

Guide for calculating a Significant Environmental Benefit

Under the *Native Vegetation Act 1991* and
Native Vegetation Regulations 2017

July 2020



Government
of South Australia



Native Vegetation
Council

Natural Resources

Contents

1. Introduction.....	4
Purpose	4
Background.....	4
2. Clearance process flow chart.....	5
3. Assessing vegetation to be cleared.....	6
Step 1. Apply the Mitigation Hierarchy	6
Step 2. Undertake an on ground assessment of residual impacts.....	6
Step 3. Determine the biodiversity score.....	10
Step 4. Determine the SEB Points	10
Step 5. Apply loadings and reductions	11
Step 6. Determine the SEB Points required to offset the impacts.....	14
Step 7. Recording the SEB Points required.....	14
4. SEB process flow chart	15
5. Assessing an on ground SEB	16
Step 1. Undertake an assessment of a proposed on ground SEB	16
Step 2. Determine the Biodiversity Benefit.....	17
Step 3. Determine the total SEB Points provided by the vegetation association.....	20
6. Providing an SEB for threatened species.....	25
7. Payment into the Fund.....	27
Step 1. Determine the hectares required.....	28
Step 2. Determine the Management Cost.....	28
Step 3. Determine the Rainfall factor.....	28
Step 4. Determine Economies of Scale	29
Step 5. Apply the payment formula	30
Step 6. Administration Fee and Minimum Payment.....	30
Step 7. Determine the Total Payment to be made into the Native Vegetation Fund.....	31
8. Termination or reduction of an SEB Area.....	32
9. Examples of SEB assessment and calculation.....	33
Process 1: Assess the areas being cleared.....	34
Process 2: Assess the site of the SEB Area being offered.....	40
Step 6: Determine if the clearance is offset	43
10. References.....	45
11. Quick Guides.....	46

List of Figures

Figure 1. An overview of the Clearance process indicating the major pathways for approval.....	5
Figure 2. An overview of the SEB process indicating the major pathways for approval.	15
Figure 3. Representation of the biodiversity gain calculation.....	17
Figure 4. Rainfall layer representing the Average annual rainfall across South Australia.	29

List of Tables

Table 1. Loss factor for clearance of patches of vegetation.	11
Table 2. Loss factor for clearance of scattered trees.....	11
Table 3. Loadings for clearance within a protected area.....	12
Table 4. Reductions for onsite ecological restoration.	13
Table 5. SEB for threatened species	25
Table 6. Economies of Scale for the different NRM regions.	30
Table 7. Termination or relocation of an SEB Area	32

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1. Introduction

The *Native Vegetation Act 1991* (the Act) and *Native Vegetation Regulations 2017* (the Regulations) allow the clearance of native vegetation under certain circumstances. However in order to prevent the further decline in native vegetation in South Australia, some clearance activities require the establishment of a Significant Environmental Benefit (SEB).

An SEB is achieved through the establishment of an area of land to be managed and protected for the growth of native vegetation. Such an area is referred to as an SEB area. This ensures that, even after allowing for the clearance of native vegetation, the overall condition of the environment will be improved and will result in a net environmental gain.

PURPOSE

There needs to be a clear, consistent and transparent means for determining SEB obligations that are required under the Act or Regulations. This Guide outlines the process to be followed to determine the SEB requirements in relation to an application to clear native vegetation.

This Guide is intended to address considerations for determining the quantum of the SEB, either as an area or payment. Issues regarding the appropriateness of a proposed SEB, the required management and the options for achieving an SEB (including Third Party and Credit SEBs), are set out in the *Policy for Significant Environmental Benefit under the Native Vegetation Act 1991 or Native Vegetation Regulations 2017* (the SEB Policy).

BACKGROUND

Native vegetation is critical for supporting biodiversity in South Australia, it is important habitat for native fauna and supports a great range of native plant species. It is essential for sustaining the health and productivity of the environment and numerous natural resources based industries.

In particular, native vegetation provides a great range of benefits such as managing erosion and salinity, providing clean water and air, supporting pollinators for our agricultural industry, underpinning the pastoral industry and being essential to tourism in South Australia. Native vegetation is also a defining feature of our landscape, such as gum studded paddocks, providing people with a sense of place.

The fundamental objective of this guide is to ensure that approved clearance activities do not result in an overall loss of native vegetation, or degrade or undermine the integrity or capacity of the services that it provides.

2. Clearance process flow chart

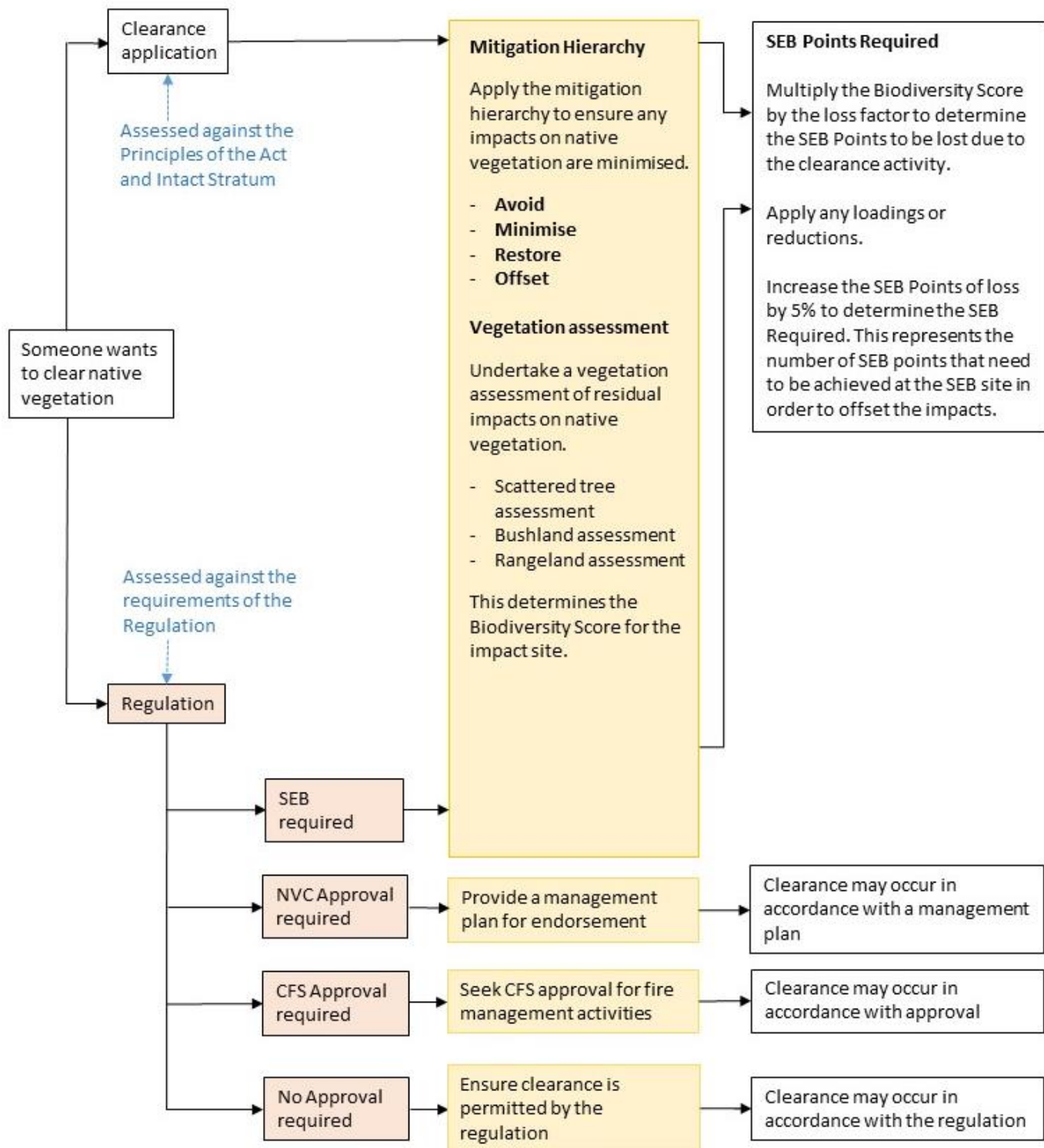


Figure 1. An overview of the Clearance process indicating the major pathways for approval.

3. Assessing vegetation to be cleared

If a proponent wishes to apply to clear native vegetation, whether as an application under the Act, or under Part 4, 5, or 6 of the Regulations, certain information must be provided to the Native Vegetation Council (NVC). This includes demonstrating that actions have been taken to avoid and minimise impacts on native vegetation as much as possible and then assessing the residual impacts. This information will form part of the application from which the NVC will determine whether consent should be granted or the conditions to be applied (for further information see the *'Guide for applications to clear native vegetation under Native Vegetation Act 1991 or Native Vegetation Regulations 2017'* – The Clearance Guide). The steps that must be applied and information to be provided in relation to determining the SEB obligations are set out below.

Step 1. Apply the Mitigation Hierarchy

When considering a proposed clearance activity the first step is always to apply the Mitigation Hierarchy. The Mitigation Hierarchy sets out the major considerations for ensuring the impacts of any proposed activity on native vegetation and biodiversity will be limited as far as possible and that any residual impacts will be addressed.

Mitigation Hierarchy

- **Avoid**
Avoiding any impacts on native vegetation by relocating the activity, redesigning how it will be undertaken, reducing the size or scale of the activity, or changing the way the activity will occur.
- **Minimise**
Minimising impacts by limiting the amount of clearance, clearing vegetation that is less significant (e.g. avoiding vegetation of high conservation value) or clearing vegetation that has been degraded to a greater extent.
- **Rehabilitate/restore**
This is particularly important for short term, transient or minor impacts where a site retains its capacity to be a viable and functional ecosystem. Any restoration or rehabilitation should, as a minimum, aim to return the site to its pre-impact condition. Where possible, it should aim to maximise species and structural diversity and ecosystem resilience.
- **Offset**
Offsets are intended to compensate for any residual adverse impacts. An offset should only be considered after all reasonable steps have been taken to avoid, minimise and rehabilitate/restore the impacts of clearance activities.

Step 2. Undertake an on ground assessment of residual impacts

Undertake an assessment of the vegetation proposed to be cleared. Assessments must be undertaken by a person or body that has been approved by the NVC (in accordance with Section 28(5) of the Act), as able to prepare a report. Such persons or body will be referred to as NVC Accredited Consultants.

