher quality vegetation from which recruitment is expected. Such cases should be scored in line with the approach outlined in Table 21 (ignoring the current understorey score threshold) depending on the agreed level of weed control.

**Table 21: Calculating improvement gains for recruitment in grasslands**

Management Requirement for Habitat Zone			Improvement gain score/ha*
Control <i>all</i> high threats  (e.g. rabbits, other pest herbivores, high threat herb / grass weeds, other threats as identified)	If <i>current understorey score (non standardised) &gt; 5</i>	If <i>current lack of weeds score = 7-15</i> Eliminate all high threat environmental weeds (<1% cover)	2
		If <i>current lack of weeds score = 7-15</i> Eliminate high threat woody environmental weeds (<1% cover) and ensure that cover of other high threat weeds does not increase beyond current levels	1
		If <i>current lack of weeds score &lt; 7</i> Eliminate high threat woody environmental weeds (<1% cover) and ensure that cover of other high threat weeds does not increase beyond current levels	1

\* Improvement gain is only possible where habitat maintenance commitments have been agreed and the understorey score is below the maximum score.

### Organic Litter

Maintenance gain can be scored for organic litter for grassland EVCs where the land manager agrees to the appropriate biomass management strategy as outlined in Table 16 during the 10-year management period. Land managers will also need to ensure that the weed cover does not increase beyond current levels following grazing control in order to qualify for organic litter maintenance gain (Table 22).

**Table 22: Calculating maintenance gains for organic litter in grasslands**

Maintenance Requirement for Habitat Zone	Maintenance gain score/ha					
	Periodic biomass reduction at agreed timing/frequency*					
Biomass management and ensure that weed cover does not increase beyond current level*	<b>Current Organic Litter Score</b>	0	2	3	4	5
	<b>Gain score/ha</b>	0	1	1.5	2	2.5
No control on grazing period/frequency but land manager agreement to ensure that total vegetation cover does not fall below 70%	<b>Current Organic Litter Score</b>	0	2	3	4	5
	<b>Gain score/ha</b>	0	0.5	0.75	1	1.25

\* Note that for some grassland EVCs (e.g. “low productivity” grasslands – see Table 16), no biomass management may be required. In such cases, maintenance gain should be scored according to any foregone grazing entitlements as per the maximum gain pathway.

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Management of grazing threats (from non-domestic animals), control of high threat weeds and ecological burning or other organic litter reduction approach (where the organic litter cover is too high) can also result in improvement gain for organic litter (Table 23).

**Table 23: Calculating improvement gains for organic litter in grasslands**

Management Requirement for Habitat Zone	Improvement gain score/ha*
Control all high threats (rabbits, other pest herbivores, high threat herb / grass weeds, lack of biomass management, other as identified)	1

\* Improvement gain is only possible where habitat maintenance commitments have been agreed and the organic litter score is below the maximum score.

### 6.4 Summary of native vegetation management gain scoring for grasslands

Table 24 below lists the range of gain scores per hectare for each grassland habitat component over the 10-year management period that could be expected under different circumstances as a guide to decision-makers assessing native vegetation management gain proposals in grasslands.

**Table 24: Summary of potential gains from native vegetation management in grasslands**

Habitat Component	Potential Maintenance gain score/ha	Potential Improvement gain score/ha	Potential Total gain score/ha	Notes
Understorey	0-12.5	0-2.5	0-12.5	Typically 5-10 for the majority of grassland sites
Lack of Weeds	not applicable	0-2	0-2	
Recruitment	0-5	0-2	0-5	Typically 2-4 for the majority of grassland sites
Organic litter	0-2.5	0-1.25	0-2.5	
Grassland standardiser (see DSE 2004)	x 1.36	x 1.36	x 1.36	
<b>Total potential native vegetation management gain / ha range (approx.)</b>	<b>0-27</b>	<b>0-11</b>	<b>0-30</b>	Typically 10-25 for the majority of grassland sites



## through improved native vegetation management and revegetation

### 7 Calculating gains from revegetation

#### 7.1 Introduction

For revegetation that meets a defined DSE standard (refer to *Revegetation Planting Standards: A guide to establishing native vegetation for net gain accounting*, DSE 2006b), an assigned gain score is applied to the site condition and landscape context components. In some cases, further gains (up to a capped maximum) may be achievable depending on the quality, placement and landscape context of the revegetation proposal.

#### 7.2 Determining the site condition gain for revegetation proposals

Table 25 establishes the process for assessing revegetation site condition gains per hectare based on the 'Habitat Hectares' approach. It assumes the use of a DSE revegetation standard based on the appropriate bioregional EVC benchmark that identifies the 10-year life form density target to be met (see DSE 2006b). In addition, there will be the requirement to meet a number of minimum establishment and on-going management standards relating to plant stock, site preparation and follow-up management that will be part of the 10-year management plan (see Appendix 7).

Revegetation proposals that meet this minimum standard will receive an assigned site condition gain score of seven points per hectare (Table 25). There may be capacity to score additional site condition gain (up to a maximum score of 15) for higher quality revegetation:

- that may include a greater range of life forms and/or species in addition to the required woody (and any large tussock) life forms; **or**
- in situations where it is considered that there is a greater capacity to manage on-site threats (e.g. weeds, pest herbivores): **and**
- where logs are to be introduced from the proposed clearing area (for offsets *only*) in line with the approach outlined in Section 5.

In general, a decision on when to apply a higher site condition gain should consider the site characteristics and the capacity of the land manager to achieve the desired result. This may require demonstration of past performance in some circumstances. DSE can advise on when such proposals may be appropriate and how these are scored.

There is also the capacity to score gains for large trees and logs present on the revegetation site in accordance with the large tree and log scoring applied to native vegetation management proposals. To qualify a land manager must agree to forego an existing entitlement to utilise large trees or logs for personal use for the 10-year management period (see Section 5) or in the case of offsets, in perpetuity.

In general, the revegetation site condition gain scoring approach reflects the risk of failure of establishment of revegetation in comparison to natural regeneration. It also acknowledges the generally lower functionality of revegetation in its establishment phase in comparison to a similar-aged stand of native vegetation. In particular, those characteristics that are not directly assessed as part of the habitat hectares method (eg. soil health, nutrient cycling etc.).

