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FUNDING AGREEMENT

FUNDING AGREEMENT IN RELATION TO RECOVERY PLANNING, DEVELOPMENT IN VICTORIA

Department of the Environment, Water, Heritage and the Arts
ABN 34 190 894 983

Department of Sustainability and Environment, Victoria
ABN 90 719 052 204

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Parties

This Agreement is made between and binds the following parties:

1. Commonwealth of Australia **(Commonwealth)** represented for the purposes of this Agreement by the **Department of the Environment, Water, Heritage and the Arts** ABN 34 190 894 983 of John Gorton Building, Environment entrance, King Edward Terrace, Parkes ACT 2600, Australia (**Department**).

2. Government of Victoria represented by **The Department of Sustainability and Environment Victoria.** ABN 90 719 052 204 of Level 2/8 Nicholson St EAST MELBOURNE VIC 3002

Context

A. The Department is committed to the Recovery Planning, Review and Implementation Program. Under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) listed threatened species (except one that is extinct or is a conservation dependent species) and threatened ecological communities may be protected, conserved and managed by recovery plans. Recovery plans set out the research and management actions necessary to stop the decline of, and support the recovery of, the listed threatened species or threatened ecological communities so that its chances of long term survival in nature are maximised.

B. The Activity will help achieve the goals of the Program.

C. The Department has agreed to provide Funding to the Recipient to support the carrying out of the Activity.

D. The Recipient agrees to accept the Funding for the purposes, and subject to the terms and conditions, set out in this Agreement.

Operative provisions

In consideration of the mutual promises contained in this Agreement, the parties to this Agreement agree as follows:

1. Interpretation

1.1. Definitions

1.1.1. In this Agreement, unless the context indicates otherwise:

Activity means the activity described in Item A [Program and Activity], which aims to fulfil one or more of the Objectives of the Program, and includes the provision

	of Activity Material;
Activity Generated Income	means any income earned or generated by the Recipient from its use of the Funding or Other Contributions including: a. interest earned from the investment of the Funding or Other Contributions; b. where the proceeds of insurance paid to the Recipient to replace an Asset exceed the amount actually paid by the Recipient to replace the Asset; and c. any income received by the Recipient as a result of its use of an Asset that reflects the proportion of the total cost of acquiring the Asset that was met by the Funding;
Activity Material	means any Material: a. created for the purpose of this Agreement; b. provided or required to be provided to the Department under the Agreement; or c. derived at any time from the Material referred to in paragraphs a or b;
Activity Period	means the period specified in Item A [Program and Activity] during which the Activity must be completed;
Agreement	means this document and includes any Schedules and Annexures;
Annexure	means any annexure to Schedule 1;
Approved Auditor	means a person who is an auditor employed by the Office of the Auditor- General established in the Recipient's State or Territory.
Asset	means any item of property, purchased, leased, hired, financed, created (except in the case of Intellectual Property Rights) or otherwise brought into existence either wholly or in part with use of the Funding, which has a value of over $5,000 exclusive of GST, but excludes Intellectual Property Rights;
Auditor-General	means the office established under the *Auditor-General Act 1997* (Cth) and includes any other entity that may, from time to time, perform the functions of that office;
Australian Accounting Standards	refers to the standards of that name maintained by the Australian Accounting Standards Board created by section 226 of the *Australian Securities and Investments Commission Act 2001* (Cth);
Australian Auditing Standards	refers to the standards made by the Auditing and Assurance Standards Board created by section 227A of

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	the *Australian Securities and Investments Commission Act 2001* (Cth);
Budget	refers to a budget for expenditure of the Funding, the Recipient Contributions and Other Contributions for the purposes of conducting the Activity or performing obligations under this Agreement, as stipulated in Item D [Budget];
Business Day	means in relation to the doing of any action in a place, any day other than a Saturday, Sunday, or public holiday in that place;
Commonwealth	means the Commonwealth of Australia;
Commonwealth Material	means any Material: a. provided by the Department to the Recipient for the purposes of this Agreement; or b. derived at any time from the Material referred to in paragraph a, and does not include Activity Material;
Completion Date	means the day after the Recipient has done all that it is required to do under clauses 2 [Activity], 4 [Management of Funding] and 9 [Reporting] of this Agreement to the satisfaction of the Department;
Confidential Information	means: a. the information described in Item N [Confidential Information]; and b. information that the parties agree in writing after the Date of this Agreement is confidential information for the purposes of this Agreement;
Constitution	means (depending on the context): a. a company's constitution, which (where relevant) includes rules and any amendments that are part of the company's constitution; or b. in relation to any other kind of body: i. the body's charter, rules or memorandum; or ii. any instrument or law constituting or defining the constitution of the body or governing the activities of the body or its members;
Date of this Agreement	means the date written on the execution page of this Agreement, or if no date or more than one date is written there, then the date on which the Agreement is signed by the last party to do so;
Department	means the Commonwealth represented by and acting through the Department of the Environment, Water,

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	Heritage and the Arts (or any other Commonwealth department or agency that is, from time to time, responsible for the administration of this Agreement) and includes, where the context permits, the officers, delegates, employees and agents, and successors of the Department;
Depreciated	means the amount by which the value of an Asset has reduced as calculated for income tax purposes under, and in accordance with, the *Income Tax Assessment Act 1936* (Cth) and the *Income Tax Assessment Act 1997* (Cth);
Director	means any of the following: a. a person appointed to the position of a director or alternate director and acting in that capacity for a body corporate within the meaning of the *Corporations Act 2001* (Cth) regardless of the name given to their position; b. a member of the governing committee of an Aboriginal and Torres Strait Islander corporation under the *Corporations (Aboriginal and Torres Strait Islander) Act 2006* (Cth); c. a member of the committee of an organisation incorporated pursuant to State or Territory laws relating to the incorporation of associations; or d. a member of the board, committee or group of persons (however described) that is responsible for managing or overseeing the affairs of the body corporate;
Dispose	means to sell, licence, lease or sublease, or otherwise transfer or give up ownership or the right to occupy or use, or to enter into an agreement to do any of the preceding acts and 'Disposal' means the method of so disposing;
Existing Material	means all Material in existence prior to the Date of this Agreement: a. incorporated in; b. supplied with, or as part of; or c. required to be supplied with, or as part of, the Activity Material;
Financial Year	means each period from 1 July to the following 30 June occurring during the Activity Period, or any part of such a period occurring at the beginning or end of the Activity Period;
Funding or Funds	means the amount or amounts (in cash or kind)