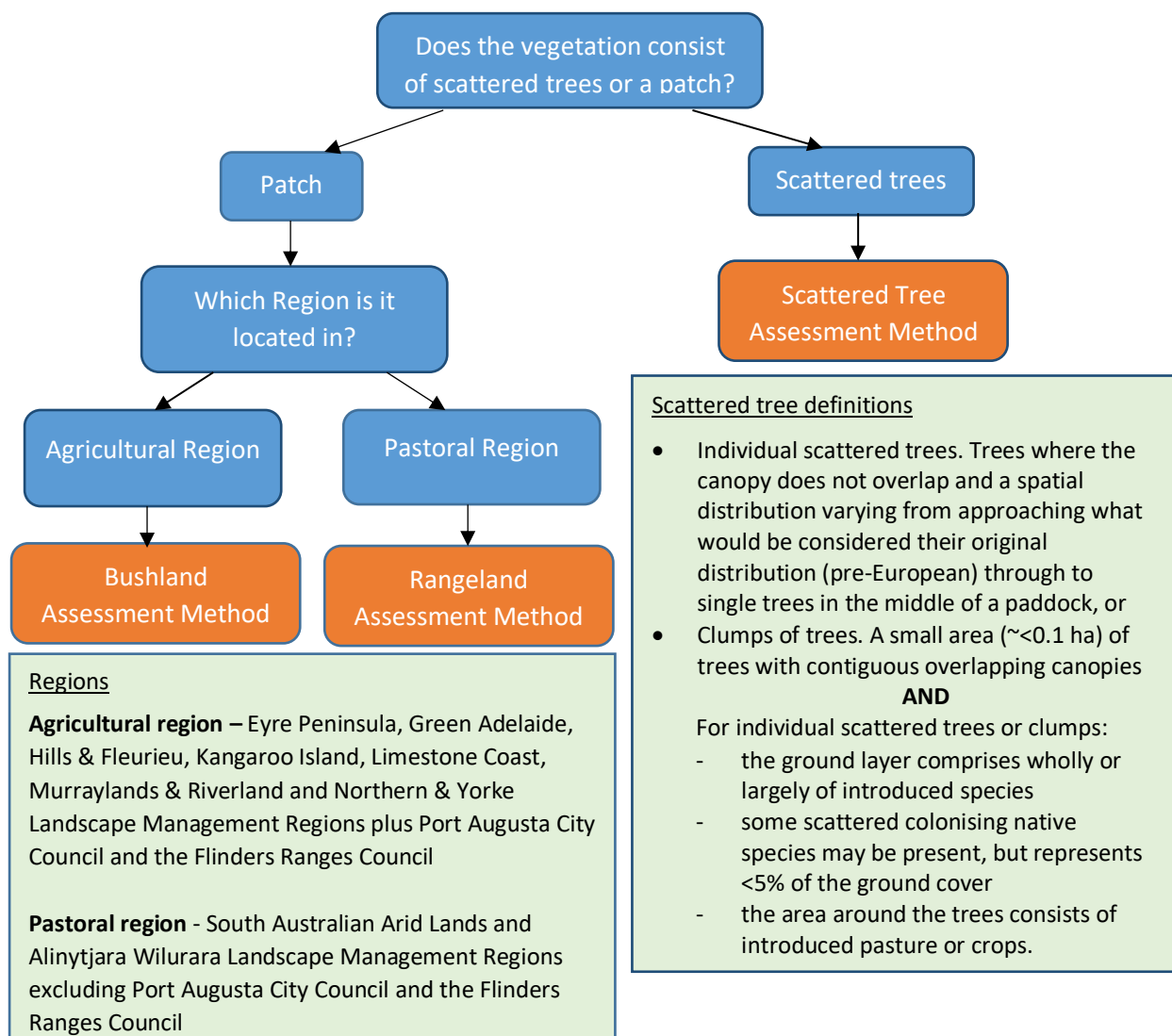
The assessment method to be employed will depend on the location of the vegetation and the type of vegetation proposed to be cleared. NVC endorsed assessment methodologies include:

- Scattered Tree Assessment Method
- Bushland Assessment Method
- Rangelands Assessment Method

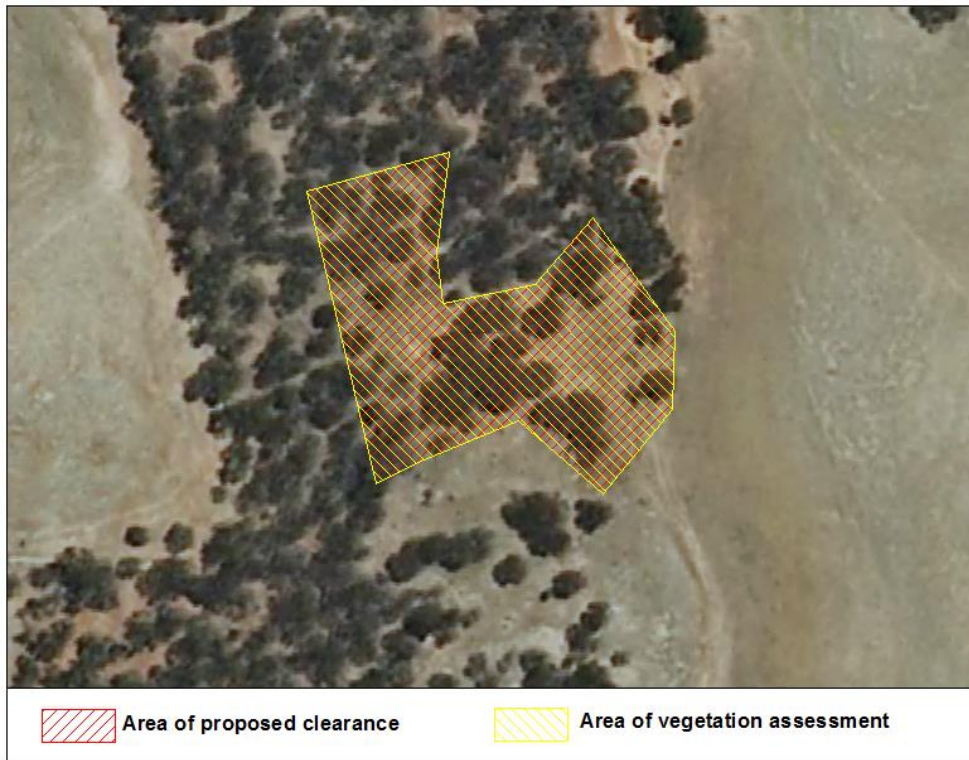
The vegetation assessment methods are quantitative and are based on a range of attributes relating to the vegetation condition, location in the landscape and conservation values. This is intended to provide the vegetation with a relative biodiversity score. This allows for an assessment of the significance of the vegetation that is proposed to be cleared and enables a quantitative means of determining the required SEB.



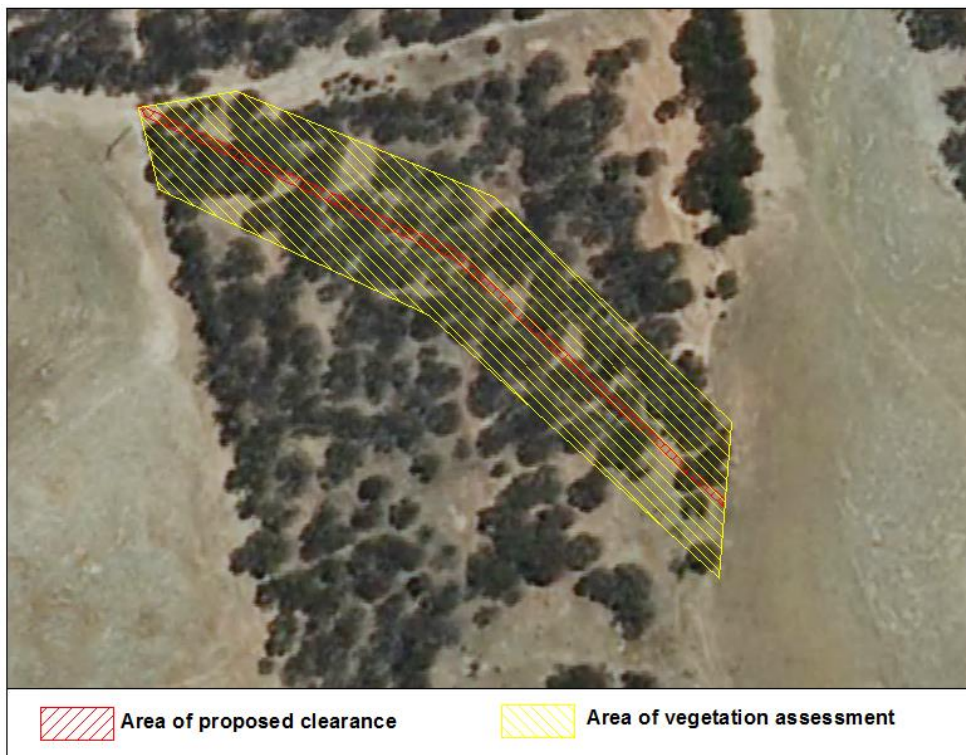
Use the following diagram to determine which assessment method is required. An application may consist of both a **Scattered Tree** and a **Patch Assessment**.



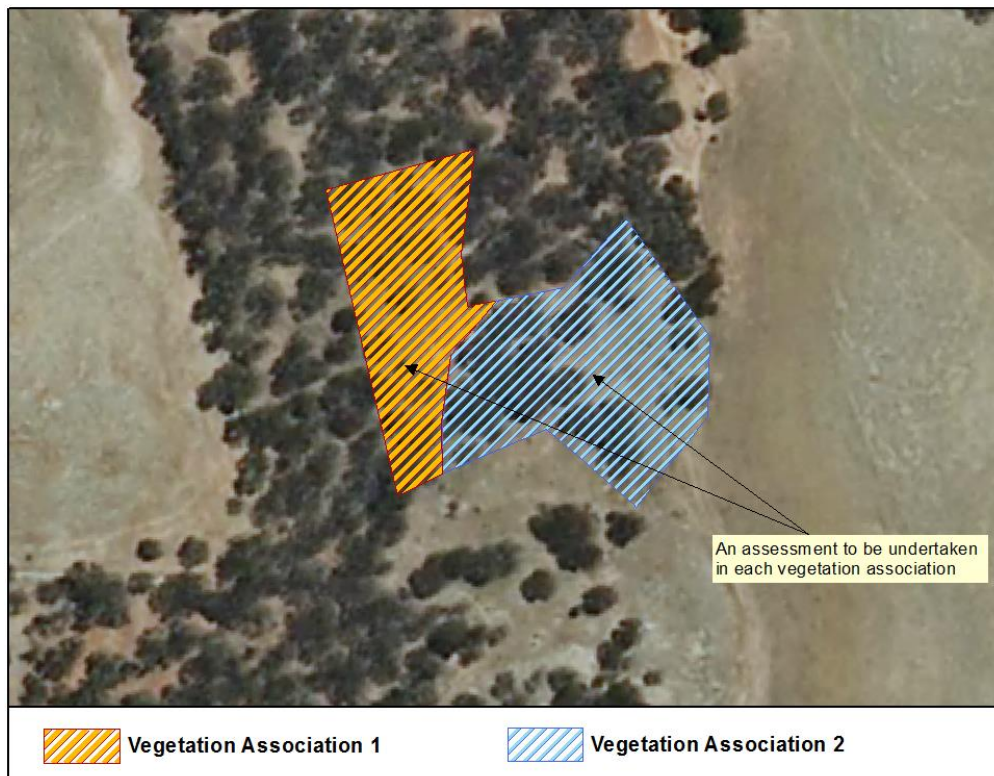
The assessment of the vegetation needs to occur within the area of immediate impact. This is the area that will be impacted once all reasonable steps have been taken to avoid and minimise the clearance as much as possible.



There will be occasions where the area of impact will be long and narrow, such as recreation tracks or road widening. In such situations, undertaking a quadrat assessment within the proposed impact area may not be practical. Accordingly the assessment should be undertaken to include the adjacent vegetation or in accordance with the small site assessment (see relevant assessment method manual).



For assessments involving patches of vegetation, the vegetation will be divided based on the vegetation associations that are present. An assessment is conducted on each individual association in the area of proposed clearance (see the Bushland or Rangeland assessment manuals for details).



For scattered trees, an assessment is conducted on each individual tree proposed to be cleared (see Scattered Tree Assessment Manual for details).



Step 3. Determine the biodiversity score

The Scattered Tree Assessment Method assesses each tree individually by measuring a range of attributes, including species, height, health (also known as dieback), proximity to other vegetation, hollows, density, and habitat potential for threatened fauna species.

The Bushland and Rangeland assessment methods assess each vegetation association by measuring attributes related to condition and composition of the vegetation (e.g. species and structural diversity, recruitment, presence and extent of weeds, tree health, ground cover and hollows), landscape context (e.g. connectivity and relationship to amount of vegetation within local vicinity) and conservation significance (e.g. the presence of rare or threatened species or communities, or habitat for such species).

The measurements of the different elements are combined to provide a biodiversity score for the vegetation under assessment (full details are set out in the assessment manuals). This is considered its relative value and enables comparison of the biodiversity value of vegetation of different types.

Scattered Tree Assessment

- Each tree is provided with a **Tree Biodiversity Score**. The the maximum score that a tree can obtain is **15**.

$$\text{Tree Biodiversity Score} = \text{Tree Score} \times \text{Multiplication factor}$$

Patch Assessment

- Each vegetation association is provided with a **Unit Biodiversity Score** which represents a per hectare score. The maximum score that a vegetation association can obtain is **170**.

$$\text{Unit Biodiversity Score} = \text{Landscape Context} \times \text{Vegetation Condition} \times \text{Conservation Significance}$$

- The Unit Biodiversity Score is multiplied by the area of vegetation association within the **impacted** area to determine the **Total Biodiversity Score** for that association.

$$\text{Total Biodiversity Score} = \text{Unit Biodiversity Score} \times \text{Area of clearance (Hectares)}$$

Step 4. Determine the SEB Points of Loss

The Total Biodiversity Score or Tree Biodiversity Score is multiplied by a **Loss Factor** to determine the SEB Points of Loss. The Loss Factor is determined from the degree to which the vegetation under application will be impacted. In most instances the Biodiversity Score will be multiplied by a Loss Factor of 1, indicating complete clearance of the vegetation under assessment. However, there will be instances where not all the vegetation present or the entire tree will be impacted. In such circumstances, the NVC will allow the use of a loss factor less than 1, depending on the scale of the impact. The NVC will apply the following tables in its determination.