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**Table 25: Calculating site condition gains from revegetation**

Habitat component	Potential Revegetation gain score/ha	Notes
Large trees*	7	Score applied to revegetation that meets a defined DSE EVC standard – relating to life forms to be introduced, species diversity within life forms, target densities, source of plant stock, site preparation, follow-up management.
Tree cover		
Understorey		
Lack of Weeds		
Recruitment		
Organic litter		
Logs*	0 → 5	Score will depend on the length of fallen timber ( $\geq 10$ cm diameter and large log class) introduced to the site in relation to the EVC benchmark. For offsets only and using <i>only</i> felled trees from the permitted clearing site for this purpose (see Logs gain scoring – Section 5).
<b>Total revegetation site condition gain/ha range</b>	<b>7 → 15**</b>	

\* There is also the capacity to score gains for large trees and logs present on the revegetation site in accordance with the large tree and log scoring applied to native vegetation management proposals. To qualify a land manager must agree to forego an existing entitlement to utilise large trees or logs for personal use for the 10-year management period (see Section 5) or in the case of offsets, in perpetuity.

\*\* There is capacity to score a site condition gain (up to a maximum score of 15) for higher quality revegetation that may include a greater range of life forms/species in addition to the required woody (and any large tussock) life forms **or** in situations where it is considered that there is a greater capacity to manage on-site threats (e.g. weeds, pest herbivores) **and** where logs are to be introduced from the proposed clearing area.

### 7.3 Calculating the landscape context gain of revegetation proposals

In addition to gains in the site condition components, revegetation also has the capacity to achieve 'landscape context' gains depending on the size, shape and location of the revegetation in relation to other native vegetation.

To qualify for landscape context gains, the revegetation will need to be a minimum of *10 m wide* for riparian areas (excluding any adjoining vegetation) or minimise the perimeter : area ratio for non-riparian revegetation.

Revegetation proposals that meet this minimum standard will receive an assigned landscape context gain score of three points per hectare (Table 26). There may be capacity to score additional landscape context gain (up to a maximum score of 10) where the revegetation goes well beyond the minimum standards (e.g. wider, better shape, connected to other native vegetation) and depending on the current landscape context (high).

DSE can advise on when such proposals may be appropriate and how these are scored.

**Table 26: Calculating landscape context gains from revegetation**

Habitat component	Potential Revegetation gain score/ha	Notes
Landscape Context	3 → 10	Score depends on the width, shape, connection to other native vegetation and landscape context of the revegetation proposal.
<b>Total revegetation landscape context gain/ha range</b>	<b>3 → 10</b>	



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Table 27 provides a summary of the gain score per hectare achievable from revegetation proposals over the 10-year establishment period.

**Table 27: Summary of potential gains from revegetation**

Habitat component	Potential Revegetation gain score/ha	Notes
Total potential revegetation site condition gain/ha range	7 → 15	May be higher depending on presence/retention of large trees.
Total potential landscape context gain/ha range	3 → 10	Depending on the width, shape, connection to other native vegetation and landscape context of the revegetation proposal.
<b>Total potential revegetation gain/ha range</b>	<b>10 → 25</b>	Depending on the current site characteristics and quality, placement and landscape context of the revegetation proposal.

## 8 Special cases – calculating gains under other scenarios

### 8.1 Introduction

This section identifies a number of gain scoring scenarios not covered by Sections 5 to 7 that may need to be considered occasionally by decision-makers. It should be noted that the following scenarios are likely to be some of the more commonly encountered proposals beyond the more typical native vegetation management and revegetation proposals outlined previously. However, other scenarios may arise from time to time and advice on how to score gains under such proposals should be sought from DSE where appropriate.

#### Foregoing an existing right to harvest timber from naturally established forest on private land

Under some circumstances, a private land manager may manage a patch of native vegetation over which they hold an existing right to harvest timber<sup>11</sup>. This permit could either be for *clearfell harvesting and regeneration* or *selective harvesting* (see NRE 2002 for further explanation).

For *clearfell harvesting and regeneration* permits, there is a requirement that regeneration be managed to reach a target of 50% of the quality of the vegetation that was harvested within 10 years and ultimately the same quality (minus large tree component). Under such circumstances, a land manager who was prepared to forego their clearfell harvesting right in perpetuity could assume 50% of their current site condition score as their 10-year maintenance gain. Additional improvement gains in line with the approach outlined in Section 5 would also be possible under such situations. Where private land forest is not substantially contiguous with the public forest estate, a higher level of mitigation will be required (as may be specified in the relevant Regional Native Vegetation Plan). The amount of maintenance gain available to a land manager prepared to forego their clearfell harvesting right under such circumstances would be the avoided loss based on the 10-year mitigation requirements.

An agreement to forego a clearfell harvesting right in perpetuity should be scored according to:

**50% of current site condition score (i.e. score out of 75) + improvement gain\* = amount of gain / ha.**

\* scored in accordance with approach outlined in Section 5

<sup>11</sup> This may be either areas that have been actively managed for timber production since prior to the introduction of the clearing controls in 1989 or where a land manager holds an existing permit.

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For *selective harvesting* permits, the reduction in quality in a site due to selective harvesting must not be greater than the percentage specified in the Regional Native Vegetation Plans. In the absence of guidance in the appropriate Regional Native Vegetation plan, the maximum reduction in site condition for selective harvesting will be 50% after 10 years. Under such circumstances, a land manager who was prepared to forego their selective harvesting right in perpetuity could calculate their 10-year maintenance gain as the difference between the current site condition score and the permitted minimum 10-year site condition score (up to a maximum of 50% of current site condition). Additional improvement gains in line with the approach outlined in Section 5 would also be possible under such situations.

### Temporary loss and re-establishment of native vegetation

Proposals where vegetation is being temporarily lost and then re-established<sup>12</sup> should be treated as revegetation gains (Section 7) where the proposed revegetation meets the DSE minimum revegetation planting standards (DSE 2006b).