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	payable by the Department under this Agreement as specified in Item B [Funding and Payment], and includes Activity Generated Income;
GST	has the meaning that it has in the *A New Tax System (Goods and Services Tax) Act 1999* (Cth);
Guidelines	refers to the guidelines for the Program, if any, as described in Item A [Program and Activity];
Intellectual Property Rights	includes: a. all copyright (including rights in relation to phonograms and broadcasts); b. all rights in relation to inventions, plant varieties, trademarks (including service marks), designs, circuit layouts; and c. all other rights resulting from intellectual activity in the industrial, scientific, literary or artistic fields; but does not include: d. Moral Rights; e. the rights of performers; or f. rights in relation to Confidential Information;
Interest	means interest calculated at the 90 day bank-accepted bill rate (available from the Reserve Bank of Australia) less 10 base points on a daily compounding basis;
Material	means any thing in relation to which Intellectual Property Rights arise;
Milestone	means a stage of completion of the Activity as set out in Item A [Program and Activity];
Moral Rights	includes the following rights of an author of copyright Material: a. the right of attribution of authorship; b. the right of integrity of authorship; and c. the right not to have authorship falsely attributed;
Objectives	means the objectives described in Item A [Program and Activity];
Other Contributions	means financial or in-kind resources (with in-kind resources valued at cost) other than the Funding or the Recipient Contributions, which are specified in Item C.2 [Other Contributions] and are to be used by the Recipient to perform the Activity;
Personnel	means a party's officers, employees, agents, contractor staff or professional advisers engaged in, or in relation to, the performance or management of this Agreement;

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Principles	refers to the principles of the Program, if any, as described in Item A [Program and Activity];
Privacy Act	refers to the *Privacy Act 1998* (Cth);
Privacy Commissioner	means the Office of the Privacy Commissioner established under the Privacy Act and includes any other entity that may, from time to time, perform the functions of that Office;
Program	means the part of the Department's operations specified in Item A [Program and Activity] under which the Department is able to provide the Funding to the Recipient;
Qualified Accountant	means a person who is a member of the Institute of Chartered Accountants in Australia or of CPA Australia;
Recipient	means Government of Victoria represented by **The Department of Sustainability and Environment Victoria.** ABN 90 719 052 204 and includes officers, employees, agents, volunteers and subcontractors, and successors of the Recipient;
Recipient Contributions	means the financial or in-kind resources (with in-kind resources valued at cost), other than the Funding or Other Contributions, which are specified in Item C.1 [Recipient Contributions] and are to be used by the Recipient to perform the Activity;
Records	includes documents, information and data stored by any means and all copies and extracts of the same;
Report	means Activity Material that is provided to the Department for reporting purposes as stipulated in clause 9 and Item E [Reporting];
Schedule	refers to the schedule to this Agreement and may include Annexures and incorporate other documents by reference;
Specified Acts	means any of the following classes or types of acts or omissions by or on behalf of the Department: a. using, reproducing, adapting or exploiting all or any part of the Activity Material, with or without attribution of authorship; b. supplementing the Activity Material with any other Material; or c. using the Activity Material in a different context to that originally envisaged, but does not include false attribution of authorship;
Specified Personnel	means the Recipient's Personnel specified in Item J [Specified Personnel] as Personnel required to

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	undertake all or any part of the Activity
Term	refers to the period described in clause 1.4;
Third Party Interest	means any legal or equitable right, interest, power or remedy in favour of any person other than the Department or the Recipient in connection with the Agreement, including, without limitation, any right of possession, receivership, control or power of sale, and any mortgage, charge, security or other interest; and
Undepreciated	in relation to the value of an Asset, means the value of the Asset which has not been Depreciated.

1.2. Interpretation

1.2.1. In this Agreement, unless the contrary intention appears:

a. words importing a gender include any other gender;

b. words in the singular include the plural and words in the plural include the singular;

c. clause headings are for convenient reference only and have no effect in limiting or extending the language of provisions to which they refer;

d. words importing a person include a partnership and a body whether corporate or otherwise;

e. a reference to dollars is a reference to Australian dollars;

f. a reference to any legislation or legislative provision includes any statutory modification, substitution or re-enactment of that legislation or legislative provision;

g. if any word or phrase is given a defined meaning, any other part of speech or other grammatical form of that word or phrase has a corresponding meaning;

h. a reference to the Schedule (or an attachment), is a reference to the Schedule (or an attachment) to the Agreement, including as amended or replaced from time to time by agreement in writing between the parties;

i. a reference to an Item is a reference to an Item in the Schedule;

j. the Schedule and any attachments form part of the Agreement;

k. if any conflict arises between the terms and conditions contained in the clauses of this Agreement and any part of the Schedule (and attachments if any), the terms and conditions of the clauses prevail;

l. if any conflict arises between any part of the Schedule and any part of an attachment, the Schedule prevails; and

m. a reference to writing is a reference to any representation of words, figures or symbols, whether or not in a visible form.

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1.3. Guidance on construction of Agreement

1.3.1. This Agreement records the entire agreement between the parties in relation to its subject matter.

1.3.2. As far as possible all provisions of this Agreement will be construed so as not to be void or otherwise unenforceable.

1.3.3. If anything in this Agreement is void or otherwise unenforceable then it will be severed and the rest of the Agreement remains in force.

1.3.4. A provision of this Agreement will not be construed to the disadvantage of a party solely on the basis that it proposed that provision.

1.4. Duration of Term

1.4.1. The Term of this Agreement commences on the Date of the Agreement and, unless terminated earlier, it expires on the Completion Date.

1.5. Debt and Interest

1.5.1. The Recipient agrees to pay any amount owed or payable to the Department or which the Department is entitled to recover from the Recipient, under this Agreement, including any Interest, without prejudice to any other rights available to the Department under the Agreement, under statute, at law or in equity, at the discretion of the Department, as a debt due to the Department by the Recipient without further proof of the debt by the Department being necessary.

1.5.2. If the Department notifies the Recipient that an amount is to be refunded or repaid to the Department and the amount is not refunded or repaid within 20 Business Days, or as otherwise notified by the Department, the Recipient agrees to pay Interest, unless the Department notifies the Recipient otherwise, on the amount outstanding after the expiry of the date it was due, until the amount is paid in full.

1.5.3. In respect to any obligation the Recipient may have under this Agreement to pay the Department any Interest, the Recipient agrees that the Interest represents a reasonable pre-estimate of the loss incurred by the Department.

2. Activity

2.1. Conduct of Activity

2.1.1. The Recipient must carry out the Activity:

a. to achieve the Objectives;

b. within the Activity Period;

c. in accordance with this Agreement (including any applicable Principles and Guidelines); and

d. diligently, effectively and to a high standard.

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2.1.2. Where the Department is satisfied that the Recipient does not have the capacity to adequately:

a. manage the Funding; or

b. undertake the Activity in accordance with this Agreement,

the Department may by written notice immediately:

c. suspend, reduce or cease the release of Funding to the Recipient; and/or

d. require the Recipient to refund some or all of the Funding to the Department.

2.2. Liaison and monitoring

2.2.1. The Recipient agrees to:

a. liaise with and provide information to the Department as reasonably notified by the Department; and

b. comply with all of the Department's reasonable requests, directions, or monitoring requirements.

2.2.2 Each of the parties may nominate, from time to time, a person who has authority to receive and sign notices and written communications for each of them under this Agreement and accept any request or direction in relation to the Activity.

2.3. Subcontractors

2.3.1. The Recipient agrees not to subcontract the performance of any obligations under this Agreement without the Department's prior written approval. In giving written approval, the Department may do so on such terms and conditions as the Department thinks fit. Any subcontractors approved by the Department at the Date of this Agreement, and any terms and conditions relating to their use, are identified in the Item H [Subcontracting]. If the Recipient proposes to replace an approved subcontractor, the Recipient must also obtain the Department's approval for the proposed change under this clause 2.3.