Scale of impact – Patch of vegetation (Bushland or Rangeland Assessment)	Loss Factor
Complete removal of vegetation under assessment	1
Clearance where at least one stratum of the vegetation in the application area will not be impacted Example – The understorey stratum of vegetation will be impacted, but the overstorey will remain intact	0.8
Removal of vegetation where the clearance is linear and narrow in nature (1m or less wide) and the path of the clearance has been carefully planned and varied, such as micro-siting, in order to avoid vegetation as much as possible Example – The development of a recreational track which is specifically placed to avoid as much vegetation as possible	0.6

Table 1. Loss factor for clearance of patches of vegetation.

Scale of impact – Trees (Scattered Tree Assessment)	Loss Factor
Complete removal of a tree	1
Tree removed back to a stump, but able to reshoot	0.8
Major pruning of the tree with more than 50% of the tree to be removed	0.6
Major pruning of the tree with more than 25% of the tree to be removed	0.4
Minor pruning of the tree with less than 25% of the tree to be removed	0

Table 2. Loss factor for clearance of scattered trees.

Calculating the SEB Points of loss

The SEB Points of loss are a representation of the loss of biodiversity value at the site of impact as a result of the clearance.

$$\text{SEB Points of loss} = \left(\text{Tree Biodiversity Score OR Total Biodiversity Score} \right) \times \text{Loss Factor}$$

Step 5. Apply loadings and reductions

Under certain circumstances, the SEB Points of loss may be subject to loadings or reductions. These circumstances are set out below:

Loading

If clearance of native vegetation is to occur within an area that is subject to legal protection for conservation, the SEB Points of loss will have a loading applied. This is intended to recognise that these areas were established for conservation and are of high environmental and social value and any clearance will have significant impacts on these values. It also recognises the public and private investment required to establish, maintain and protect those sites. This is an investment that will be lost due to the clearance of the vegetation.

SEB loading applies for the following activities:

Clearance of protected areas	Loading factor
National Park or Conservation Park as declared under the <i>National Parks and Wildlife Act 1972</i>	1 The NVC will also require any financial assistance that it has provided for the establishment or management of Heritage Agreement to be repaid. This will either be in full or in part, depending on the area of the Heritage Agreement to be impacted and will include interest.
Heritage Agreement established under the <i>Native Vegetation Act 1991</i> or <i>South Australian Heritage Act 1978</i> or <i>Native Vegetation Management Act 1985</i>	
Any other agreement or area established under legislation for the protection and enhancement of the environment with an equivalent level of protection (i.e. Ramsar listed wetlands).	
Conservation Reserves dedicated under the <i>Crown Land Management Act 2009</i>	0.5
Management Agreement established under the <i>Upper South East Dryland Salinity and Flood Management Act 2002</i>	
Any other agreement or area established under legislation for the protection and enhancement of the environment with an equivalent level of protection	
Clearance of an area established as a condition of consent under the <i>Native Vegetation Act 1991</i> or to achieve a Significant Environmental Benefit as required by the <i>Native Vegetation Regulations 2017</i> (SEB Area)	The SEB Area must first be terminated in accordance with Section 4 of this Policy - <i>Terminating an SEB Area</i>

Table 3. Loadings for clearance within a protected area

$$\text{Loading} = \text{SEB Points of loss} \times \text{Loading Factor}$$

Note: some areas of land may be subject to multiple levels of protection. Under such circumstances, only the highest loading applies, not multiple loadings.

Note 2: areas defined as Ramsar wetlands may include areas additional to the wetland itself. The loading will only apply where an activity will have a direct impact on the wetland or aquatic system that is the object of the protection.

Reduction

If the impacted site is to be subject to ecological restoration activities subsequent to the clearance, then the SEB Points of loss may be reduced. This is to recognise that restoration of the impacted site reduces the impact on the environment and therefore requires less of an SEB to compensate for the clearance. However to qualify for a reduction, the rehabilitation must commence within a given time frame over the whole of the area for which the reduction is being sought.

SEB reductions will apply for the following activities:

Ecological restoration of clearance site	Reductions to be applied
Rehabilitation and ecological restoration of the clearance site is initiated within 3 years of the clearance occurring	0.5
Rehabilitation and ecological restoration of the clearance site is initiated within 5 years of the clearance occurring	0.3
Rehabilitation and ecological restoration of the clearance site is initiated within 7 years of the clearance occurring	0.2

Table 4. Reductions for onsite ecological restoration.

$$\text{Reduction} = \text{SEB Points of loss} \times \text{Reduction Factor}$$

“Restoration initiated”

Restoration initiated means that the soil surface has been reinstated and planting of vegetation or re-establishment of a soil seedbank (e.g. direct seeding or topsoil spreading) can commence.

“Ecological restoration”

Ecological restoration means the return of an ecosystem to an approximation of its natural or predisturbance condition. The goal is to emulate a natural, functioning, self-regulating system that is integrated with the ecological landscape in which it occurs. It may involve the manipulation of natural processes of ecological succession to create a dynamic self-sustaining indigenous ecosystem. The restored ecosystem should simulate the natural condition, or some other native ecosystem appropriate for the new conditions of the landscape. It must be stable with a minimum of human input after the initial efforts. Ecological restoration should broadly be undertaken in accordance with the *‘Habitat Restoration Planning Guide for Natural Resource Managers’* (DEWNR 2010).

The restoration of the impact site does not constitute an SEB itself, nor does it change how or when an SEB needs to be provided. This must still occur as specified by the SEB Policy.

The reduction is likely to apply to mining and infrastructure related activities, where the impacts are transient and will be rehabilitated after the action has ceased (e.g. construction then subsequent rehabilitation for an underground pipeline or closure and rehabilitation of a mine site).

If ecological restoration is not undertaken or achieved to an appropriate standard or within the required time period, then the SEB requirement will be adjusted accordingly and will need to be provided by the proponent.

Calculating the adjusted scores to account for loadings or reductions

To determine the adjusted SEB Points of loss, the scores must be increased by any loading and/or reduced in accordance with any reduction. If both a loading and reduction are to be applied, then each is applied as described below.

$$\text{Adjusted SEB Points of Loss} = \text{SEB Points of Loss} + \text{Loading} - \text{Reduction}$$

Step 6. Determine the SEB Points required to offset the impacts

The Act requires that, in order for a clearance to be approved, the NVC must be satisfied that there will be a significant environmental benefit **over and above** the impact of the clearance.

The assessment of the area of impact will have determined the loss of biodiversity, while an assessment of the proposed SEB Area will determine the likely gain to biodiversity. In order to achieve a significant benefit, the gain to the environment must be greater than the loss by a specified amount. In this particular instance, the gain will need to be greater than the loss by 5 per cent for it to be considered significant.

Calculate the SEB points required to offset the clearance

$$\text{SEB Points Required} = \text{SEB Points of Loss} \times 1.05$$

Step 7. Recording the SEB Points required

The assessment of the vegetation under application may involve trees of different species or vegetation of different communities. If the the vegetation is of the same species or community and will be subject to the same SEB requirements, the SEB Points can be combined. However, where the vegetation differs, then the SEB Points required must be kept separate. This is to ensure that each element that will be impacted will be adequately offset.

For example, if a site contains both a Stringybark (*Eucalyptus arenacea*) Woodland and a Bulloak (*Allocasuarina luehmannii*) Woodland, they will be subject to different offset requirements in order to meet the like for like criteria (refer to SEB Policy for details). Accordingly, the SEB Points Required for each vegetation community would need to be kept separate to ensure the corresponding SEB Area is appropriate.

4. SEB process flow chart

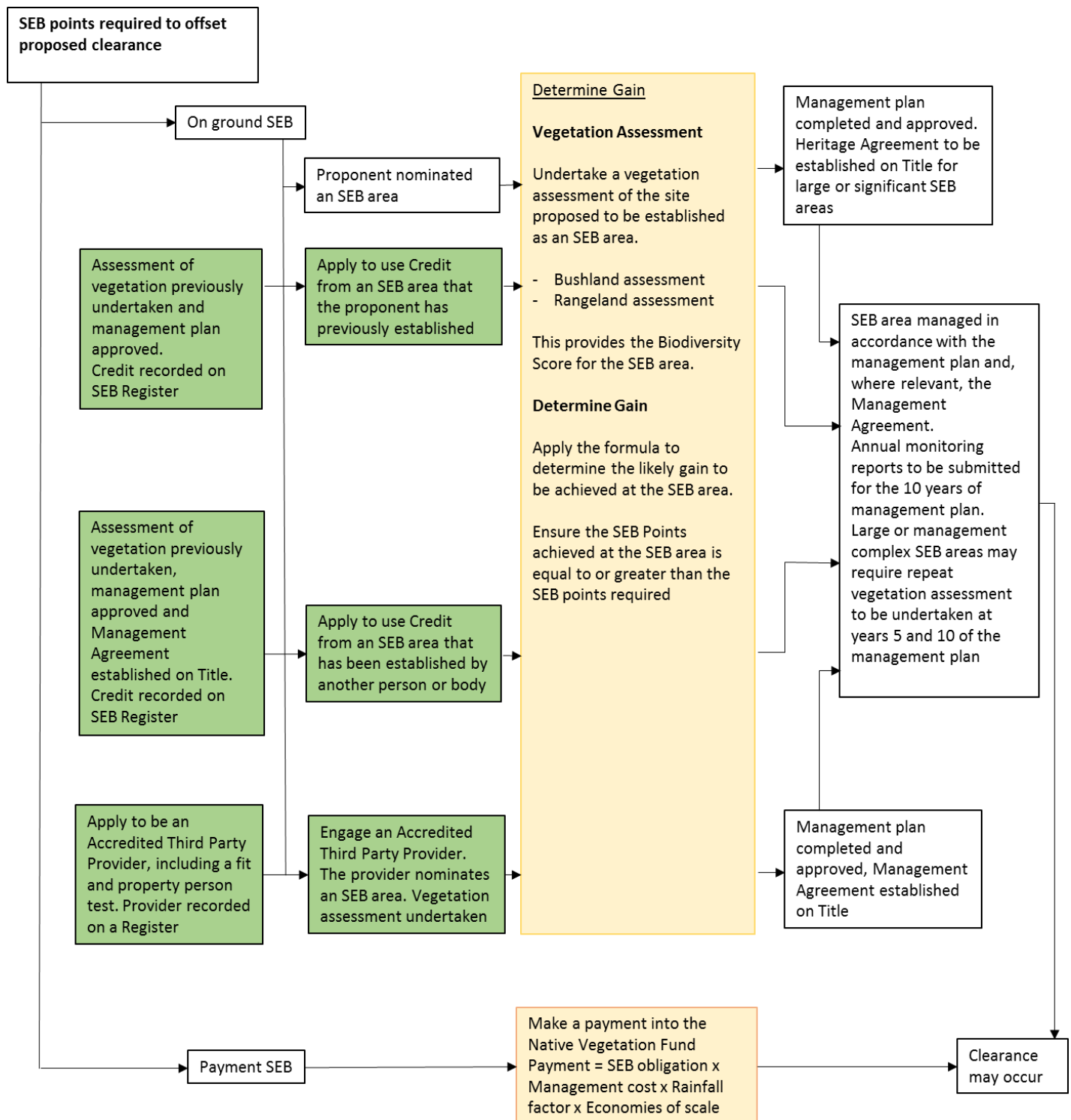


Figure 2. An overview of the SEB process indicating the major options for approval.