It should be noted that the site characteristics, the time taken to commence re-establishment, the rehabilitation approach and the landscape context will influence the amount of revegetation gain score (see Section 7). This score may be maximised in cases where the loss of vegetation is for a limited time only (e.g. less than one year), where due care is taken to stockpile and reintroduce any removed topsoil, where there are low on-site threats (e.g. weeds, pest herbivores) and where the rehabilitation zone is within a good landscape context (e.g. easement surrounded by high quality native vegetation).

### Surface drainage control to avoid waterlogging of terrestrial vegetation

Waterlogging of terrestrial vegetation can result in the rapid decline and loss of native vegetation. Where it can be demonstrated that a proposed surface drainage scheme will avoid waterlogging of terrestrial vegetation<sup>13</sup>, the gain should be scored according to:

**50% of current site condition score (i.e. score out of 75) + improvement gain\* = amount of gain / ha.**

\* scored in accordance with approach outlined in Section 5 (and Section 6 for grasslands where appropriate).

### Improvement or establishment of wetlands<sup>14</sup> through altered hydrology

On a case-by-case basis, proposals that aim to improve the condition of an existing wetland or establish a wetland through changes to the current site hydrology can qualify for gains in excess of the standard 10-year native vegetation improvement or revegetation gains referred to in Sections 5, 6 and 7 previously. This approach recognises that in comparison to dryland vegetation, wetland vegetation under a natural hydrological regime generally has a greater capacity to recover within a 10-year time frame.

Examples of such proposals may include improvements of degraded wetlands through re-instatement of the natural hydrological regime and associated threat management or establishment of “new” wetlands through revegetation.

It should be noted that wetlands are highly variable environments subject to seasonal fluctuations that influence their vegetation expression. The apparent “poor condition” of a wetland at various times may be a natural phenomenon and does not necessarily mean that the hydrological system needs changing. Caution should be exercised when proposing a change to the hydrology of a wetland to improve its condition. Advice should be sought from DSE before proceeding.

<sup>12</sup> Loss of native vegetation is considered temporary where rehabilitation of the clearing site with indigenous vegetation is required as part of the approval process.

<sup>13</sup> This may require the use of a predictive catchment surface water and ground water model.

<sup>14</sup> Wetland vegetation is considered that which is found naturally-occurring waterbodies with static water and without a marine hydrological influence. Includes vegetation that is typically inundated for periods of at least one week and does not include vegetation associated with permanent or temporary streams that may be subject to shorter periods of inundation.





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In order to qualify for higher gains, DSE must agree that the wetland proposal is appropriate for the site. Such a decision will routinely take into consideration:

- the appropriateness of the proposed wetland vegetation type in relation to natural wetland types of the bioregion;
- the appropriateness of the proposed re-instated or created hydrological regime in relation to the wetland EVC proposed for the site;
- the current and future short to medium-term hydrology of the local catchment<sup>15</sup> including any identified risks (e.g. salinity);
- the proposed design, establishment and on-going management approach in relation to existing or anticipated threats; and
- the capacity of the land manager to implement the proposal.

Other issues such as habitat requirements for particular species may also need to be considered by DSE on a case-by-case basis.

Where DSE agrees to the wetland re-creation or revegetation proposal, a land manager will qualify for the following gains.

### **Improvement of degraded wetlands through re-instatement of the natural hydrological regime**

The amount of gain accountable for proposals that aim to improve the management of a remnant wetland through re-instatement of the natural hydrological regime should be calculated according to:

**50% of maximum site condition score – current site condition score\* = amount of gain / ha.**

\* Where the current site condition score is assessed using either the habitat hectares method (DSE 2004) where a terrestrial EVC benchmark exists or where this is not the case, a default site condition score (see DSE 2006a).

In addition to standard threat management requirements, improved wetland management proposals would also require the land manager to agree to management of any unforeseen threats for the 10-year management period that may arise as a result of the changed site hydrology. In particular, control of any high threat aquatic or amphibious weed species that may establish during the 10-year management period.

### **Establishment of wetlands through revegetation**

The amount of gain accountable for proposals that aim to establish a “new” wetland through revegetation should be calculated according to:

**50% of maximum site condition score\* + landscape context gain<sup>16</sup> = amount of gain / ha.**

\* condition assessment method as above.

The 10-year revegetation targets and establishment methods would need to be determined on a case-by-case basis in agreement with DSE and in consideration of “best wetland establishment” principles.

Wetland revegetation proposals would also require the land manager to agree to management of any unforeseen threats for the 10-year management period that may arise as result of the changed site hydrology. In particular, control of any high threat aquatic or amphibious weed species that may establish during the 10-year management period.

<sup>15</sup> This may require the use of a predictive catchment surface water and ground water model.

<sup>16</sup> Landscape context gains should be scored in line with the approach outlined in Section 7.



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## Vegetation Gain Approach – technical basis for calculating gains

### 9 References

- DSE (2004). *Vegetation Quality Assessment Manual – Guidelines for applying the habitat hectares scoring method*. Version 1.3. Victorian Government. Department of Sustainability and Environment, East Melbourne.
- DSE (2006a). *Native Vegetation – Guide for assessment of referred planning permit applications*. Victorian Government. Department of Sustainability and Environment, East Melbourne.
- DSE (2006b). *Native Vegetation – Revegetation Planting Standards – Guidelines for establishing native vegetation for net gain accounting*. Victorian Government. Department of Sustainability and Environment, East Melbourne.
- NRE (2002). *Victoria's Native Vegetation Management: A Framework for Action*. Department of Natural Resources and Environment, East Melbourne.

through improved native vegetation management and revegetation

## 10 Appendices

### Appendix 1: Summary of decision-making process for scoring maintenance gains from improved native vegetation management