2.3.2. The Recipient is fully responsible for the performance of the Recipient's obligations under this Agreement regardless of whether the Recipient has subcontracted any of its obligations.

2.3.3. The Recipient agrees, in any subcontract placed with a subcontractor, to reserve a right of termination to take account of the Department's rights of termination under clause 17 [Termination or reduction in scope of Agreement], and the Recipient agrees to make use of that right in the event of a termination or revocation by the Department.

2.3.4. The Recipient must not enter into a subcontract under this Agreement with a subcontractor named by the Director of the Equal Opportunity for Women in the Workplace Agency as an employer currently not complying with the *Equal Opportunity for Women in the Workplace Act 1999* (Cth).

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2.4. Specified Personnel

2.4.1. The Recipient agrees that the Specified Personnel will perform work in relation to the Activity in accordance with this Agreement.

2.4.2. If Specified Personnel are unable to perform the work as required under this clause 2.4, the Recipient agrees to notify the Department immediately.

2.4.3. The Recipient agrees, at the request of the Department acting in its absolute discretion, to remove Personnel (including Specified Personnel) from work in relation to the Activity.

2.4.4. If clause 2.4.2 or clause 2.4.3 applies, the Recipient will provide replacement Personnel acceptable to the Department at no additional cost and at the earliest opportunity.

2.4.5. If the Recipient is unable to provide acceptable replacement Personnel, the Department may terminate this Agreement in accordance with the provisions of clause 17.2 [Termination for fault].

2.5. Review

2.5.1. The Recipient agrees to:

a. provide all reasonable assistance required by the Department;

b. respond to all of the Department's reasonable requests; and

c. provide any information the Department reasonably requires,

in relation to conducting a review and final evaluation of the Program.

3. Payment

3.1. Making of payment

3.1.1. Subject to sufficient funds being available for the Program, and compliance by the Recipient with this Agreement, the Department agrees to provide the Recipient with the Funding at the times and in the manner specified in Item B [Funding and Payment].

3.1.2. Without limiting the Department's rights, the Department may suspend any payment in whole or in part until the Recipient has performed its obligations under this Agreement.

4. Management of Funding

4.1. Use of Funding

4.1.1. The Recipient agrees to spend the Funding only for the Activity in accordance with this Agreement.

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4.1.2. The Recipient agrees to do all things necessary to ensure that all payments from the Funding that the Recipient makes to third parties (including subcontractors) are correctly made and properly authorised and that the Recipient maintains proper and diligent control over the incurring of all liabilities.

4.2. Keeping of Funding

4.2.1. The Recipient agrees to:

a. ensure that the Funding is held in an account in the Recipient's name and which the Recipient solely controls, with an authorised deposit-taking institution authorised under the *Banking Act 1959* (Cth) to carry on banking business in Australia;

b. unless otherwise specified in Item B.1.4, ensure that the account referred to in clause 4.2.1 a is:

   i. established solely for the purposes of the Activity;

   ii. separate from the Recipient's other operational accounts; and

   iii. an account that complies with any other requirements specified in the Schedule;

c. notify the Department, prior to the receipt of any Funding, of details sufficient to identify the account;

d. reserved;

e. reserved;

f. if the account changes, notify the Department within 10 Business Days of the change occurring, provide the Department with details of the new account;

g. unless the Recipient is a sole director company or an individual, ensure that as a minimum, two signatories, who have the Recipient's authority to do so, are required to operate the account; and

h. identify the receipt and expenditure of the Funding separately within the Recipient's accounts and Records so that the Funding is identifiable at all times.

4.3. Financial Records

4.3.1. The Recipient agrees to keep financial accounts and Records relating to the Activity so as to enable:

a. all receipts and payments related to the Activity to be identified and reported in accordance with this Agreement;

b. unless otherwise notified by the Department, the preparation of financial statements in accordance with Australian Accounting Standards including:

   i. an income and expenditure statement for the Financial Year to date compared with the Budget; and

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ii. a register of the Assets created, acquired, written-off or Disposed of during the Financial Year to date compared with the Budget;

c. the audit of those accounts and Records in accordance with Australian Auditing Standards; and

d. the identification of all the Recipient's taxation liabilities and payments.

4.4. Use as security

4.4.1. Except with the prior written approval of the Department, the Recipient agrees not to use any of the following as any form of security for the purpose of obtaining or complying with any form of loan, credit, payment or other interest, or for the preparation of, or in the course of, any litigation:

a. the Funding;

b. this Agreement or any of the Department's obligations under the Agreement; or

c. any Assets or Intellectual Property Rights in Activity Material.

4.5. Refunds

4.5.1. If, at any time during the Term or as at the Completion Date or earlier termination of this Agreement the Department determines that:

a. The Recipient has an amount of Funding that it has not spent or legally committed for expenditure in accordance with the Agreement; or

b. Funding has not been spent in accordance with the Agreement,

then at the discretion of the Department the Recipient agrees to refund this amount to the Department. This amount must be refunded within 20 Business Days of a notice from the Department, dealt with as notified by the Department, or the Department may reduce further payments of Funding to the Recipient by up to this amount.

4.5.2. If at the completion of the Activity Period the Recipient has remaining Funding (which does not include any Funding legally committed for expenditure in accordance with this Agreement and which fall for payment thereafter) and wishes to retain that Funding, the Recipient agrees to seek the Department's written consent to retain the Funding and use it for purposes agreed by the Department.

4.5.3. If the Department does not agree to the Recipient retaining the Funding under clause 4.5.2, the Recipient agrees to return the Funding to the Department within 20 Business Days of the Department's notice requiring the Recipient to return the Funding.

4.6. Budget

4.6.1. The Recipient agrees to only spend the Funding in accordance with the Budget.

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4.7. Budget flexibility

4.7.1. The Recipient may transfer Funding between categories of expenditure items within the Budget subject to the following limitations:

a. the Recipient must seek the prior written approval of the Department for any transfer that exceeds 10% of the total Budget for the Financial Year in which the transfer would occur; and

b. the total amount of transfers in a Financial Year must not, except with the written approval of the Department, exceed 20% of the total Budget for that Financial Year.

4.7.2. Any Activity Generated Income that is not included in the Budget may only be spent in accordance with the prior written approval of the Department.

4.8. No additional Funding

4.8.1. The Department is not responsible for the provision of additional money to meet any expenditure in excess of the Funding. The Recipient accepts responsibility for the provision of any additional funds that may be required to complete the Activity.

4.9. Unspent funding

4.9.1. Any payments under this Agreement may be suspended by the Department if a Report provided by the Recipient is not accurate or complete or indicates that the Recipient currently has unspent Funding.

4.9.2. Notwithstanding such suspension of any payments, the Recipient agrees to continue to perform any obligations under this Agreement, unless the Department agrees otherwise in writing.

5. Taxes, duties and government charges

5.1. Taxes, duties and government charges

5.1.1. Unless otherwise indicated, the Recipient agrees to pay all taxes, duties and government charges imposed or levied in Australia or overseas in connection with the performance of this Agreement.