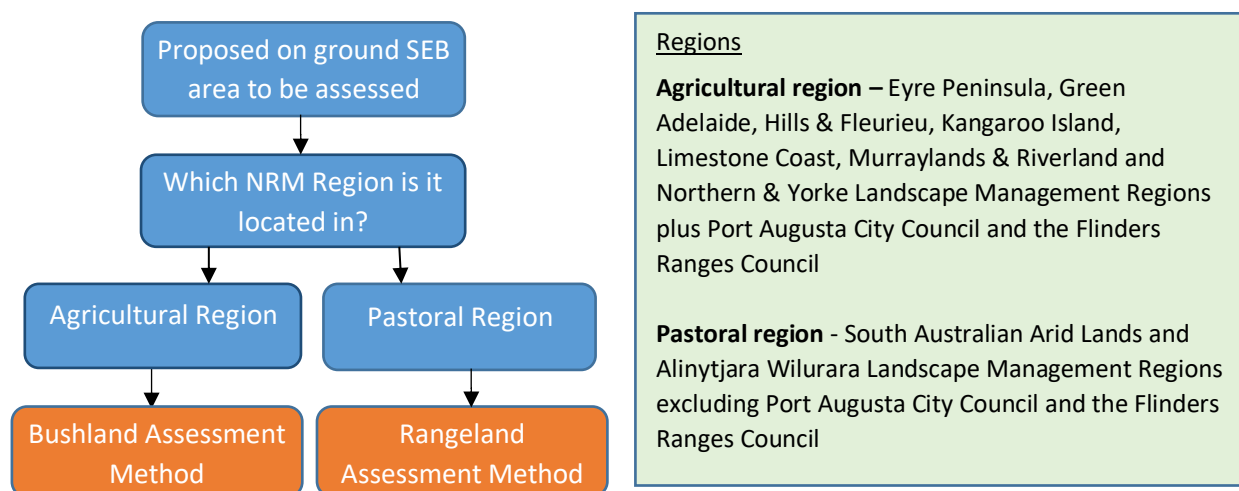
5. Assessing an on ground SEB

In order to achieve an SEB, a proponent will have multiple options available to them. This includes providing an on ground SEB through the following means: providing a new SEB Area; using credit from an existing SEB Area; obtaining SEB Credit from someone else, and; engaging a Third Party Provider. Alternatively a proponent may make a payment into the Native Vegetation Fund. Refer to the SEB Policy for further details. If a proponent chooses an on ground SEB option, an assessment of the proposed SEB Area must occur in accordance with the following steps.

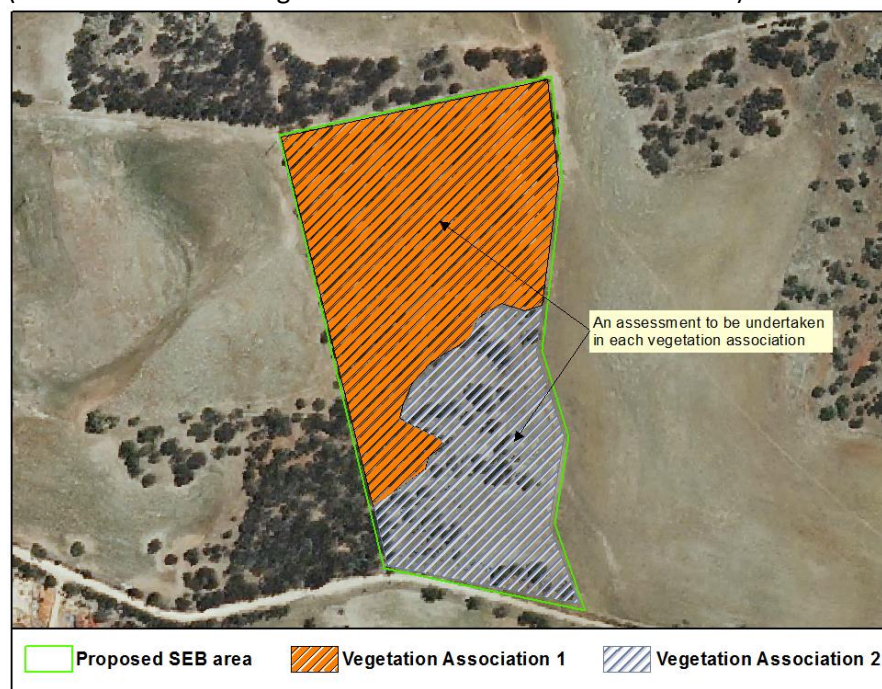
Step 1. Undertake an assessment of a proposed on ground SEB

The assessment of the proposed SEB Area must occur in accordance with an NVC approved methodology and be carried out by an accredited consultant.

In order to determine which assessment method is required, the following diagram should be applied.



An assessment is conducted on each individual vegetation association within the proposed SEB Area (see Bushland and Rangeland assessment manuals for details).



The vegetation assessment will provide a **Unit Biodiversity Score** (maximum score of 170) for **each vegetation association**. The Unit Biodiversity Score (UBS) is a per hectare score and consists of a **Landscape Context Score** (between 1 – 1.25), a **Vegetation Condition** score (between 0 – 80) and a **Conservation Significance Score** (between 1 – 1.7). These elements are used to determine the likely gain to be achieved from managing the vegetation for conservation.

$$\text{Unit Biodiversity Score} = \text{Landscape Context} \times \text{Vegetation Condition} \times \text{Conservation Significance}$$

Step 2. Determine the Biodiversity Benefit

In order to determine what Biodiversity Benefit that can be achieved at a proposed SEB Area, two main factors will be considered:

- a Protection Gain
- a Management Gain.

The Protection Gain is an estimation of biodiversity value that might be lost, relative to its current state, if the vegetation is not protected and the current state maintained. This is sometimes referred to as an averted loss.

The Management Gain is an estimation of the likely improvement in biodiversity value, relative to its current state, if the vegetation is actively managed and enhanced.

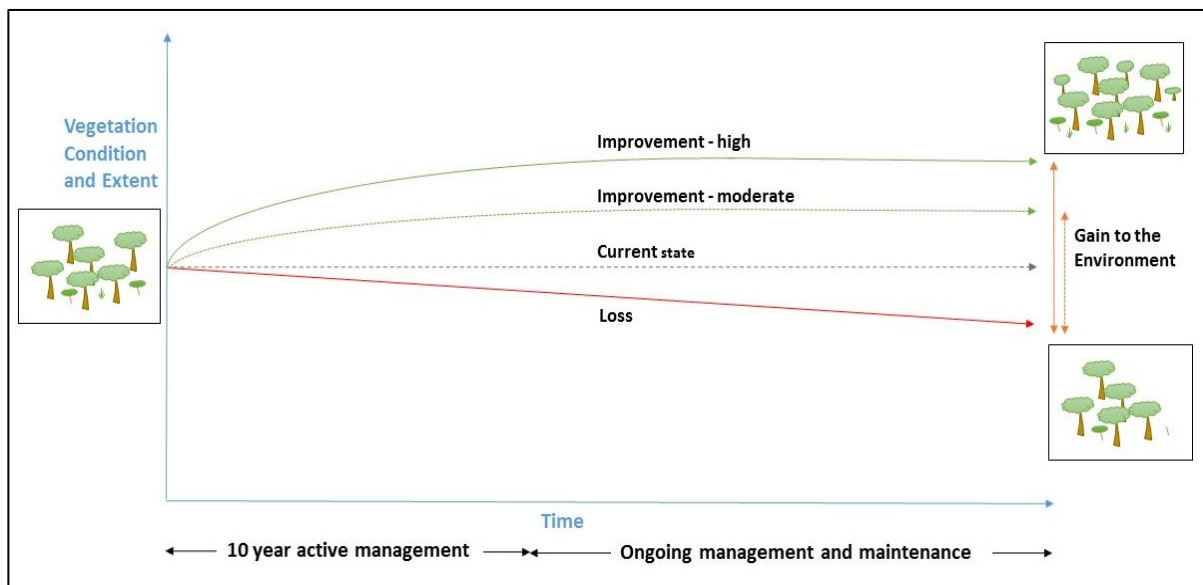


Figure 3. Representation of the biodiversity gain calculation. This indicates the various components that determine the level of biodiversity benefit that is likely to be achieved at a proposed SEB Area. This includes the **Protection Gain** (averted loss) and **Management Gain** (predicted improvement).

Protection Gain

In the absence of protection and some degree of management, vegetation may decline in condition or extent over time. This is due to a range of factors such as weed invasion, pest impacts, inappropriate land use, excessive grazing, direct clearance activities or recreational use. Accordingly, managing those potential impacts by protecting the vegetation will help prevent a decline in vegetation condition or extent (an averted loss) and is therefore considered part of a gain. However

the likelihood that vegetation will decline in condition or extent is not constant for all areas of native vegetation. Vegetation that is in better condition is less likely to be invaded by weeds or pest, generally has a higher level of ecological function, therefore is more self sustaining and resilient to impacts and often represent areas that are less preferable for development (e.g. hillsides, remote areas or areas of low agricultural value). Additionally, both the *Native Vegetation Regulations 2017* and associated NVC Policy requires that clearance of vegetation in better condition be avoided where ever possible and the *Native Vegetation Act 1991*, generally prohibits the clearance of vegetation in good condition. Therefore, the better the condition of native vegetation, the less likely it is to be approved or permitted for clearance or less likely that it will decline in condition over time.

Calculation of the Future Unit Biodiversity Score in the absence of protection

The Protection Gain is the difference between the Current Unit Biodiversity Score (Current UBS) and the Future Unit Biodiversity Score (Future Negative UBS) in the absence of protection. This is determined from the potential loss of biodiversity value over a 20 year timeframe. The Future Negative UBS is determined from the following equations.

1. Calculate the likely percentage loss in vegetation condition score over 20 years. This is based on the current vegetation condition and will result in a likely loss of between 0.5 and 7.5%.

$$\text{Likely \% loss} = \left[\left[80 \text{ (Maximum vegetation conditions score)} - \text{Current Vegetation Condition score} \right] \times 0.000875 + 0.005 \right]$$

2. Calculate the likely loss vegetation condition score. This is calculated on the current vegetation condition score multiplied by the likely percentage loss.

$$\text{Loss in Vegetation Condition Score} = \text{Current Vegetation Condition Score} \times \text{Likely \% loss}$$

3. Calculate the like loss in the UBS. This is based on the loss in vegetation condition score.

$$\text{Loss in UBS} = \text{Conservation Significance Score} \times \text{Landscape Context Score} \times \text{Loss in Vegetation Condition Score}$$

4. Determine the Future Negative UBS for the vegetation association. This is the change in the UBS as a result of the likely loss in vegetation condition over 20 years in the absence of active protection and management.

$$\text{Future Negative USB} = \text{Current UBS} - \text{Loss in UBS}$$

Management Gain

Undertaking active management of a site through actions such as stock exclusion, intensive weed and pest control, revegetation and supplementary planting will help improve the condition of vegetation over time, over and above its current state. However, the capacity and extent to which a site can

recover or be restored and time required for restoration to occur will vary considerably from site to site.

In particular, the maximum extent to which a site can potentially improve in vegetation condition will be dependent on its current state. The better the condition of the vegetation and closer it is to its pre-European state, the less potential there is for improvement. Such sites will already contain a near complete compliment of species and structural diversity, with limited weed incursion. 19aintenance, sites in very poor vegetation condition, with limited native vegetation present will have far greater scope for improvement.

The likelihood of an improvement being achieved is also largely dependent on the current condition of the site. The poorer the condition of the vegetation, the less certain it is that an improvement in vegetation condition can and will be achieved. This is due to such sites generally having a longer or more intensive disturbance history resulting in low soil seedbank, fewer plant species to provide for recruitment, more altered soil structure and composition and greater likelihood of having been invaded by introduced species. Accordingly, whilst such sites have greater scope for improvement, there is also greater uncertainty that such sites can and will be restored or to what extent.