Habitat Component	Commitment required to score Maintenance Gain for Habitat Zone*	Maintenance gain score/ha						
<b>1. LARGE TREES</b>	Retain all large trees – dead or alive	<b>Current Large Tree Score</b>	<b>Size of offset/investment patch</b>					
			< 5ha	5 < 20ha		≥ 20ha		
		0	0	0		0		0
		1	1	0.5		0.25		0.25
		2	2	1		0.5		0.5
		3	3	1.5		0.75		0.75
		4-6	2.5	1.25		0.625		0.625
7-10	2	1		0.5		0.5		
<b>2. TREE CANOPY COVER</b>	Retain all (non-large) canopy trees – dead or alive	<b>Current Tree Canopy Cover Score</b>	<b>Size of offset/investment patch</b>					
			< 5ha	5 < 20ha		≥ 20ha		
		1	0.2	0.1		0.05		0.05
		2	0.4	0.2		0.1		0.1
		3	0.6	0.3		0.15		0.15
		4	0.8	0.4		0.2		0.2
<b>3. UNDERSTOREY</b>	Exclude stock and ensure that weed cover does not increase beyond current levels <sup>#</sup>	<b>Current Understorey Score</b>	0	5	10	15	20	25
		<b>Gain score/ha</b>	0	0.5	1	1.5	2	2.5
<b>4. LACK OF WEEDS</b>	not applicable							
<b>5. RECRUITMENT</b>	Exclude stock and ensure that weed cover does not increase beyond current level <sup>#</sup>	<b>Current Recruitment Score</b>	0	1	3	5	6	10
		<b>Gain score/ha</b>	0	0.1	0.3	0.5	0.6	1
<b>6. ORGANIC LITTER</b>	Exclude stock and ensure that weed cover does not increase beyond current level <sup>#</sup> and retain fallen branches and leaf litter	<b>Current Organic Litter Score</b>	0	2	3	4	5	
		<b>Gain score/ha</b>	0	0.2	0.3	0.4	0.5	
<b>7. LOGS</b>	Retain all logs	<b>Current Logs Score</b>	0	2	3	4	5	
		<b>Gain score/ha</b>	0 + 0.4 <sup>◆</sup>	2 + 0.4 <sup>◆</sup>	3 + 0.4 <sup>◆</sup>	4 + 0.4 <sup>◆</sup>	5	

Notes

\* Where the land manager agrees to forego entitled land use activities.

<sup>#</sup> Stock exclusion is desirable in all non-grassy and most grassy EVCs with woody overstorey or understorey life forms. Note that for some treeless grassy EVCs (e.g. Plains Grassland), periodic grazing (or an alternative biomass management strategy) may be required to *maintain* understorey condition – see Calculating maintenance gains in treeless vegetation.

<sup>◆</sup> Add 0.4 only when Current Tree Canopy Cover > 0.

# Native Vegetation

## Vegetation Gain Approach – technical basis for calculating gains

**Appendix 2: Summary of decision-making process for scoring improvement gains from improved native vegetation management**

Habitat Component	Maintenance Requirement for Habitat Zone (see Appendix 1)	Commitment required to score improvement gain for Habitat Zone <sup>#</sup>		Improvement gain score/ha <sup>^</sup>		
<b>1. LARGE TREES</b>	Retain all Large Trees – dead or alive	not applicable*				
<b>2. TREE CANOPY COVER</b>	Retain all (non-large) canopy trees – dead or alive	Control <i>all</i> on-site grazing threats* (e.g. stock, rabbits, other pest herbivores, other threats as identified)	If <i>current tree canopy cover score = 1-3</i>	0.4		
			If <i>current tree canopy cover score = 0</i>	Supplementary planting <sup>#</sup> (or predicted recruitment of canopy tree species from on-site or adjoining areas)	0.6	
<b>3. UNDERSTOREY</b>	Exclude stock and ensure that weed cover does not increase beyond current level	Control <i>all</i> high threats (e.g. rabbits, other pest herbivores, high threat weeds, inappropriate fire regime, inappropriate flooding regime, other threats as identified)	If <i>current understorey score = 10-20</i>	If <i>current lack of weeds score = 7-15</i> Eliminate all high threat environmental weeds (<1% cover)	5	
				If <i>current lack of weeds score = 7-15</i> Eliminate high threat woody environmental weeds (<1% cover) and ensure that cover of other high threat weeds does not increase beyond current levels	2.5	
				If <i>current lack of weeds score &lt; 7</i> Eliminate high threat woody environmental weeds (<1% cover) and ensure that cover of other high threat weeds does not increase beyond current levels	2.5	
		Control <i>all</i> high threats (e.g. rabbits, other pest herbivores, high threat weeds, inappropriate fire regime, inappropriate flooding regime, other threats as identified)	If <i>current understorey score = 0 or 5</i>	If <i>current lack of weeds score = 7-15</i> Eliminate all high threat environmental weeds (<1% cover)	Supplementary planting <sup>#</sup> (or predicted recruitment of understorey species from on-site or adjoining areas)	5
				If <i>current lack of weeds score = 7-15</i> Eliminate high threat woody environmental weeds (<1% cover) and ensure that cover of other high threat weeds does not increase beyond current levels	Supplementary planting <sup>#</sup> (or predicted recruitment of understorey species from on-site or adjoining areas)	2.5
				If <i>current lack of weeds score &lt; 7</i> Eliminate high threat woody environmental weeds (<1% cover) and ensure that cover of other high threat weeds does not increase beyond current levels	Supplementary planting <sup>#</sup> (or predicted recruitment of understorey species from on-site or adjoining areas)	2.5