5.1.2. Unless otherwise indicated, any consideration for a supply made under this Agreement is exclusive of any GST imposed on the supply.

5.1.3. If one party (the supplier) makes a taxable supply to the other party (the recipient) under this Agreement, on receipt of a tax invoice from the supplier, the recipient will pay without setoff an additional amount to the supplier equal to the GST imposed on the supply in question.

5.1.4. No party may claim or retain from the other party any amount in relation to a supply made under this Agreement for which the first party can obtain an input tax credit or decreasing adjustment.

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5.1.5. If requested by the Department, the Recipient must provide evidence of its GST status.

6. Recipient Contributions and Other Contributions

6.1. Recipient Contributions

6.1.1. The Recipient agrees to provide the Recipient Contributions for the Activity. The Recipient Contributions must not include any amount that has been provided to the Recipient by a Commonwealth, State, Territory or local government.

6.1.2. If the Recipient does not provide the Recipient Contributions or provide them in time to enable completion of the Activity, then the Department may:

a. suspend payment of the Funding or an instalment of the Funding (as the case may be) until the Recipient Contributions are provided; or

b. terminate this Agreement in accordance with clause 17.2 [Termination for fault].

6.2. Other Contributions

6.2.1. Unless otherwise specified in Item C [Recipient Contributions and Other Contributions], it is a condition precedent to the payment of Funding under this Agreement that:

a. the Recipient agrees to provide the Department with satisfactory written evidence that the persons identified in Item C.2 [Other Contributions] will provide the Other Contributions, including the amounts to be provided, the due dates for each of these amounts and the terms and conditions of the provision of the Other Contributions; and

b. the basis on which these Other Contributions are to be provided is satisfactory to the Department.

6.2.2. The Recipient agrees that the written evidence required by clause 6.2.1.a. will be provided to the Department within 20 Business Days of the Date of this Agreement, failing which the Department may terminate this Agreement in accordance with clause 17.2 [Termination for fault].

6.2.3. If the Recipient is not able to obtain Other Contributions or obtain them in time to enable completion of the Activity, then the Department may:

a. suspend payment of the Funding or an instalment of the Funding until the Other Contributions are received; or

b. terminate this Agreement in accordance with clause 17.2 [Termination for fault].

6.2.4. The Recipient agrees to notify the Department within 10 Business Days of entering into any arrangement under which the Recipient is entitled to receive any additional monetary or in-kind contributions in respect of the Activity that are not identified as Other Contributions in Item C.2 [Other Contributions]. Any such

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additional contribution that the Recipient becomes entitled to receive after the Date of this Agreement constitutes Other Contributions for the purposes of the Agreement (and Schedule 1 is deemed to be varied accordingly) on the date on which the Recipient notifies the Department of that contribution under this clause 6.2.4.

7. Assets

7.1. No acquisition of Asset

7.1.1. You must not use the Funding to acquire or create any Asset.

8. Records

8.1. Keeping Records

8.1.1. The Recipient must create and maintain full and accurate accounts and Records of the conduct of the Activity including, without limitation, all:

a. progress against the Milestones;

b. receipt and use of Funding;

c. Other Contributions (if any);

d. Recipient Contributions (if any);

e. creation, acquisition and Disposal of Assets; and

f. creation, acquisition and Disposal of any Intellectual Property Rights in the Activity Material or Existing Material.

8.2. Retention of Records

8.2.1. The Recipient agrees to create and maintain records and accounts under clause 8.1.1 and retain them for a period of no less than 7 years after the end of the Activity Period.

9. Reporting

9.1. Progress and Final Reports

9.1.1. The Recipient agrees to provide to the Department written Reports of the Recipient's progress in undertaking the Activity, as well as a final report for the Activity, in the manner specified in Item E [Reporting].

9.2. Financial Reports

9.2.1. Within 60 Business Days after:

a. the completion of each Financial Year in which a payment of Funding is made or used by the Recipient, or the Recipient contributes Recipient Contributions or receives any Other Contributions, except the Financial Year in which subparagraph b applies; and

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b. the expiry of the Activity Period, completion of the Activity or the termination or expiry of this Agreement, whichever is the earlier,

the Recipient agrees to provide to the Department:

c. audited financial statements prepared in accordance with Australian Accounting Standards in respect of the Funding, Recipient Contributions and the Other Contributions (if any) (separately and in the context of the Recipient's overall financial position), which must include a definitive statement as to whether the financial information for the Activity represents the financial transactions fairly and is based on proper accounts and Records; and

d. a written statement of the balance of the Recipient's account referred to in clause 4.2.1.a, or, where the Recipient is not required to keep a separate account, the balance of the Funds;

e. a written statement of how much money the Recipient needs to meet current liabilities under legal commitments entered into by the Recipient pursuant to this Agreement;

f. a copy of a letter to the Recipient from the Approved Auditor, or a report from the Approved Auditor, including:

   i. specific comment on the adequacy of financial controls being maintained by the Recipient;

   ii. specific comment on the Recipient's financial position as it relates to any issues affecting the Recipient's ability to repay surplus Funding or complete the Activity with available Funding;

   iii. specific comment on the Recipient's ability to meet the Recipient's taxation liabilities and any costs associated with any court or tribunal orders made against the Recipient or involving the Recipient;

   iv. specific comment on the Recipient's compliance with the Recipient's obligations to pay superannuation entitlements;

   v. where there are any qualifications or limitations on the audit, an outline of the reason(s) for the qualifications or limitations and the remedial action recommended;

   vi. an itemised list of fees paid to Directors, stating how much was paid, to whom, when and what travel costs were involved; and

g. any other requirements specified in Item E.4.1.

9.2.2. Information required to be provided under clauses 9.1 and 9.2 must be accompanied by a statement that:

a. all Funding, Other Contributions and Recipient Contributions received were spent for the purpose of the Activity and in accordance with this Agreement, and that the Recipient has complied with the Agreement;

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b. salaries and allowances paid to persons involved in the Activity are in accordance with any applicable award or agreement in force under any relevant law on industrial or workplace relations;

c. unless the Activity Period has expired or the Agreement has been terminated, the unspent portion of the Funding (if any) is available for use within the next Reporting period;

d. the financial information is presented in accordance with any other financial Reporting requirements the Department may notify to the Recipient; and

e. at the time the Report or financial statement is provided to the Department, the Recipient is able to pay all the Recipient's debts as and when they fall due and the Recipient has sufficient resources to discharge all the Recipient's debts at the end of the current Financial Year.

9.3. Audit and certification

9.3.1. The audited statement referred to in clause 9.2.1.c and the statement referred to in clause 9.2.2, must also contain the requirements, if any, described in Item E.4.2.

9.4. Use of Approved Auditor and Qualified Accountant

9.4.1. The audited statement referred to in clause 9.2.1.c must be prepared by an Approved Auditor and must comply with the Australian Auditing Standards, and the statements referred to in clauses 9.2.1.c, 9.2.1.d and 9.2.1.e must be prepared by a Qualified Accountant who, if notified by the Department, must also be a person acceptable to the Department.