Therefore, the biodiversity gain is a combination of the extent and likelihood of potential improvement in vegetation condition and is determined in accordance with the following;

Calculation of the Future Unit Biodiversity Score with active management

The Management Gain is the difference between the Current Unit Biodiversity Score (Current UBS) and the Future Unit Biodiversity Score (Future Positive UBS) with active management and ongoing maintenance. The Future Positive UBS is determined from the following steps:

5. Determine the maximum possible improvement in the vegetation condition score for the vegetation association. This is the difference between the maximum possible vegetation condition score that a vegetation association can receive (80) and its current vegetation condition score.

$$\text{Maximum possible improvement in vegetation condition} = 80 \text{ (Maximum vegetation condition score)} - \text{Current vegetation condition score}$$

6. Determine the improvement in condition that could potentially be achieved through the implementation of the management plan over a 10 year period followed by 10 years of maintenance. Achieving an improvement in vegetation condition of 20 per cent of maximum possible improvement is considered plausible within the 20 year timeframe.

$$\text{Potential improvement in vegetation condition} = \text{Maximum possible improvement in vegetation condition} \times 0.20$$

7. Determine the likelihood of the potential improvement in vegetation condition being achieved. Likelihood increases as the vegetation condition improves and is determined in accordance with the following;

$$\text{Likelihood} = 0.1 + \left[\text{Vegetation condition} \times 0.01 \right]$$

8. Determine the estimated Improvement in Vegetation Condition Score. This is a combination of the predicted improvement in vegetation condition and the likelihood of the outcome being achieved.

$$\text{Improvement in Vegetation Condition} = \text{Potential improvement in vegetation condition} \times \text{Likelihood}$$

9. Determine the Future Positive UBS for the vegetation association. This is the change in the UBS as a direct result of the estimated improvement in vegetation condition after 20 years of management and maintenance.

$$\text{Future Positive UBS} = \text{Landscape Context Score} \times \left[\text{Current Vegetation Condition Score} + \text{Improvement in Vegetation Condition Score} \right] \times \text{Conservation Significance Score}$$

Biodiversity Gain

Determine the overall Biodiversity Benefit (UBS Gain) for the vegetation association by determining the likely difference in Unit Biodiversity Score with (Future Positive UBS) and without (Future Negative UBS) the establishment of the SEB Area. This represents the improvement in the Biodiversity Score on a per hectare basis, over and above what would have happened in the absence of the establishment of the SEB Area, over a 20 year period.

Calculate the Biodiversity Gain for the vegetation association

$$\text{UBS Gain} = \text{Future Positive UBS} - \text{Future Negative UBS}$$

Step 3. Determine the total SEB Points provided by the vegetation association

Multiply the UBS Gain by the number of hectares of that particular vegetation association contained within the proposed SEB Area. This determines the total number of SEB Points that will be achieved by that vegetation association.

$$\text{SEB Points Provided} = \text{UBS Gain} \times \text{Area (Hectares)}$$

If a proposed SEB Area contains multiple vegetation associations, then the SEB Points provided by the SEB Area will be a combination of the SEB Points provided by each association.

Step 4. Determine if the SEB Area will offset the proposed clearance

For the clearance to be offset, the SEB Points provided by the SEB Area must be equal to or greater than the SEB Points required as a result of the assessment of the impact area. The SEB must also be

compliant with the requirements set out in the SEB Policy. This particularly relates to achieving the 'like for like' criteria.

If the SEB Points generated are greater than the SEB Points required, the additional points will be recorded as SEB Credit.

SEB Points of Gain Adjustment

The SEB Points of gain as determined by the formulas above, representing the standard expected outcomes from the establishment of an SEB area. However, the NVC will consider each application for the establishment of an SEB area on its merits. In particular, NVC will adjust the parameters within the formula, where an application is considered to vary from the standard expectations. The adjustments will occur as detailed in the Protection Gain and Management Gain calculations below;

Protection Gain

Likely percent loss in vegetation condition

If the site is already subject to relatively high levels of protection from existing legislation, the likely % loss in vegetation condition will be determined in accordance with the formula below. These areas of vegetation are less likely to be degraded over time, therefore they will be represented by a lower likelihood of loss than is the standard. This may be applied to proposed SEB areas where, for example;

- The zoning generally limits development that can occur within that area (such as conservation zones or coastal conservation zones), and/or,
- Stock grazing has been excluded and can not be introduced without NVC approval (noting this would not be applied if the applicant is the landholder and they voluntarily removed stock), and/or,
- There is no or only limited threats to the condition of the vegetation that can be identified.

$$\begin{array}{|c|} \hline \text{Low} \\ \hline \text{Likely \% loss} \\ \hline \end{array} = \left[\left[\begin{array}{|c|} \hline 80 \text{ (Maximum} \\ \hline \text{vegetation} \\ \hline \text{conditions score)} \\ \hline \end{array} - \begin{array}{|c|} \hline \text{Current} \\ \hline \text{Vegetation} \\ \hline \text{Condition score} \\ \hline \end{array} \right] \times \begin{array}{|c|} \hline 0.0004375 \\ \hline \end{array} \right]$$

If the establishment of a Heritage Agreement or Management Agreement under the Native Vegetation Act is considered unlikely to add any additional protection to the vegetation, then the following formula will be applied. Such areas are already protected, therefore the establishment of an SEB will have no effect in relation to prevent future loss. Noting that in the absence of a significant management gain, the NVC will not approve the establishment of an SEB area on such a site.

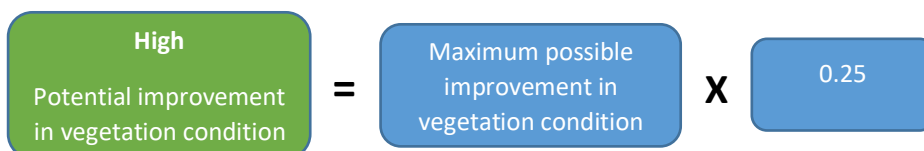
$$\begin{array}{|c|} \hline \text{Very Low} \\ \hline \text{Likely \% loss} \\ \hline \end{array} = \begin{array}{|c|} \hline 0 \\ \hline \end{array}$$

Management Gain

Potential improvement in vegetation condition

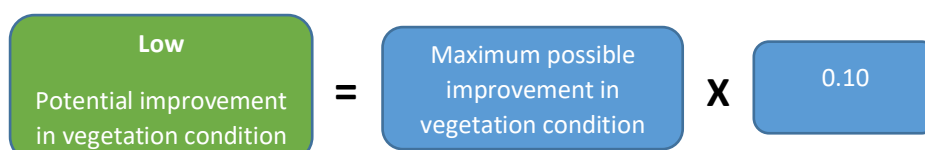
If an applicant commits to undertaking management actions that are clearly and significantly in excess of the standard requirements as set out in the SEB Policy, then the potential improvement in vegetation condition may be determined in accordance with the formula below. These areas of vegetation are likely to improve to a greater extent due to the additional management actions, therefore they will be represented by a higher potential improvement than the standard. However, the actions that are proposed need to be considered appropriate for the site, ecologically sustainable and unlikely to result in environmentally undesirable outcomes. This may be applied to proposed SEB areas where, for example;

- A very high standard of revegetation will be conducted, with a high proportion of the species diversity expected within the relevant vegetation community will be established, with representation being achieved in all strata that should be present, including grasses, sedges, herbs and ground cover plants; and/or
- Fencing will be installed to exclude introduced predators and herbivores with possible native species reintroduction; and/or
- Intensive management of threatened flora or fauna will be undertaken which is not required in association with the proposed clearance for which the SEB is being provided.


$$\begin{array}{|c|} \hline \text{High} \\ \hline \text{Potential improvement} \\ \text{in vegetation condition} \\ \hline \end{array} = \begin{array}{|c|} \hline \text{Maximum possible} \\ \text{improvement in} \\ \text{vegetation condition} \\ \hline \end{array} \times \begin{array}{|c|} \hline 0.25 \\ \hline \end{array}$$

If the actions that are committed to are relatively minimal, particularly due to the absence of any significant management issues, or if management actions or rehabilitation is likely to be inhibited in some way, then the potential improvement in vegetation condition will be determined in accordance with the formula below. These areas of vegetation are likely to improve to a lesser extent due to the lack of active intervention or certain impediments, therefore they will be represented by a lower potential improvement than the standard. This may be applied to proposed SEB areas where, for example;

- There is minimal management issues impacting, or likely to impact the condition of the vegetation, such as an absence of significant weeds or only very minor distribution, and/or,
- Where the management issues are technically or practically difficult to address and will prevent them being managed to their fullest possible extent (e.g. weed infestations within difficult to access terrain) and/or,
- Physical or environmental constraints, such as compacted soils or altered soil chemistry, (e.g. high nutrients levels), which are likely to significantly impede the rehabilitation of vegetation and therefore slow the rate of recovery.


$$\begin{array}{|c|} \hline \text{Low} \\ \hline \text{Potential improvement} \\ \text{in vegetation condition} \\ \hline \end{array} = \begin{array}{|c|} \hline \text{Maximum possible} \\ \text{improvement in} \\ \text{vegetation condition} \\ \hline \end{array} \times \begin{array}{|c|} \hline 0.10 \\ \hline \end{array}$$

Likelihood of achieving the outcome

If an application has significant experience and capability with sufficient resources in delivering habitat restoration projects, the likelihood of achieving the improvement in vegetation condition may be determined in accordance with the formula below. Increased experience and resources increases the level of certainty that the restoration will be successful and is therefore represented by a higher likelihood of achieving the outcome compared to the standard. This will generally only be applied to revegetation projects, where likelihood is often quite low due to the technical and financial difficulties in achieving a successful outcome, therefore additional experience and resources can have significant impact.

$$\begin{array}{c} \text{High} \\ \text{Likelihood} \end{array} = 0.2 + \left[\text{Vegetation condition} \times 0.00875 \right]$$

If an applicant is proposing restoration that is considered high risk or where the applicant has a previous record of not fully achieving necessary outcomes, the likelihood of achieving the improvement in vegetation condition will be determined in accordance with the formula below. In these instances, there is greater risk that the outcome will not be achieved, therefore is represented by a lower likelihood of achieving the outcome than the standard. This may also be applied where the site is subject to management issues that are outside control of the applicant, such as inundation with water, therefore introduces an additional level of uncertainty.

$$\begin{array}{c} \text{Low} \\ \text{Likelihood} \end{array} = 0.05 + \left[\text{Vegetation condition} \times 0.005 \right]$$

SEB Credit

If the on ground SEB involves the use of Credit, an assessment will have previously occurred and the result from that assessment will be applied. However if the NVC believes that the condition of the vegetation has declined, the NVC may require a new assessment to be undertaken. If the condition of the vegetation has declined and the proponent is unable to provide a reasonable justification as to why the decline was beyond their control (i.e. due to natural events such as drought or fire), then the NVC will not recognise that Credit.

Third Party SEB

An assessment of an area proposed to be established as a Third Party SEB Area only needs to occur at the time the Provider applies to use the area to achieve a specific SEB requirement. However, a Third Party Provider may wish to undertake an assessment of the site in advance in order to know and be able to provide information to clearance proponents regarding their capacity to achieve an SEB. If this assessment is registered with the NVC at the time of completion, the NVC will recognise this assessment when a Third Party Provider applies to achieve a Third Party SEB.

However, if the NVC believes the condition of the vegetation has declined since the previous assessment, it may request a new assessment to occur at the time of applying to establish the Third Party SEB.

Equally, the Accredited Third Party Provider may commission a new vegetation assessment at the time of establishing the SEB Area if they think the value of the site has substantially increased.

6. Providing an SEB for threatened species

Threatened flora

If proposed clearance of native vegetation will impact on a flora species that is listed as threatened under either the *National Parks and Wildlife Act 1972* (NP&W Act) or the *Environmental Protection and Biodiversity Protection Act 1999* (EPBC Act), then additional actions need to be undertaken in order to offset the impacts on that particular species.

These additional actions will **either** be in accordance with requirements for an offset under the EPBC Act or where an offset is not required under the EPBC Act, in accordance with the following;

Actions must be taken that will either provide additional protection and management to an existing population of that species or that will establish and protect a new population of that species. The population to be protected or established must be a number of times greater than the population being impacted (in accordance with Table 5). If a species has a rating under both the EPBC Act and NP&W Act, then only the the EPBC Act rating applies.

The following requirements must also be met for the establishment of a new population. The population must:

- be located within the known range of the species in question
- be located within a site suitable for the growth of that species
- be established in a spatial arrangement/density appropriate for that species
- achieve a minimum of 50 per cent survival rates after five years.