## through improved native vegetation management and revegetation

Habitat Component	Maintenance Requirement for Habitat Zone (see Appendix 1)	Commitment required to score improvement gain for Habitat Zone <sup>#</sup>		Improvement gain score/ha <sup>^</sup>	
<b>4. LACK OF WEEDS</b>	not applicable	Control or eliminate all high threat weeds	<i>If current lack of weeds score = 7-15</i>	Eliminate all high threat environmental weeds (<1% cover)	4
			<i>If current lack of weeds score &lt; 7</i>	Eliminate high threat woody environmental weeds (<1% cover) and ensure that cover of other high threat weeds does not increase beyond current levels	2
				Eliminate high threat woody environmental weeds (<1% cover) and ensure that cover of other high threat weeds does not increase beyond current levels	2
<b>5. RECRUITMENT</b>	Exclude stock and ensure that weed cover does not increase beyond current level	Control all high threats (e.g. rabbits, other pest herbivores, high threat weeds, inappropriate fire regime, inappropriate flooding regime, other threats as identified)	<i>If current understorey score &gt; 5</i>	<i>If current lack of weeds score = 7-15</i> Eliminate all high threat environmental weeds (<1% cover)	4
				<i>If current lack of weeds score = 7-15</i> Eliminate high threat woody environmental weeds (<1% cover) and ensure that cover of other high threat weeds does not increase beyond current levels	2
				<i>If current lack of weeds score &lt; 7</i> Eliminate high threat woody environmental weeds (<1% cover) and ensure that cover of other high threat weeds does not increase beyond current levels	2
<b>6. ORGANIC LITTER</b>	Exclude stock and ensure that weed cover does not increase beyond current level and retain fallen branches and leaf litter	Control all high threats (e.g. rabbits, inappropriate fire regime, other threats as identified)	<i>If current organic litter score = 0-3</i>		2
			<i>If current organic litter score = 4</i>		1
<b>7. LOGS</b>	Retain all logs	Introduce logs removed / felled from impact site	<i>If current Understorey score &lt; 10</i>		0-5 <sup>♦</sup>
			<i>If current Understorey score ≥ 10</i>		na

### Notes

<sup>#</sup> Improvement gains are scored via commitments that are beyond current obligations (as established under current legislation or planning controls) and use approved method as agreed by DSE. For example, scoring improvement gains for weed control will need to take account of current legal requirements to control/eliminate weed species present at the site listed under the *Catchment and Land Protection Act 1994*.

<sup>\*</sup> For habitat zones with over-abundance of tree canopy cover, this may include DSE-approved ecological thinning to achieve gain. Management of threats contributing to poor large tree and canopy tree health may also be scored on a case-by-case basis (see Section 5).

<sup>♦</sup> Restricted to logs sourced from the approved clearing site using appropriate canopy and understorey tree genera. Calculated depending on the length and size of logs introduced to the site.

<sup>^</sup> Only possible where habitat maintenance commitments have been agreed and where current habitat component score is below maximum score.

# Native Vegetation

## Vegetation Gain Approach – technical basis for calculating gains

### Appendix 3: Summary of decision-making process for scoring maintenance gains from improved native vegetation management in grasslands

Habitat Component	Commitment required to score maintenance gain for Habitat Zone <sup>#</sup>	Maintenance gain score/ha
<b>1. UNDERSTOREY</b>	Biomass management and ensure that weed cover does not increase beyond current level*	Periodic biomass reduction at agreed timing/frequency <sup>+</sup>
		<b>Current Understorey Score</b>
		<b>Gain score/ha</b>
		No control on grazing period/frequency but land manager agreement to ensure that total vegetation cover does not fall below 70%
		<b>Current Understorey Score</b>
		<b>Gain score/ha</b>
<b>2. LACK OF WEEDS</b>	not applicable	
<b>3. RECRUITMENT</b>	Biomass management and ensure that weed cover does not increase beyond current level*	Periodic biomass reduction at agreed timing/frequency <sup>+</sup>
		<b>Current Recruitment Score</b>
		<b>Gain score/ha</b>
		No control on grazing period/frequency but land manager agreement to ensure that total vegetation cover does not fall below 70%
		<b>Current Recruitment Score</b>
		<b>Gain score/ha</b>
<b>4. ORGANIC LITTER</b>	Biomass management and ensure that weed cover does not increase beyond current level*	Periodic biomass reduction at agreed timing/frequency <sup>+</sup>
		<b>Current Organic Litter Score</b>
		<b>Gain score/ha</b>
		No control on grazing period/frequency but land manager agreement to ensure that total vegetation cover does not fall below 70%
		<b>Current Organic Litter Score</b>
		<b>Gain score/ha</b>

#### Notes

\* For some grassland EVCs (e.g. "low productivity" grasslands), no biomass management may be required. In such cases, maintenance gain should be scored according to any foregone grazing entitlements as per the maximum gain pathway.

<sup>#</sup> Where the land manager agrees to forego or control an entitled land use (as established under current legislation).

<sup>+</sup> In general, refers to controlled grazing; burning; or slashing and removal of thatch.



## through improved native vegetation management and revegetation

### Appendix 4: Summary of decision-making process for scoring improvement gains from improved native vegetation management in grasslands

Habitat Component	Maintenance Requirement for Habitat Zone (see Appendix 3)	Commitment required to score improvement gain for Habitat Zone#			Improvement gain score/ha <sup>^</sup>
<b>1. UNDERSTOREY</b>	Biomass management and ensure that weed cover does not increase beyond current level	Control <i>all</i> high threats  (e.g. rabbits, other pest herbivores, high threat herb / grass weeds, other threats as identified)	If current understorey score (non standardised) = 10-20	If current lack of weeds score = 7-15 Eliminate all high threat environmental weeds (<1% cover)	2.5
				If current lack of weeds score = 7-15 Eliminate high threat woody environmental weeds (<1% cover) and ensure that cover of other high threat weeds does not increase beyond current levels	1.25
				If current lack of weeds score < 7 Eliminate high threat woody environmental weeds (<1% cover) and ensure that cover of other high threat weeds does not increase beyond current levels	1.25
			If current understorey score (non standardised) = 0 or 5*	If current lack of weeds score = 7-15 Eliminate all high threat environmental weeds (<1% cover)	1.25
				If current lack of weeds score = 7-15 Eliminate high threat woody environmental weeds (<1% cover) and ensure that cover of other high threat weeds does not increase beyond current levels	0.625
				If current lack of weeds score = < 7 Eliminate high threat woody environmental weeds (<1% cover) and ensure that cover of other high threat weeds does not increase beyond current levels	0.625
<b>2. LACK OF WEEDS</b>	not applicable	Control or eliminate all high threat weeds	If current lack of weeds score (non standardised) = 7-15 Eliminate all high threat environmental weeds (<1% cover)	2	
			If current lack of weeds score (non standardised) = 7-15 Eliminate high threat woody environmental weeds (<1% cover) and ensure that cover of other high threat weeds does not increase beyond current levels	1	
			If current lack of weeds score (non standardised) < 7 Eliminate high threat woody environmental weeds (<1% cover) and ensure that cover of other high threat weeds does not increase beyond current levels	1	
<b>3. RECRUITMENT</b>	Biomass management and ensure that weed cover does not increase beyond current level	Control <i>all</i> high threats  (e.g. rabbits, other pest herbivores, high threat herb / grass weeds, other threats as identified)	If current understorey score (non standardised) > 5*	If current lack of weeds score = 7-15 Eliminate all high threat environmental weeds (<1% cover)	2
				If current lack of weeds score = 7-15 Eliminate high threat woody environmental weeds (<1% cover) and ensure that cover of other high threat weeds does not increase beyond current levels	1
				If current lack of weeds score < 7 Eliminate high threat woody environmental weeds (<1% cover) and ensure that cover of other high threat weeds does not increase beyond current levels	1
<b>4. ORGANIC LITTER</b>	Biomass management and ensure that weed cover does not increase beyond current level	Control all high threats  (rabbits, other pest herbivores, high threat herb / grass weeds, lack of biomass management, other as identified)			1