9.5. Certification

9.5.1. The statement referred to in clause 9.2.2 must be provided:

a. if the Recipient is an incorporated body, by the Recipient's Chairperson, Chief Executive Officer, Chief Financial Officer or a person authorised by the Recipient to execute documents and legally bind the Recipient by their execution. Satisfactory evidence of the authorisation is to be provided to the Department before the statement is made;

b. if the Recipient is an unincorporated association or partnership, by:

   i. a majority of the members; or

   ii. a person or persons authorised by a majority of the members to act on behalf of the members in accordance with the Recipient's Constitution. Satisfactory evidence of the authorisation is to be provided to the Department before the statement is made;

c. if the Recipient is a joint venture, the chief executive officer or chief financial officer of each joint venturer must certify the one statement; or

d. if the Recipient is an individual, by that individual.

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10. Commonwealth Material

10.1. Ownership

10.1.1. Ownership of all Commonwealth Material, including Intellectual Property Rights in that Material, remains vested at all times in the Department but the Department grants the Recipient a licence to use, reproduce, adapt and exploit that Material only for the purposes of this Agreement and in accordance with any conditions or restrictions specified in the Schedule or that the Department may notify to the Recipient.

10.2. Possession of Commonwealth Material

10.2.1. Upon the expiration of the Completion Date or earlier termination of the Agreement, the Recipient may retain all Commonwealth Material remaining in the Recipient's possession, unless otherwise notified by the Department.

10.3. Maintain Commonwealth Material

10.3.1. The Recipient agrees to keep safely Commonwealth Material provided to the Recipient for the purposes of this Agreement.

11. Intellectual property

11.1. Ownership

11.1.1. Subject to this clause 11 [Intellectual property], Intellectual Property Rights in Activity Material vest immediately in the Recipient.

11.1.2. Clause 11.1.1 does not affect the position between the Recipient and a third party.

11.2. Licence of Activity Material

11.2.1. The Recipient grants to the Department a permanent, irrevocable, royalty-free, worldwide, non-exclusive licence (including a right of sublicence) to use, reproduce, communicate, adapt and exploit Intellectual Property Rights in the Activity Material for any purpose.

11.3. Licence of Existing Material

11.3.1. This clause 11 [Intellectual property] does not affect the ownership of any Intellectual Property Rights in any Existing Material, which is specified in the Schedule. The Recipient, however, agrees to grant to the Department or procure a permanent, irrevocable, royalty-free, worldwide, non-exclusive licence (including a right of sublicence) to use, reproduce, communicate, adapt and exploit the Intellectual Property Rights in Existing Material for any purpose.

11.4. Dealing with Intellectual Property Rights

11.4.1. The Recipient:

a. agrees, if requested by the Department to do so, to bring into existence, sign, execute or otherwise deal with any document which may be necessary or desirable to give effect to this clause 11 [Intellectual property]; and

b. warrants that it is entitled, or will be entitled at the relevant time, to deal with the Intellectual Property Rights in the Activity Material and the Existing Material in accordance with this clause 11 [Intellectual property].

11.5. Consent to Specified Acts

11.5.1. Where the Recipient is a natural person and the author of the Activity Material, the Recipient consents to the performance of the Specified Acts by the Department or any person claiming under or through the Department and agrees to comply with clauses 11.5.2.b and 11.5.2.c.

11.5.2. In any other case, the Recipient agrees:

a. to obtain from each author of any Activity Material a written consent to the Specified Acts (whether occurring before or after the consent is given) which extends directly or indirectly to the performance of the Specified Acts by the Department or any person claiming under or through the Department;

b. to obtain from each author of any Existing Material a written consent to the Specified Acts (whether occurring before or after the consent is given) which extends directly or indirectly for the Department's benefit in relation to the Department's licensed use of such material; and

c. upon request, to provide the executed original of each such consent to the Department.

12. Confidential Information

12.1. Confidential Information not to be Disclosed

12.1.1. Subject to clause 12.3, a party must not, without the prior written consent of the other party, disclose any Confidential Information of the other party to a third party.

12.2. Written undertakings

12.2.1. The Recipient must, on request by the Department at any time, arrange for:

a. its Personnel; or

b. any person with a Third Party Interest,

to give a written undertaking in a form acceptable to the Department relating to the use and non disclosure of the Department's Confidential Information.

12.3. Exceptions to obligations

12.3.1. The obligations on the parties under this clause 12 [Confidential Information] will not be breached to the extent that Confidential Information:

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a. is disclosed by a party to its Personnel solely in order to comply with obligations, or to exercise rights, under this Agreement;

b. is disclosed to a party's internal management Personnel, solely to enable effective management or auditing of Agreement-related activities;

c. is disclosed by the Department to the responsible Minister;

d. is disclosed by the Department, in response to a request by a House or a Committee of the Parliament of the Commonwealth of Australia;

e. is shared by the Department within the Department's organisation, or with another agency, where this serves the Commonwealth's legitimate interests;

f. is authorised or required by law to be disclosed; or

g. is in the public domain otherwise than due to a breach of this clause 12 [Confidential Information].

12.3.2. Where a party discloses Confidential Information to another person pursuant to clauses 12.3.1.a - 12.3.1.e, the disclosing party must notify the receiving person that the information is confidential.

12.3.3. In the circumstances referred to in clauses 12.3.1.a, 12.3.1.b and 12.3.1.e, the disclosing party agrees not to provide the information unless the receiving person agrees to keep the information confidential.

12.3.4. The Recipient agrees to secure all Confidential Information against loss and unauthorised access, use, modification or disclosure.

12.4. Period of confidentiality

12.4.1. The obligations under this clause 12 [Confidential Information] will continue, notwithstanding the expiry or termination of this Agreement:

a. in relation to an item of information described in Item N [Confidential Information] – for the period set out in respect of that item; and

b. in relation to any item of information agreed after the Date of this Agreement to be Confidential Information – for the period agreed by the parties in writing in respect of that item.

12.5. No reduction in privacy obligations

12.5.1. This clause 12 [Confidential Information] does not detract from any of the Recipient's obligations under the Privacy Act or under clause 13 [Privacy] in relation to the protection of Personal Information (as defined in clause 13.1.1).

13. Privacy

13.1. Interpretation and application

13.1.1. In this clause 13 [Privacy]:

Information has the same meaning as it has in the Privacy Act; and

Privacy Principle	
Personal Information	has the same meaning as it has in the Privacy Act.

13.1.2. This clause applies only where the Recipient deals with Personal Information when, and for the purpose of, conducting the Activity.

13.2. Obligations of Recipient in relation to privacy

13.2.1. The Recipient agrees, in conducting the Activity:

a. not to do any act or engage in any practice which, if done or engaged in by the Department, would be a breach of an Information Privacy Principle; and

b. to comply with any directions, guidelines, determinations or recommendations of the Department, to the extent that they are consistent with the Information Privacy Principles.

13.2.2. The Recipient agrees to notify the Department immediately if it becomes aware of a breach or possible breach of any of its obligations under this clause 13 [Privacy].