The population may be established or protected within the SEB Area for the same action, or in another location additional to the SEB Area if appropriate. If located outside the SEB Area, appropriate management and protection measures must be identified and committed to.

management and protection measures must be identified and committed to.							
Number of individuals to be impacted	<3	3 - 5		6 - 25		>25	
	Remedial action						
	None	Establish new population	Protect existing population	Establish new population	Protect existing population	Establish new population	Protect existing population
Rare (NP&W Act)	-	-	-	2 x	4 x	3 x	6 x
Vulnerable (NP&W Act)	-	-	-	2 x	4 x	3 x	6 x
Vulnerable (EPBC Act)	-	-	-	2 x	4 x	3 x	6 x
Endangered (NP&W Act)	-	2 x	4 x	3 x	6 x	5 x	10 x
Endangered (EPBC Act)	-	2 x	4 x	3 x	6 x	5 x	10 x
Critically Endangered (EPBC Act)	-	2 x	4 x	3 x	6 x	5 x	10 x

Table 5. SEB for threatened species. This table indicates the size of the population that must be protected or established relative to the size of the population being impacted.

Threatened Fauna

If a clearance will significantly impact habitat of a fauna species listed as threatened under either the *National Parks and Wildlife Act 1972* (NP&W Act) or the *Environmental Protection and Biodiversity Protection Act 1999* (EPBC Act), the NVC will consult with the relevant threatened species recovery team, recovery plan or relevant expert to determine if additional actions are required to offset those particular impacts. Typically this may involve replacing the particular habitat element that is being lost, such as nesting sites. This may occur within the SEB Area for the same action, or in another location additional to the SEB Area if appropriate. The NVC may also develop and adopt policies specific for particular threatened species.

7. Payment into the Fund

If a proponent is unable to provide an on ground SEB, a proponent may choose to, subject to meeting certain requirements as described in the SEB Policy, make a payment into the Native Vegetation Fund in lieu of providing an on ground SEB.

This payment needs to be an amount that represents what it would cost to manage an SEB Area to the standard required in accordance with an approved management plan. However, given that an SEB Area will not have been identified at the point of making the payment, the payment needs to be determined from a theoretical SEB Area. Given that managing areas of vegetation in moderate condition are likely to provide the greatest biodiversity benefit, this will represent the focus of NVC investment. Accordingly, the payment will be determined from what it would cost to manage a site currently in moderate condition to be improved to good condition over a 20 year period (10 years of active management followed by 10 years of maintenance).

The amount to be paid will be determined in accordance with the following.

Hectares

A site in moderate condition, with a Landscape Context score of 1.125, Vegetation Condition score of 40 and Conservation Significance score of 1.35, will provide **8 SEB Points** of gain per hectare. Accordingly, the SEB Points Required as determined from the assessment of the vegetation to be cleared, will be divided by 8. This determines the area (hectares) of moderate condition vegetation that would be need to be managed in order to offset the impact.

Management Cost

This is an estimation of the cost to manage an area of vegetation to improve the site from moderate condition to good condition. The Management Cost takes into account the cost of establishing the SEB Area, active management to achieve a gain and the management required to maintain that gain. A review of available information on habitat restoration costs indicates that for Southern Temperate Australian ecosystems, an average figure of \$20,000/ha is realistic to restore a degraded site in moderate condition to one of good condition over a 10 year period. This was established through a review of scientific and grey literature (Fisher and Hodder, 2011), substantial discussions with practitioners and experienced operators involved in the field of restoration, and extensive consultation with key stakeholders.

This figure will be increased annually in line with the Consumer Price Index (CPI), applying the \$20,000 as of 1 July 2017 and increased in line with CPI thereafter. This will ensure the figure remains appropriate and will cover annual increases in the costs of equipment, materials and labour.

Rainfall Factor

This is intended to moderate the management cost in recognition of the higher costs generally associated with managing vegetation in high rainfall regions. This relates particularly to the increased prevalence, diversity and growth of invasive species in higher rainfall regions. It also relates to diversity and generally more intensive land use in the higher rainfall regions and therefore the more extensive disturbance history.

Economies of Scale

Economies of Scale further moderate the management cost in recognition that management generally cost less on a per hectare basis as the SEB Area becomes larger. The reason for this is that certain costs will generally reduce by having few but larger SEB areas. This particularly relates to reduced costs for constructing fences and ongoing monitoring and upgrading of fences (larger consolidated areas will generally have a smaller perimeter to area ratio compared to multiple smaller areas), reduced number of management plans and monitoring reports being produced, less travel time to access the sites and the lower perimeter to area ratio also reduces the edge effect and therefore limiting extent and likelihood of future weed and pest invasion or stock incursions.

The Economies of Scale are split into six categories. These are based on the Interim Biogeographic Regionalisation for Australia (IBRA) system which identifies biogeographic regions and subregions determined from areas with common climate, geology, landform, native vegetation and species information. Within the IBRA Units, property parcel size and vegetation remnancy figures were determined and used as an indicator of the likely size of an SEB within that region (larger parcels/properties in combination with more native vegetation cover is likely to result in larger SEB areas). An Economies of Scale figure for the IBRA Units was assigned based on the parcel size and vegetation remnancy for each IBRA Unit. Noting that small increases in economies of scale factor corresponds with large increases in likely SEB area size. Full details are contained in the following NVC report; Review of Economies of Scale Figures, May 2019.

Calculating the required payment

Step 1. Determine the hectares required

The hectares are determined from the SEB Points required as derived from an assessment of the impact site, divided by 8 (SEB Points of gain).

Step 2. Determine the Management Cost

The Management Cost is standard for all sites at \$20,000 per hectare.

Step 3. Determine the Rainfall factor

The rainfall factor is determined by identifying the mean annual rainfall for the clearance site. This is determined from the Rainfall layer on NatureMaps. The Rainfall layer has been produced by the Bureau of Meteorology (BOM).

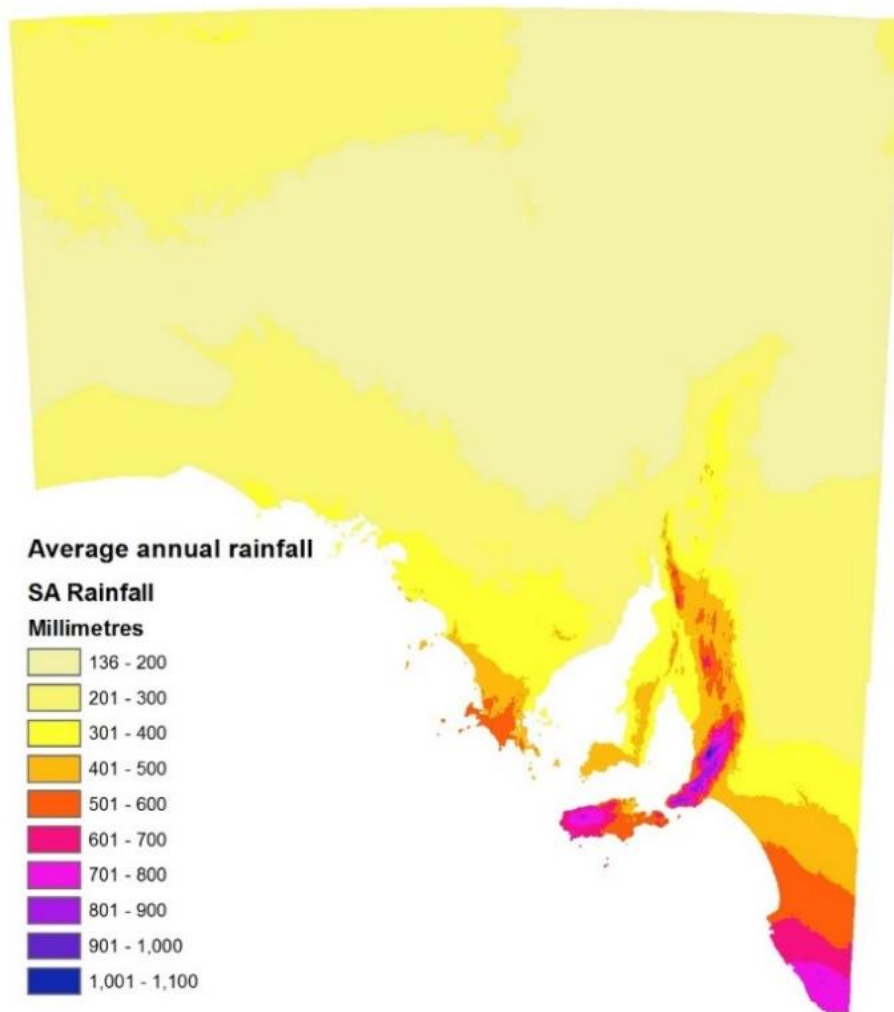


Figure 4. Rainfall layer representing the average annual rainfall across South Australia.

The mean annual rainfall should be taken from the centroid of the clearance site. If the clearance site is distributed over a large geographic area, such as linear infrastructure developments, then mean annual rainfall should be recorded at 2 km intervals for the agricultural zone and 20 km intervals for the arid zone. These figures can then be averaged for the length of the clearance site.

The mean annual rainfall (mm) is then divided by 1000 to provide the Rainfall Factor.

Step 4. Determine Economies of Scale

The Economies of Scale is determined by the areas in which the clearance site is located. This is determined in accordance with Table 4 and Figure 5 below.

Class	Economies of Scale Factor
1	0.5
2	0.35
3	0.29
4	0.23
5	0.11
6	0.065

Table 4. Economies of Scale figures

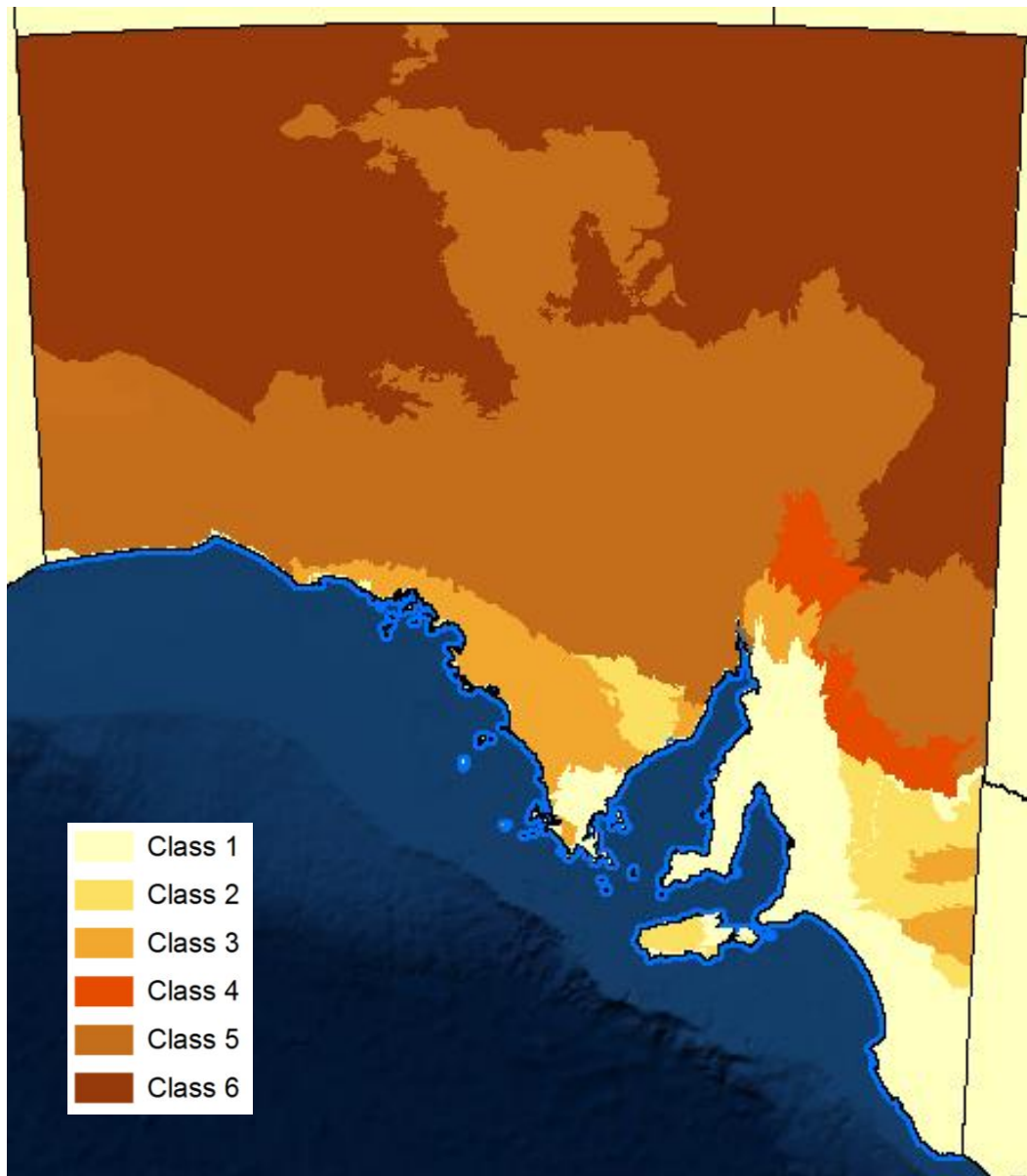


Figure 5. Economies of Scale for the different areas.