#### Notes

# Improvement gains must be through commitments that are beyond current obligations (as established under current legislation or planning controls) and use approved method as agreed by DSE. For example, scoring improvement gains for weed control will need to take account of current legal requirements to control/eliminate listed weed species under the *Catchment and Land Protection Act 1994*.

\* Improvement gains may also be possible in lower quality habitat zones under particular circumstances.

<sup>^</sup> Only possible where habitat maintenance commitments have been agreed and where current habitat component score is below maximum score.

# Native Vegetation

## Vegetation Gain Approach – technical basis for calculating gains

### Appendix 5: Native vegetation quality field assessment sheet

#### Vegetation Quality Field Assessment Sheet Version 1.3 - October 2004

Department of  
Sustainability and  
Environment

Site Name/No. .... Location ..... Date .....  
Assessor(s) ..... Map Name/No. .... AMG / MGA .....  
Tenure ..... EVC ..... Bioregion .....

#### 'Site Condition Score'

#### Large Trees

Score

Category & Description	% Canopy Health*		
	> 70%	30-70%	< 30%
None present	0	0	0
> 0 to 20% of the benchmark number of large trees/ha	3	2	1
> 20% to 40% of the benchmark number of large trees/ha	4	3	2
> 40% to 70% of the benchmark number of large trees/ha	6	5	4
> 70% to 100% of the benchmark number of large trees/ha	8	7	6
≥ the benchmark number of large trees/ha	10	9	8

Large trees are defined by diameter at breast height (dbh)  
- see EVC benchmark.

\* Estimate proportion of an expected healthy canopy cover that is present (i.e. not missing due to tree death or decline, or mistletoe infestation).

#### Tree Canopy Cover

Score

Category & Description	% Canopy Health *		
	> 70%	30-70%	< 30%
< 10% of benchmark cover	0	0	0
< 50% or > 150% of benchmark cover	3	2	1
≥ 50% or ≤ 150% of benchmark cover	5	4	3

Tree canopy is defined as those canopy tree species reaching ≥ 80% of mature height - see EVC benchmark description.

\* Estimate proportion of an expected healthy canopy cover that is present (i.e. not missing due to tree death or decline, or mistletoe infestation).

#### Lack of Weeds

Score

Category & Description	'high threat' weeds*		
	None	≤ 50%	> 50%
> 50% cover of weeds	4	2	0
25 - 50% cover of weeds	7	6	4
5 - 25% cover of weeds	11	9	7
< 5% cover of weeds**	15	13	11

\* proportion of weed cover due to 'high threat' weeds - see EVC benchmark for guide.

'High threat' weed species are defined as those introduced species (including non-indigenous 'natives') with the ability to out-compete and substantially reduce one or more indigenous life forms in the longer term assuming on-going current site characteristics and disturbance regime.

The EVC benchmark lists typical weed species for the EVC in the bioregion and provides an estimate of their 'invasiveness' and 'impact'. In general, those weed species considered to have a *high impact* are considered *high threat* regardless of their invasiveness.

\*\* if total weed cover is negligible (<1%) and high threat weed species are present then score '13'.

#### Understorey Life forms

LF Code from EVC benchmark	# spp observed / Benchmark spp.	% cover observed / Benchmark % cover	Present (✓)	Modified (✓)
	/	/		
	/	/		
	/	/		
	/	/		
	/	/		
	/	/		
	/	/		
	/	/		
	/	/		
	/	/		
	/	/		
	/	/		
	/	/		
	/	/		
	/	/		
	/	/		

#### Present

For life forms with benchmark cover of < 10%, considered 'present' if

- any specimens are observed.

For life forms with benchmark cover of ≥ 10%, considered 'present' if

- the life form occupies at least 10% of benchmark cover.

#### Modified

(apply only where life form is 'present')

For life forms with benchmark cover of <10%, then considered substantially 'modified' if the life form has either:

- < 50% of the benchmark species diversity; or
- no reproductively-mature specimens are observed.

For life forms with benchmark cover of ≥ 10%, then considered substantially 'modified' if the life form has either:

- < 50% of benchmark cover; or
- < 50% of benchmark species diversity; or
- ≥ 50% of benchmark cover due largely to immature canopy specimens but the cover of reproductively-mature specimens is < 10% of the benchmark cover.

#### Understorey

Score

Category & Description	Score
All strata and Life forms effectively absent	0
Up to 50% of life forms present	5
≥ 50% to 90% of Life forms present	10
• of those present, ≥ 50% substantially modified	10
• of those present, < 50% substantially modified	15
≥ 90% of Life forms present	15
• of those present, ≥ 50% substantially modified	15
• of those present, < 50% substantially modified	20
• of those present, none substantially modified	25



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### Vegetation Quality Field Assessment Sheet

Version 1.3 October 2004

#### Recruitment

#### Score

Category & Description			High diversity**	Low diversity**
No evidence of a recruitment 'cohort'*	within EVC not driven by episodic events		0	0
	within EVC driven by episodic events^	clear evidence of appropriate episodic event	0	0
		no clear evidence of appropriate episodic event	5	5
Evidence of at least one recruitment 'cohort' in at least one life-form	proportion of native woody species present that have adequate recruitment°	< 30%	3	1
		30 - 70%	6	3
		≥ 70%	10	5

+ 'cohort' refers to a group of woody plants established in a single episode (can include suppressed canopy species individuals).