14. Acknowledgement and publicity

14.1. Acknowledgement of support

14.1.1. Unless or until notified by the Department, the Recipient agrees, in all publications, promotional and advertising materials, public announcements and activities by the Recipient or on the Recipient's behalf in relation to the Activity, or any products, processes or inventions developed as a result of the Activity, to acknowledge the financial and other support the Recipient has received from the Australian Government, in the manner set out in Item I [Acknowledgement and publicity], or as otherwise approved by the Department prior to its use.

14.2. Right to publicise Funding

14.2.1. The Department reserves the right to publicise and report on the awarding of Funding to the Recipient. The Department may do (but is not limited to doing) this by including the Recipients' name, the amount of the Funding given to the Recipient, the title and a brief description of the Activity in media releases, general announcements about the Funding, annual reports or through any other means as determined by the Department.

14.3. Copies of publications

14.3.1. Where the Recipient has been provided with Funding to produce any publication, a copy of the publication must be provided to the Department, if notified by the Department.

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15. Indemnity

15.1. General indemnity

15.1.1. The Recipient indemnifies (and agrees to keep indemnified) the Department against any:

a. cost or liability incurred by the Department or the Department's Personnel;

b. loss of or damage to property of the Department; or

c. loss or expense incurred by the Department in dealing with any claim against it, including legal costs and expenses on a solicitor/own client basis and the cost of time spent, resources used, or disbursements paid by the Department,

arising from:

d. any act or omission by the Recipient or the Recipient's Personnel, in connection with this Agreement, where there was fault on the part of the person whose conduct gave rise to that cost, liability, loss, damage, or expense;

e. any breach by the Recipient of the Agreement;

f. use or Disposal of the Assets; or

g. the use by the Department of the Activity Material or Existing Material, including any claims by third parties about the ownership or right to use Intellectual Property Rights or Moral Rights in the Activity Material or Existing Material.

15.2. Reduction of scope

15.2.1. The Recipient's liability to indemnify the Department under this clause 15 [Indemnity] will be reduced proportionally to the extent that any act or omission involving fault on the part of the Department or its Personnel contributed to the relevant cost, liability, loss, damage or expense.

15.3. Preservation of other rights

15.3.1. The right of the Department to be indemnified under this clause 15 [Indemnity] is in addition to, and not exclusive of, any other right, power or remedy provided by law, but the Department is not entitled to be compensated in excess of the amount of the relevant cost, liability, loss, damage or expense.

15.4. Meaning of 'fault'

15.4.1. In this clause 15 [Indemnity], 'fault' means any negligent or unlawful act or omission or wilful misconduct.

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16. Dispute resolution

16.1. Procedure for dispute resolution

16.1.1. The parties agree that a dispute arising under this Agreement will be dealt with as follows:

a. the party claiming that there is a dispute will give the other party a notice setting out the nature of the dispute;

b. within 5 Business Days each party will nominate a representative not having any prior involvement in the dispute;

c. the representatives will try to settle the dispute by direct negotiation between them;

d. failing settlement within a further 10 Business Days, the parties may agree to refer the dispute to an independent third person with power:

i. to intervene and direct some form of resolution, in which case the parties will be bound by that resolution; or

ii. to mediate and recommend some form of non-binding resolution;

e. the parties will co-operate fully with any process instigated under clause 16.1.1 d in order to achieve a speedy resolution; and

f. if a resolution is not reached within a further 20 Business Days, either party may commence legal proceedings.

16.2. Costs

16.2.1. Each party will bear its own costs of complying with this clause 16 [Dispute resolution], and the parties will bear equally the cost of any third person engaged under clause 16.1.1.d.

16.3. Application of clause

16.3.1. This clause 16 [Dispute resolution] does not apply to:

a. legal proceedings by either party for urgent interlocutory relief; or

b. action by the Department under or purportedly under clauses 3 [Payment], 4 [Management of Funding], 17 [Termination or reduction in scope of Agreement] or 24.1.

16.4. Performance of obligations

16.4.1. Despite the existence of a dispute, the Recipient will (unless requested in writing by the Department not to do so) continue to perform the Recipient's obligations under this Agreement.

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17. Termination or reduction in scope of Agreement

17.1. Termination for convenience

17.1.1. The Department may by notice, at any time and in its absolute discretion, terminate this Agreement or reduce the scope of the Agreement immediately.

17.1.2. The Recipient agrees, on receipt of a notice of termination or reduction, to:

a. stop or reduce the performance of the Recipient's obligations as specified in the notice;

b. take all available steps to minimise loss resulting from that termination or reduction;

c. continue work on any part of the Activity not affected by the notice; and

d. immediately return to the Department any Funding in accordance with clause 17.1.3.d, or otherwise deal with any Funding held by the Recipient as directed by the Department.

17.1.3. In the event of termination under clause 17.1.1, the Department:

a. will be liable only for payments due and owing to the Recipient under the payment provisions of the Agreement as at the date of the notice;

b. will be liable to reimburse any reasonable costs incurred by the Recipient and directly attributable to the termination of the Agreement;

c. will not be liable to pay amounts under 17.1.3. a and 17.1.3. b which would, added to any payments already paid to the Recipient under this Agreement, together exceed the Funding set out in Item B [Funding and Payment];

d. will be entitled to recover from the Recipient any part of the Funding which:

i. has not been legally committed for expenditure by the Recipient in accordance with the Agreement and payable by the Recipient as a current liability by the date that the notice of termination is received; or

ii. has not, in the Department's opinion, been spent by the Recipient in accordance with the Agreement.

17.1.4. In the event of a reduction in the scope of the Agreement under clause 17.1.1:

a. the Department will be liable to reimburse any reasonable costs incurred by the Recipient and directly attributable to the reduction in scope; and

b. the Department's liability to pay any part of the Funding will, unless there is agreement in writing to the contrary, reduce in accordance with the reduction in the Activity.

17.1.5. The Department's liability to pay any compensation under or in relation to this clause 17.1 [Termination or reduction in scope of Agreement] is subject to:

a. the Recipient's compliance with this clause 17.1 [Termination or reduction in scope of Agreement]; and

b. the Recipient's substantiation of any amount claimed under clause 17.1.3.b.

17.1.6. The Recipient will not be entitled to compensation for loss of prospective profits or loss of any benefits that would otherwise have been conferred on the Recipient.

17.2. Termination for fault

17.2.1. The Department may by notice, terminate this Agreement immediately (but without prejudice to any right of action or remedy which either party has or may have) if:

a. the Recipient fails to fulfil, or is in breach of any of its obligations under this Agreement, and the Department considers that this failure or breach is not capable of remedy;

b. the Recipient fails to fulfil, or is in breach of any of its obligations under this Agreement, and does not rectify the omission or breach within 10 Business Days of receiving a notice from the Department to do so;

c. the Recipient is unable to pay all its debts as and when they become due and payable;

d. the Recipient has applied to come under, received a notice requiring it to show cause why it should not come under, or has otherwise come under one of the forms of external administration referred to in Chapter 5 of the *Corporations Act 2001* (Cth) or equivalent provisions in legislation of the States and Territories pertaining to incorporated associations or in the *Corporations (Aboriginal and Torres Strait Islander) Act 2006* (Cth) or an order has been made for the purpose of placing the Recipient under external administration;

e. being an individual, the Recipient becomes bankrupt or enters into a scheme of arrangement with creditors;

f. in relation to the Agreement, the Recipient breaches any law of the Commonwealth, or of a State or Territory;

g. the Department is satisfied that any statement made in the Recipient's application for Funding is incorrect, incomplete, false or misleading in a way which would have affected the original decision to approve the Funding; or

h. the Department exercises any other specific right of termination under the Agreement.