Step 5. Apply the payment formula

Each of these elements are multiplied together to provide the SEB Payment.

Payment formula – Clearance Applications and Regulation approvals

$$\text{SEB Payment (\$)} = \text{Hectares} \times \text{Management Cost (\$/ha)} \times \text{Rainfall Factor} \times \text{Economies of Scale}$$

Hectares	The SEB Points required, divided by 8
Management Cost	\$20,000 (per SEB hectare)
Rainfall Factor	Mean annual rainfall for clearance site in millimetres, divided by 1000
Economies of Scale	Class 1 – 0.5, Class 2 – 0.35, Class 3 – 0.29, Class 4 – 0.23, Class 5 – 0.11 and Class 6 – 0.065

Administration Fee

Money paid into the Native Vegetation Fund is administered by the NVC in order to reinvest the money to deliver on ground works across the State. This includes administering a grant scheme, provision of funds, ongoing monitoring and support for projects and auditing of outcomes. These are activities and associated costs that would be borne by the clearance applicant if providing an on ground SEB Area. Therefore, to enable the NVC to support and maintain this program and ensure that the money paid into the Fund is used strategically to optimise outcomes and provide the intended environmental benefit, all payments into the Fund will be subject to an Administration Fee. The funds received from this fee will be used for the purpose of administering the Fund. The Administration Fee will be 5 per cent of the SEB Payment and is additional to that payment.

Minimum Payment

Regardless of the amount that is determined to be paid into the Fund from the above calculation, the minimum SEB Payment is \$500.

Step 7. Determine the Total Payment to be made into the Native Vegetation Fund

The Total Payment to be made into the Fund is the SEB Payment plus the Administration Fee, but must be a minimum of \$500.

8. Termination or reduction of an SEB Area

There may be occasions when a proponent wishes to relocate part or all of an on ground SEB to another location or terminate an on ground SEB and achieve the gain through a payment into the Native Vegetation Fund. The relocation or termination of an SEB Area will result in further temporal delays in achieving the required gain. To compensate for such delays, if the termination or relocation is approved, the NVC may require a loading to be applied to any SEB Points shortfall that is created as a result of the relocation or termination.

Termination or relocation of an SEB Area	Loading to be applied
<p>Termination or relocation of an area established as a condition of consent under the Act or to achieve a Significant Environmental Benefit as required by the Regulations (SEB Area).</p> <p>The NVC may waive or reduce the additional requirement if it deems the alternative SEB is more appropriate or of higher environmental value than the existing SEB Area.</p>	<p>The SEB Points required to be achieved elsewhere (SEB Points shortfall) to account for any reduction or termination of SEB Area will be increased by 10 per cent for every year since establishment of the SEB Area, up to a maximum of 10 years.</p>

Table 7. Termination or relocation of an SEB Area

Note: if the termination of an SEB Area is to allow the clearance of the vegetation, then an SEB Area must be provided for the clearance that is **additional** to the replacement of the existing SEB Area.

Note 2: if the SEB was established prior to the implementation of this Guide, then the loading will apply to the area (hectares) of the SEB, rather than the SEB Points.

Calculation of SEB Area required

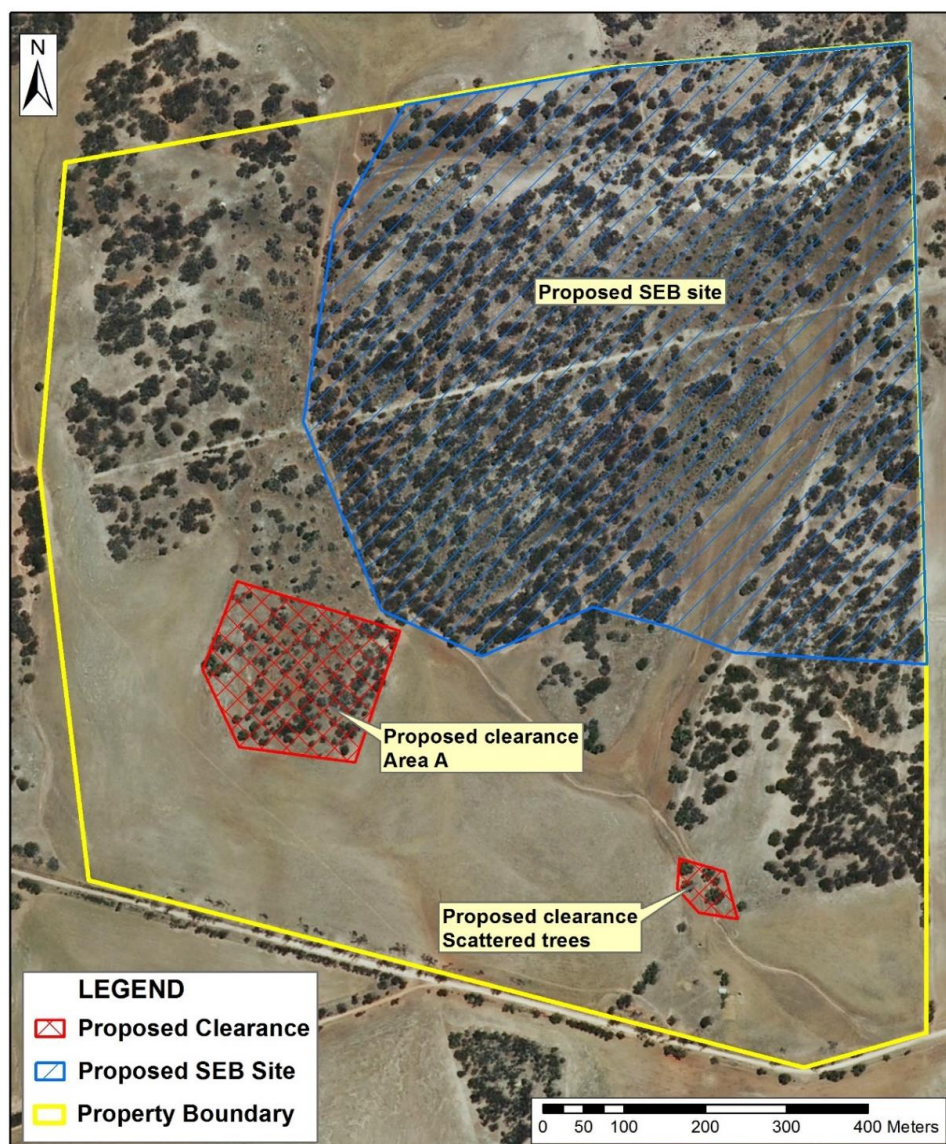
$$\text{SEB Points Required} = \text{SEB Points shortfall} + \left[\text{SEB Points shortfall} \times 0.1 (10\%) \times \text{Years since establishment of SEB Area (maximum of 10)} \right]$$

9. Examples of SEB assessment and calculation

SCENARIO: A proponent wishes to clear a patch of vegetation for a development. Scattered trees will also need to be impacted in order to provide sufficient access to the site. Four trees will be removed completely, while one will be significantly pruned. All reasonable steps have been taken to avoid and minimise the impacts on native vegetation. It is now necessary to assess the residual impacts of the proposed clearance and determine the SEB requirement.

The proponent is proposing to use the vegetation on the same property in order to establish the SEB Area. To be able to consider the SEB Area, the NVC would need to be assured that any possible future developments would not impact the SEB Area. This may require a Heritage Agreement to be established over the site. If the SEB area is deemed unacceptable, the proponent will elect to pay into the Native Vegetation Fund.

The proposed clearance and SEB Area need to be assessed in order to calculate the SEB Area or SEB payment requirements.



A map showing the property and vegetation being assessed, as well as their relationship to each other.

Process 1: Assess the areas being cleared

Two assessment methods are required in order to calculate the impact on native vegetation from the proposed development.

Assessment Method 1: Scattered Tree Assessment



Five scattered trees are proposed to be cleared in order to upgrade the access to the development site.

Step 1. Undertake an on ground vegetation assessment

The area consists of five scattered trees with predominantly pasture grass in the understorey with only some scattered colonising native grasses. Accordingly, the Scattered Tree Assessment Method is applied. Refer to the Scattered Trees Assessment Manual for further details on this process.

The assessment method measures the following attributes of each of the five individual trees:

- species
- height
- health
- proximity to other vegetation
- hollows
- density
- habitat potential for threatened fauna species

The measurements are combined to provide a score for each of the individual trees.

Tree No.	Species	Tree Biodiversity Score
Tree 1	<i>Eucalyptus porosa</i>	4
Tree 2	<i>Eucalyptus porosa</i>	3.84
Tree 3	<i>Eucalyptus porosa</i>	2.24
Tree 4	<i>Eucalyptus porosa</i>	6.912
Tree 5	<i>Eucalyptus porosa</i>	0.96

Step 2. Determine the SEB Points of Loss

Multiply the Tree Biodiversity Score by the appropriate Loss Factor in order to determine the SEB Points of Loss.

Tree No.	Species	Tree Biodiversity Score	Loss Factor	SEB Points of Loss
Tree 1	<i>Eucalyptus porosa</i>	4.4	1	4.4
Tree 2	<i>Eucalyptus porosa</i>	3.84	1	3.84
Tree 3	<i>Eucalyptus porosa</i>	2.24	1	2.24
Tree 4	<i>Eucalyptus porosa</i>	6.912	1	6.912
Tree 5	<i>Eucalyptus porosa</i>	0.96	0.6	0.576

Step 3. Apply any loading or reduction

Apply in loadings or reduction if required. In this instance, clearance is not in a protected area, nor will there be any ecological restoration of the impact site. Accordingly no loading or reduction is to be applied.

Tree No.	Species	Tree Biodiversity Score	Loss Factor	SEB Points of Loss	Loadings or Reductions	Adjusted SEB Points of loss
Tree 1	<i>Eucalyptus porosa</i>	4.4	1	4.4	n/a	4.4
Tree 2	<i>Eucalyptus porosa</i>	3.84	1	3.84	n/a	3.84
Tree 3	<i>Eucalyptus porosa</i>	2.24	1	2.24	n/a	2.24
Tree 4	<i>Eucalyptus porosa</i>	6.912	1	6.912	n/a	6.912
Tree 5	<i>Eucalyptus porosa</i>	0.96	0.6	0.576	n/a	0.576
SEB Points of Loss - Total						17.968

Step 4. Determine the SEB Required to offset the impact

A 5 per cent increase is applied to the SEB Points of Loss to determine the SEB Points Required to offset the impact. This is a pre-determined amount and does not change.

Tree No.	Species	Tree Biodiversity Score	Loss Factor	SEB Points of Loss	Loadings or Reductions	Adjusted SEB Points of Loss	SEB Points Required
Tree 1	<i>Eucalyptus porosa</i>	4.4	1	4.4	N/A	4.4	4.62
Tree 2	<i>Eucalyptus porosa</i>	3.84	1	3.84	N/A	3.84	4.032
Tree 3	<i>Eucalyptus porosa</i>	2.24	1	2.24	N/A	2.24	2.352
Tree 4	<i>Eucalyptus porosa</i>	6.912	1	6.912	N/A	6.912	7.258
Tree 5	<i>Eucalyptus porosa</i>	0.96	0.6	0.576	N/A	0.576	0.605
SEB Points Required - Total							18.867

As can be seen from the table above the total SEB Points Required to offset the clearance of the scattered trees in this example is **18.867**.