^ refer to EVC benchmark for clarification.

° treat multiple eucalypt canopy species as one species.

\*\* high diversity defined as ≥ 50% of benchmark woody species diversity.

#### Species Recruitment

Woody species recorded in habitat zone	Adequate Recruitment
Eucalypt canopy (combined species)	(✓)
number of woody spp. in EVC benchmark (SS and taller)	

#### Organic Litter

#### Score

Category & Description	Dominated by native organic litter	Dominated by non-native organic litter
< 10% of benchmark cover	0	0
< 50% or > 150% of benchmark cover	3	2
≥ 50% or ≤ 150% of benchmark cover	5	4

#### Logs

#### Score

Category & Description	Large logs present*	Large logs absent*
< 10% of benchmark length	0	0
< 50% of benchmark length	3	2
≥ 50% of benchmark length	5	4

Large logs defined as those with diameter ≥ 0.5 of benchmark large tree dbh.

\* present if large log length is ≥ 25% of EVC benchmark log length.

# absent if large log length is < 25% of EVC benchmark log length.

### 'Landscape Context Score'

#### Patch Size

#### Score

Category & Description	Score
< 2 ha	1
Between 2 and 5 ha	2
Between 5 and 10 ha	4
Between 10 and 20 ha	6
≥ 20 ha, but 'significantly disturbed'	8
≥ 20 ha, but not 'significantly disturbed'	10

\* 'significantly disturbed' defined as per RFA 'Old Growth' analyses eg. roading, coupes, grazing etc. - effectively most patches within fragmented landscapes.

#### Distance to Core Area

#### Score

Distance	Core Area not significantly disturbed*	Core Area significantly disturbed*
> 5 km	0	0
1 to 5 km	2	1
< 1 km	4	3
contiguous	5	4

\* defined as per RFA 'Old Growth' analyses.

#### Neighbourhood

#### Score

Radius from site	% Native vegetation*	Weighting	Score
100 m		0.03	
1 km		0.04	
5 km		0.03	
subtract 2 if the neighbourhood is 'significantly disturbed'			
<b>Add Values and 'round-off'</b>			

\* to nearest 20%.

Multiply % native vegetation x Weighting for each radius from the zone (eg. 40% x 0.03 = 1.2); then add values to obtain final Neighbourhood Value.

### Final Habitat Score

Component	'Site Condition Score'							'Landscape Context Score'		Total	
	Large Trees	Tree Canopy Cover	Lack of Weeds	Understorey	Recruitment	Organic Litter	Logs	Patch Size	Neighbourhood		Distance to Core Area
Score											100

# Native Vegetation

## Vegetation Gain Approach – technical basis for calculating gains

### Appendix 6: Example of a native vegetation management plan

(performance standards schedules *only*)

This plan is designed for attachment to an agreement between the landholder and a relevant authority. Such an agreement could be used as part of an offset plan or a management agreement to create a native vegetation credit.

Sample only

## SCHEDULE A

### MANAGEMENT PLAN-ID

**Landholder**      **Land manager name**

**Site Identifier**      ID -1

#### (A) Objectives

The objectives for the management plan are:

1. e.g. Protect current site quality
2. e.g. Increase the cover and diversity of understorey life forms
3. *[Set out any additional objectives]*

#### (B) Landholder's Commitments

1. Land-use commitments

From the date of Commencement of Agreement to the date of Termination of Agreement, the Landholder agrees to:

- e.g. Retain all standing large trees (dead or alive)
- e.g. Retain all other standing trees
- e.g. Exclude stock from the site at all times
- e.g. Retain all fallen leaf litter, twigs, branches and logs

2. Management commitments

The Landholder will complete the management actions specified in the following table on the land for ten years from the Commencement date:



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**MANAGEMENT ZONE ID-1A – EVC 1 (as per site plan)**

Year from commencement	Management actions to be completed	Timing
First	e.g. Fumigate and collapse rabbit burrows as per minimum standards	Autumn
	e.g. Plan supplementary planting program for second year: collect or order seedlings as per minimum standards (see attached species list)	Autumn
	Control weed species "A" using "cut and paint" method as per minimum standards [Set out additional actions as agreed]	Spring
Second	[Set out actions for subsequent years as agreed]	
Third	•	
Fourth	•	
Fifth	•	
Sixth	•	
Seven	•	
Eight	•	
Nine	•	
Ten	•	

**MANAGEMENT ZONE ID-1B – EVC 2 (as per site plan)**

*[Set out management actions for additional zones]*

3. Fire prevention  
The Land manager will take all reasonable steps to prevent fire on the land, provided these steps are not inconsistent with the Land manager's commitments.
4. Reporting  
As soon as practicable after the end of each year specified below the Landholder will submit a Report:  
Year one  
Year two  
Year five  
Year ten

# Native Vegetation

## Vegetation Gain Approach – technical basis for calculating gains

### SCHEDULE B

Plants to be used for supplementary planting of EVC 1

#### Management Zone ID-1A – EVC 1 (as per site plan)

(approx. xx ha available for supplementary planting)

Understorey Trees/Large Shrubs > 5 m tall 10-year survival target number of xx	
[Common name]	[Latin name]
Medium Shrubs 1-5 m tall 10-year survival target number of xx	
Large Graminoids (grasses, sedges, rushes etc.) > 1 m tall 10-year survival target number of xx	

**Total 10-year survival target number of plants: xxx**

### SCHEDULE C

#### SITE PLAN

Map showing at 1:5000 or better showing:

- Property Identification
- Native vegetation management/offset site(s) with site identification code(s)
- AMG Coordinates and Latitude/Longitude
- Cadastre
- Site Boundary with bearing and distance to cadastre (By Survey or Differentially Corrected GPS)
- Roads
- Streams (where appropriate)

# through improved native vegetation management and revegetation

## Appendix 7: Example of a revegetation management plan

(performance standards schedules *only*)

This plan is designed for attachment to an agreement between the landholder and a relevant authority. Such an agreement could be used as part of an offset plan or a management agreement to create a native vegetation credit.