17.2.2. Where the Department terminates this Agreement under clause 17.2.1 the Department:

a. will be liable only for payments due and owing to the Recipient under the payment provisions of the Agreement as at the date of the notice; and

b. will be entitled to recover from the Recipient any part of the Funding which:

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i. has not been legally committed for expenditure by the Recipient in accordance with the Agreement and is not payable by the Recipient as a current liability by the date that the notice of termination is received; or

ii. has not, in the Department's opinion, been spent by the Recipient in accordance with the Agreement.

17.3. Preservation of other rights

17.3.1. Clause 17.2 does not limit or exclude any of the Department's other rights under this Agreement.

18. Delay

18.1. Recipient to minimise delay

18.1.1. The Recipient must take all reasonable steps to minimise delay in completion of the Activity.

18.1.2. If the Recipient becomes aware that it will be delayed in progressing or completing the Activity in accordance with this Agreement, the Recipient must immediately notify the Department in writing of the cause and nature of the delay. The Recipient is to detail in the notice the steps it will take to contain the delay.

18.1.3. In the event of a delay, the Department may at its sole option:

a. notify the Recipient in writing of a period of extension to complete the Activity and vary this Agreement accordingly;

b. notify the Recipient in writing of reduction in the scope of the Activity and any adjustment to the Funds for the Recipient to complete the reduced Activity and vary this Agreement accordingly; or

c. terminate this Agreement under clause 17.2 or take such other steps as are available under this Agreement.

18.1.4. Unless the Department takes action under clause 18.1.3, the Recipient is required to comply with the time frame for progressing and completing the Activity as set out in this Agreement.

18.1.5. If the Recipient does not notify the Department of any delay in progressing or completing the Activity in accordance with clause 18.1.2, the Department may, at its sole discretion, terminate this Agreement under clause 17.2.

19. Reserved

20. Occupational Health and Safety

20.1. Use of the Department's premises

20.1.1. The Recipient agrees, when using the Department's premises or facilities, to comply with all reasonable directions and procedures relating to occupational health, safety and security in effect at those premises or in regard to those facilities, as notified by the Department or as might reasonably be inferred from the use to which the premises or facilities are being put.

21. Animal ethics

21.1. Approval and compliance

21.1.1. Where the Activity involves the use and care of living non-human vertebrate animals or tissue for scientific purposes, the Recipient must obtain review of and approval for such scientific purposes from a recognised animal ethics committee operating under the Australian Code of Practice for the Care and Use of Animals for Scientific Purposes.

21.1.2. The Recipient agrees to provide the Department with a certificate of compliance with the appropriate guidelines prior to the commencement of any such scientific activities.

21.1.3. The Department reserves the right to terminate this Agreement in accordance with clause 17 [Termination or reduction in scope of Agreement] should the certificate referred to in clause 21.1.2 not be properly provided.

21.1.4. The Recipient agrees to comply with any legislation, regulations, guidelines and/or codes of practice relating to animal welfare in force in the States or Territories where the Activity is to be carried out.

22. Corporate Governance

22.1. Constitution

22.1.1. The Recipient agrees not to employ, engage or elect any person who would have a role in the Recipient's management, financial administration or, if stated in Item, the performance of the Activity if:

a. the person is an undischarged bankrupt;

b. there is in operation a composition, deed of arrangement or deed of assignment with the person's creditors under the law relating to bankruptcy;

c. the person has suffered final judgment for a debt and the judgment has not been satisfied;

d. subject to Part VIIC of the *Crimes Act 1914* (Cth), the person:

i. has been convicted of an offence within the meaning of paragraph 85ZM (1) of that Act unless:

i. that conviction is regarded as spent under paragraph 85ZM(2) (taking into consideration the application of Division 4 of Part VIIC);

ii. the person was granted a free and absolute pardon because the person was wrongly convicted of the offence; or

iii. the person's conviction for the offence has been quashed;

e. that person is or was a Director or occupied an influential position in the management or financial administration of an organisation that had failed to comply with funding requirements of the Commonwealth; or

f. the person is otherwise prohibited from being a member or Director or employee or responsible officer of the Recipient's organisation under the relevant local government legislation.

22.1.2. Where a person falls or is discovered as falling within any of clauses 22.1.1.a to 22.1.1.f while employed or engaged by the Recipient, or after being elected as an officer of the Recipient, the Recipient will be in breach of clause 22.1.1 if the Recipient does not:

a. transfer the person to a position which does not have a role in the Recipient's management, financial administration or, if stated in Schedule 1, the performance of the Activity; or

b. terminate the employment or engagement of the person or remove the person from office,

as the case may be and immediately notify the Department of the Recipient's action.

22.1.3. If the Recipient advises the Department that the Recipient considers such termination action would be a breach of a statutory provision binding on the Recipient, the Department will take the Recipient's view into account in deciding what action to take as a result of the breach.

23. Notices

23.1. Format, addressing and delivery

23.1.1. A notice under this Agreement is only effective if it is in writing, and dealt with as follows:

a. *if given by the Recipient to the Department* - addressed to the Department at the address specified in Item M [Notice] or as otherwise notified by the Department; or

b. *if given by the Department to the Recipient* - given by the Department and addressed (and marked for attention) as specified in Item M [Notice] or as otherwise notified by the Recipient.

23.1.2. A notice is to be:

a. signed by the person giving the notice and delivered by hand;

b. signed by the person giving the notice and sent by pre-paid post; or

c. transmitted electronically by the person giving the notice by electronic mail or facsimile transmission.

23.2. When notice is effective

23.2.1. A notice is deemed to be effected:

a. *if delivered by hand* - upon delivery to the relevant address;

b. *if sent by post* - upon delivery to the relevant address; or

c. *if transmitted electronically* - upon actual receipt by the addressee.

23.2.2. A notice received after 5.00 pm, or on a weekend or public holiday in the place of receipt, is deemed to be effected on the next Business Day in that place.

24. General Provisions

24.1. Audit and access

24.1.1. The Recipient agrees:

a. to give the Department, or any persons authorised in writing by the Department, access to premises where obligations under this Agreement are being carried out; and

b. to permit those persons to inspect and take copies of any Material relevant to this Agreement.

24.1.2. The rights referred to in clause 24.1.1. are subject to:

a. the Department providing reasonable prior notice;

b. the reasonable security procedures in place at the premises; and

c. if appropriate, execution of a deed of confidentiality by the persons to whom access is given.

24.1.3. The Auditor-General and the Privacy Commissioner are persons authorised for the purposes of clause 24.1.1.

24.1.4. This clause 24.1 does not detract from the statutory powers of the Auditor-General or the Privacy Commissioner.

24.2. Insurance

24.2.1. The Recipient agrees:

a. to effect and maintain the insurance specified in Item G [Insurance]; and

b. on request, to provide proof of insurance acceptable to the Department.