Assessment Method 2: Patch Assessment



4.36 ha of native vegetation is proposed to be cleared.



Step 1. Undertake an on ground vegetation assessment

This site is located in the South Australian Murray-Darling Basin NRM Board Region, so a Bushland Assessment is undertaken. The assessment identifies the vegetation associations and provides a Unit Biodiversity Score (UBS) for each association.

The UBS is arrived at by applying a formula that takes into account the following:

- Vegetation condition
- Landscape context
- Conservation significance.

Site	Vegetation Association	Unit Biodiversity Score
Site A1	<i>Eucalyptus socialis</i> very open mallee	42.3
Site A2	<i>Eucalyptus porosa</i> woodlands	61.53

Step 2. Determine the Biodiversity Score

Multiply the UBS by the area (hectares) contained within the vegetation association in order to determine the Total Biodiversity Score.

Site	Vegetation Association	Unit Biodiversity Score	Area of site (ha)	Total Biodiversity Score
Site A1	<i>Eucalyptus socialis</i> very open mallee	42.3	2.61	110.40
Site A2	<i>Eucalyptus porosa</i> woodlands	61.53	1.75	107.68

Step 3. Determine the SEB Points of Loss

Multiple the Total Biodiversity Score by the appropriate Loss Factor in order to determine the SEB Points of Loss.

Site	Vegetation Association	Unit Biodiversity Score	Area of site (ha)	Total Biodiversity Score	Loss Factor	SEB Points of Loss
Site A1	<i>Eucalyptus socialis</i> very open mallee	42.3	2.61	110.40	1	110.40
Site A2	<i>Eucalyptus porosa</i> woodlands	61.53	1.75	107.67	1	107.68

Step 4. Apply any loadings or reductions

Apply any loadings or reductions as required. Clearance is not in a protected area, nor will there be any ecological restoration of the impact site. Accordingly no loadings or reductions will be applied.

Site	Vegetation Association	Unit Biodiversity Score	Area of site (ha)	Total Biodiversity Score	Loss Factor	SEB Points of Loss	Loadings of Reductions	Adjusted SEB Points of Loss
Site A1	<i>Eucalyptus socialis</i> very open mallee	42.3	2.61	110.40	0	110.40	N/A	110.40
Site A2	<i>Eucalyptus porosa</i> woodlands	61.53	1.75	107.67	0	107.67	N/A	107.68
SEB Points of loss - Total								218.08

Step 5. Determine the SEB Required to offset the impact

A 5 per cent increase is applied to the SEB Points of loss to determine the SEB Points required to offset the impact. This is fixed pre-determined amount.

Site	Vegetation Association	Unit Biodiversity Score	Area of site (Ha)	Total Biodiversity Score	Loss Factor	SEB Points of Loss	Loadings of Reductions	Adjusted SEB Points of Loss	SEB Points Required
Site A1	<i>Eucalyptus socialis</i> very open mallee	42.3	2.61	110.40	1	110.40	N/A	110.40	115.92
Site A2	<i>Eucalyptus porosa</i> woodlands	61.53	1.75	107.68	1	107.68	N/A	107.68	113.05
SEB Points Required - Total									228.97

To calculate the total value of the SEB Points Required to offset this proposed clearance the SEB Points required of the scattered trees is added to that of the SEB Points required of the patch of vegetation.

SEB Points Required to offset the Patch Vegetation	228.97
SEB Points Required to offset the Scattered Trees	18.867
Total SEB Points of Loss for the proposed clearance	247.83

Process 2: Assess the site of the SEB Area being offered

This site has four vegetation associations and each needs to be assessed.



49.6 ha site containing mostly remnant vegetation, proposed to be established as an SEB Area.



Step 1. Undertake an on ground vegetation assessment

This site is located in the South Australian Murray-Darling Basin NRM Region, so a Bushland Assessment is undertaken. The vegetation assessment will determine the size of each vegetation association (hectares) and provide a Unit Biodiversity Score (UBS) for each.

Site	Vegetation Association	Area (ha)	Unit Biodiversity Score (UBS)
Site A1	<i>Eucalyptus socialis</i> / <i>Eucalyptus gracilis</i> mallee	30.01	58.12
Site A2	<i>Eucalyptus socialis</i> / <i>Eucalyptus gracilis</i> mallee	9.02	70.86
Site A3	Revegetation - <i>Eucalyptus porosa</i> woodlands	3.66	19.06
Site A4	<i>Eucalyptus porosa</i> open woodland	6.87	46.68

Step 2. Determine the Future Negative UBS

Determine the possible UBS in the absence of protection. This is an estimate in the likely decline in vegetation condition of a 20 year period.

Site	Vegetation Association	Area (ha)	Unit Biodiversity Score (UBS)	Future negative UBS
Site A1	<i>Eucalyptus socialis</i> / <i>Eucalyptus gracilis</i> mallee	30.01	58.12	55.80
Site A2	<i>Eucalyptus socialis</i> / <i>Eucalyptus gracilis</i> mallee	9.02	70.86	68.03
Site A3	Revegetation - <i>Eucalyptus porosa</i> woodlands	3.66	19.06	18.30
Site A4	<i>Eucalyptus porosa</i> open woodland	6.87	46.68	44.81

Step 3. Determine the Future Positive UBS

Determine the estimated UBS with active management. This is an estimate of the condition of the vegetation after 10 years of active management and 10 years of maintenance.

Site	Vegetation Association	Area (ha)	Unit Biodiversity Score (UBS)	Future Negative UBS	Future Positive UBS
Site A1	<i>Eucalyptus socialis</i> / <i>Eucalyptus gracilis</i> mallee	30.01	58.12	55.80	62.94
Site A2	<i>Eucalyptus socialis</i> / <i>Eucalyptus gracilis</i> mallee	9.02	70.86	68.03	77.21
Site A3	Revegetation - <i>Eucalyptus porosa</i> woodlands	3.66	19.06	18.30	22.89
Site A4	<i>Eucalyptus porosa</i> open woodland	6.87	46.68	44.81	53.25

Step 4. Determine the UBS Gain

Determine the possible UBS Gain by calculating the difference between the Future Positive UBS and the Future Negative UBS.

Site	Vegetation Association	Area (ha)	Unit Biodiversity Score (UBS)	Future Negative UBS	Future Positive UBS	UBS Gain
Site A1	<i>Eucalyptus socialis</i> / <i>Eucalyptus gracilis</i> mallee	30.01	58.12	55.80	64.30	7.14
Site A2	<i>Eucalyptus socialis</i> / <i>Eucalyptus gracilis</i> mallee	9.02	70.86	68.03	75.72	7.69
Site A3	Revegetation - <i>Eucalyptus porosa</i> woodlands	3.66	19.06	18.30	23.09	4.78
Site A4	<i>Eucalyptus porosa</i> open woodland	6.87	46.68	44.81	52.08	7.27

Step 5. Determine the SEB Points Provided

Determine the SEB Points Provided by multiplying the UBS Gain by the area of the vegetation association.

Site	Vegetation Association	Area (ha)	Unit Biodiversity Score (UBS)	Future Negative UBS	Future Positive UBS	UBS Gain	SEB Points Provided
Site A1	<i>Eucalyptus socialis</i> / <i>Eucalyptus gracilis</i> mallee	30.01	58.12	55.80	64.30	7.14	214.27
Site A2	<i>Eucalyptus socialis</i> / <i>Eucalyptus gracilis</i> mallee	9.02	70.86	68.03	75.72	7.69	69.36
Site A3	Revegetation - <i>Eucalyptus porosa</i> woodlands	3.66	19.06	18.30	23.09	4.78	17.49
Site A4	<i>Eucalyptus porosa</i> open woodland	6.87	46.68	44.81	52.08	7.27	49.94
Total SEB Points Provided							351.06

Step 6: Determine if the clearance is offset

If the clearance is to be offset, the SEB Points Provided by the SEB Area must be equal to or greater than the SEB Points Required from the clearance area.

In this situation, the SEB Points Required are 288.45 while the SEB Points Provided by the SEB Area are 351.06.

Additionally, the vegetation communities within the proposed SEB Area are similar to the areas to be cleared in terms of vegetation species and structure. Therefore, it is determined that the proposed SEB Area meets the principle of like for like or better (see SEB Policy for further details). Accordingly, the SEB Area is sufficient to offset the impacts of the clearance.

SEB Points from offset area	351.06
SEB Points Required to offset the clearance	247.83
Difference (and potential credit)	103.23

If the whole of the area is established as an SEB Area, the SEB Points provided exceed the SEB Points Required by 103.23. These SEB Points will be recorded as an SEB Credit, and will be available for future applications or could be assigned to another person.

Process 3: Calculated the payment into the fund

If the proposed SEB Area is not suitable, then the proponent may choose to make a payment into the Native Vegetation Fund. The payment is determined as follows.

Step 1. Determine the Hectares Required

The area (Ha) required is determined from the SEB Points Required as established from the assessment of the vegetation proposed to be cleared, divided by 8. In this particular scenario, there is 247.83 SEB points required. This is divided by 8. Accordingly **30.97 hectares are theoretically required.**

Step 2. Determine the Management Cost

The management cost is standard for all sites and is **\$20,000.**

Step 3. Determine the Rainfall Factor

Determine the annual rainfall for the site from the centroid of the site using BOM data available on NatureMaps. For this particular site, the annual rainfall is 379mm. This is divided by 1000 to provide the Rainfall Factor, which is in this case **0.379.**

Step 4. Determine the Economies of Scale Factor

The Economies of Scale are determined from the Class in which the clearance will occur. The proposed clearance site is within Class 1 and therefore it receives the Economies of Scale Factor of **0.5**

Step 5. Apply the SEB Formula

Multiply the four factors together to determine the SEB payment.

Hectares	Management cost	Rainfall factor	Economies of Scale	SEB Payment
30.97	20,000	0.379	0.5	\$117,376.30

Step 6. Administration Fee and Minimum Payment

The Administration Fee required in association with this payment is 5 per cent of the SEB Payment.

- Administration Fee = **\$5,868.81**

The payment is greater than \$500, therefore the Minimum Payment is not relevant.

Step 7. Determine the total payment to be made into the NV Fund

The total payment required to be made into the Native Vegetation Fund for the approval to clear native vegetation is the SEB Payment plus the Administration fee.

SEB Payment	\$117,376.30
Administration Fee (5%)	\$5,868.81
Total Payment	\$123,245.11

10. References

Clarke, I. Stokes, Z. and Wallace, R., 2010, Habitat Restoration Planning Guide for Natural Resource Managers, Government of South Australia, through Department of Environment and Natural Resources, Adelaide, SA.

Fisher, A. & Hodder, M. (2011). Review of Significant Environmental Benefit metrics applied under the Native Vegetation Act 1991. Final Draft Report. Department of Environment and Natural Resources, Adelaide, SA.

11. Quick Guides

QUICK GUIDE TO ASSESSING NATIVE VEGETATION FOR SIGNIFICANT ENVIRONMENTAL BENEFIT

1. Apply the Mitigation Hierarchy
2. Undertake on ground assessment of residual impacts
3. Determine Biodiversity Score
4. Determine the SEB Points Required to offset impacts
5. Record the SEB Points

QUICK GUIDE TO ASSESSING AN ON GROUND SEB

1. Undertake an assessment of a proposed on ground SEB
2. Determine the Biodiversity Benefit: Protection Gain & Management Gain
3. Determine the total SEB Points Provided by the vegetation association
4. Determine if the SEB Area will offset the proposed clearance

QUICK GUIDE TO PAYMENTS INTO THE NATIVE VEGETATION FUND

1. Determine the Hectares Required
2. Apply the Management Costs
3. Determine the Rainfall Factor
4. Determine the Economies of Scale
5. Apply the SEB Payment Formula
6. Adjust for Administration Fee and Minimum Payment
7. Determine the total payment to be paid into the Fund



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