**Sample only**

### SCHEDULE A

#### ESTABLISHMENT AND MANAGEMENT PRINCIPLES

##### 1. Commitments and reporting schedule

<b>Milestone</b>	<b>Deliverables</b>	<b>Reporting</b>
Commencement	Agreement is executed by both parties	Date of commencement
Establishment	<p><b>1. Establishment of vegetation</b></p> <p>1.1 The Landholder must:</p> <ul style="list-style-type: none"> <li>(a) prepare the Site appropriately to ensure optimal establishment of the vegetation;</li> <li>(b) for each category specified in Column 1 of the relevant Table in Schedule B, sow seeds or plant seedlings and establish either: <ul style="list-style-type: none"> <li>(i) a reasonable random selection of vegetation from the corresponding suitable species specified in Column 2 of the relevant Table in Schedule B; or</li> <li>(ii) such other suitable species as approved by the Relevant Authority's Representative in writing.</li> </ul> </li> </ul> <p><b>2. Provenance of vegetation</b></p> <p>2.1 Subject to item 2.2, the Landholder must endeavour to ensure that all vegetation is established by indigenous seed or seedlings sourced from at least ten parent plants from within viable populations matched to the Site in terms of soil type, altitude, topography, aspect and climate and located within 25 kilometres of the Site and within the same bioregion.</p> <p>2.2 If it is not reasonably practicable for the Landholder to comply with item 2.2 in the case of any suitable species specified in Column 2 of the relevant Table in Schedule B, the Landholder must ensure that vegetation of that species is established from available indigenous seed and seedlings sourced from more than one parent plant from a viable population as close as possible to the Site.</p> <p>2.3 The Landholder must:</p> <ul style="list-style-type: none"> <li>(a) record the exact provenance of any vegetation established under items 2.2 and 2.3; and</li> <li>(b) give a copy of that record to the Relevant Authority as part of the Report for this Milestone.</li> </ul> <p><b>3. Site protection – fencing and fire prevention</b></p> <p>3.1 The Landholder must erect and/or maintain adequate fencing around the Site in accordance with defined minimum standards, to ensure that domestic stock are excluded from the Site at all times.</p> <p>3.2 The Landholder will take all reasonable steps to prevent fire on the Land, provided that these steps are not inconsistent with this Agreement.</p>	No later than 2 years following <i>Commencement</i>
Stewardship	<p>The Landholder must:</p> <ul style="list-style-type: none"> <li>(a) ensure that non-native animals are excluded from browsing or grazing the Site at all times, except as approved in writing by the Relevant Authority; and</li> <li>(b) only cultivate the Site or prune or thin the vegetation to the extent necessary to achieve the Survival Target; and</li> <li>(c) maintain in good condition: <ul style="list-style-type: none"> <li>(i) any fencing around the Site; and</li> <li>(ii) any set-back or fire break shown in the attached Site plan.</li> </ul> </li> </ul>	Minimum of three years following <i>Establishment</i>

# Native Vegetation

## Vegetation Gain Approach – technical basis for calculating gains

<b>Milestone</b>	<b>Deliverables</b>	<b>Reporting</b>
Survival 1	The Landholder must: (a) achieve the Stewardship Milestone; and (b) agree to undertake remedial actions proposed by the Relevant Authority's Representative in relation to: (i) the planting of additional vegetation at the Site; or (ii) pruning or thinning vegetation at the Site; or (iii) any other action to be taken by the Landholder to meet the required Survival 2 Milestone.	Minimum of one year following <i>Establishment</i>
Survival 2	The Landholder must: (a) achieve the Survival 1 Milestone; and (b) ensure that the number of living plants on the Site for each Category in Column 1 of the relevant Table in Schedule B complies with the requirements in Columns 4 and 5 for that Category.	Minimum of two years following <i>Establishment</i>
Completion	The Landholder must: (a) achieve the Survival 2 Milestone; and (b) ensure that the number of living plants on the Site for each Category in Column 1 of the relevant Table in Schedule B complies with the requirements in Columns 4 and 5 for that Category.	Minimum of one year following <i>Survival 2</i>

### SCHEDULE B

#### Management Zone ID – EVC *name* (as per site plan)

(approx. xx ha available for supplementary planting)

#### **Plants to be used for planting of EVC**

**TABLE 1 – MANAGEMENT ZONE ID – EVC *name*** (as per site plan)

<b>Column 1</b>	<b>Column 2</b>	<b>Column 3</b>	<b>Column 4</b>	<b>Column 5</b>
<b>Category</b>	<b>Common name</b>	<b>Scientific name</b>	<b>Maximum density</b>	<b>Minimum density</b>
Overstorey	name	species	xx/ha (e.g. 125% of 10-year target)	xx/ha (e.g. 75% of 10-year target)
Large Shrubs (> 5 m tall)	name	Species	n/a	xx/ha
Medium Shrubs (1-5 m tall)	name	Species	n/a	xx/ha
Small Shrubs (0.2-1 m tall)	name	Species	n/a	xx/ha
Non woody plants	name	Species	n/a	n/a
Total live woody plants/hectare	n/a	n/a	n/a	xx/ha

Notes:

1. The plant numbers specified in column 4 for each category in the table above are the minimum numbers required to fulfil the *Survival 2* and *Completion* Milestones (see Schedule A).
2. The minimum density of plants (Column 5) for each species specified in Column 2 can be achieved by any combination of recommended plant species.
3. Non woody plants may be included as desirable additions to the site on a case-by-case where this is considered as current regional practice for the EVC.



through improved native vegetation management and revegetation

## **SCHEDULE C**

### **SITE PLAN**

Map showing at 1:5000 or better showing:

- Property Identification
- Revegetation/offset site(s) with site identification code(s)
- AMG Coordinates & Latitude/Longitude
- Cadastre
- Site Boundary with bearing and distance to cadastre (By Survey or Differentially Corrected GPS)
- Roads
- Streams (where appropriate)