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24.2.2. This clause 24.2 continues in operation for so long as any obligations remain in connection with this Agreement.

24.3. Conflict of interest

24.3.1. In this clause 24.3:

Conflict means any matter, circumstance, interest or activity involving or affecting the Recipient, its Personnel or subcontractors which may or may appear to impair the ability of the Recipient to perform the Activity diligently and independently.

24.3.2. The Recipient warrants that, to the best of its knowledge after making diligent inquiry, at the Date of this Agreement no Conflict exists or is likely to arise in the performance of the Recipient's obligations under the Agreement.

24.3.3. If during the Term a Conflict arises, the Recipient agrees to:

a. notify the Department immediately;

b. make full disclosure to the Department of all relevant information relating to the Conflict; and

c. take any steps the Department reasonably requires to resolve or otherwise deal with that Conflict.

24.4. Relationship of parties

24.4.1. The Recipient is not by virtue of this Agreement an officer, employee, partner or agent of the Department, nor does the Recipient have any power or authority to bind or represent the Department.

24.4.2. The Recipient agrees:

a. not to misrepresent its relationship with the Department; and

b. not to engage in any misleading or deceptive conduct in relation to the Activity.

24.5. Waiver

24.5.1. A failure or delay by a party to exercise any right or remedy it holds under this Agreement or at law does not operate as a waiver of that right.

24.5.2. A single or partial exercise by a party of any right or remedy it holds under this Agreement or at law does not prevent the party from exercising the right again or to the extent it has not fully exercised the right.

24.6. Variation of Agreement

24.6.1. Except for action the Department is expressly authorised to take elsewhere in this Agreement, no variation of this Agreement is binding unless it is agreed in writing and signed by both parties.

24.7. Assignment

24.7.1. The Recipient cannot assign its obligations, and agrees not to assign its rights, under this Agreement without the Department's prior written approval.

24.8. Survival

24.8.1. The operation of clauses 2.5 [Review], 7 [Assets], 8 [Records], 11 [Intellectual property], 12 [Confidential Information], 13 [Privacy], 15 [Indemnity], 16 [Dispute resolution], 24.2 [Insurance] and any other provision which expressly or by implication from its nature is intended to continue survive the expiration or earlier termination of this Agreement.

24.8.2. Clauses 14 [Acknowledgement and publicity] and 24.1 apply for the Term and for a period of 7 years from the date of expiration or earlier termination of the Agreement.

24.9. Compliance with legislation and policies

24.9.1. The Recipient agrees to comply with any provision of a statute or subordinate legislation of the Commonwealth, or of a State, Territory or local authority applicable to its performance of this Agreement.

24.9.2. The Recipient agrees, in carrying out its obligations under this Agreement, to comply with any of the Department's policies as notified, referred or made available by the Department to the Recipient (including by reference to an internet site), including those listed in Item K [Compliance with policies].

24.10. Applicable law and jurisdiction

24.10.1. This Agreement is to be construed in accordance with, and any matter related to it is to be governed by, the law of the Australian Capital Territory.

24.10.2. The parties submit to the jurisdiction of the courts of that Territory.

SCHEDULE 1 PARTICULARS

A. Program and Activity

(Recital A, clauses 1.1.1 and 2.1.1)

A.1. Program

Under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) listed threatened species (except one that is extinct or is a conservation dependent species) and threatened ecological communities may be protected, conserved and managed by recovery plans. Recovery plans set out the research and management actions necessary to stop the decline of, and support the recovery of, the listed threatened species or threatened ecological communities so that its chances of long term survival in nature are maximised.

A.2. Activity

A.2.1. Preparation of National Recovery Plans for the Natural Temperate Grassland of the Victorian Volcanic Plain Ecological Community and Southern Bent-wing Bat *Miniopterus schreibersii bassanii* suitable for adpotion under the EPBC Act.

A.2.2. The Activity Period commences on the Date of this Agreement and ends on 28 May 2010.

A.2.3. The Activity is made up of the following:

a. development of a recovery plan for the Natural Temperate Grassland of the Victorian Volcanic Plain of Victoria ecological community. (note: It is anticipated that the Grassy Eucalypt Woodland of the Victorian Volcanic Plain ecological community will soon be listed under the EPBC Act. In this event, the Department will liaise with the recipient about the possibility of undertaking a regional recovery plan incorporating both ecological communities and all EPBC listed species occurring with such a region)

b. development of a recovery plan for the Southern Bent-wing Bat *Miniopterus schreibersii bassanii*

A.2.4. In performing the Activity, the Recipient is required to perform the tasks and achieve the Milestones (including those relating to the provision of Reports) specified in this Item A of the Schedule.

A.2.5. The Objectives of the Activity are to:

a. complete draft recovery plans that meet the requirements of EPBC Act section 270 for the Natural Temperate Grassland of the Victorian Volcanic Plain Ecological Community and the Southern Bent-wing Bat *Miniopterus schreibersii bassanii;*

b. improve knowledge and mapping of the distribution of the above community, to help ensure protection and to guide recovery and restoration efforts;

c. raise awareness regarding the implications of the ecological community listing among land management agencies, and help build the capacity of local communities and relevent agencies to implement best practice management and recovery actions for the community.

A.2.6. The Recipient shall undertake the tasks, achieve the Milestones and provide Reports as set out in the table below:

Table 1 Development of a recovery plan for the Natural Temperate Grassland of the Victorian Volcanic Plain of Victoria ecological community and the Southern Bent-wing Bat *Miniopterus schreibersii bassanii*

Ref	Tasks and Milestones	Date due
1.	Prepare draft recovery plan outlines for the Natural Temperate Grassland of the Victorian Volcanic Plain of Victoria ecological community the Southern Bent-wing Bat *Miniopterus schreibersii bassanii.*	31 January 2010
2.	In preparation of the recovery plan for Southern Bent-wing Bat *Miniopterus schreibersii bassanii* undertake the following tasks: • collate research and incorporate new information about the species ecology and the significance of threats; and • seek necessary state endorsement.	28 May 2010
3.	In preparation of the recovery plan the Natural Temperate Grassland of the Victorian Volcanic Plain of Victoria ecological community undertake the following tasks: • collate available information of this ecological community, in particular distributional information; • identify priority areas and any additional mapping requirements for the ecological community; and • seek necessary state endorsement.	28 May 2010
4.	Provide half yearly progress and performance Report (see requirement at Item E) detailing the performance and completion of tasks and Milestones and expenditure during the seven months to 31 December 2009.	31 January 2010
5.	Provide final Report (see requirement at Item E) detailing the performance and completion of tasks and Milestones and expenditure to due 28 May 2010.	28 May 2010
6.	Complete and submit a self-compliance assessment of the plan as per the Recovery Plan Checklist (at Appendix 1) when submitting recovery plan	28 May 2010

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7.	Address any issues identified by the Department in the final draft and resubmit plan.	60 days after receiving comments
8.	Consider any comments received during the public comment process undertaken by the Department and, if necessary, revise the recovery plan	60 days after receiving comments
9.	Address any issues identified in the recovery plan by the Threatened Species Scientific Committee	60 days after receiving comments
10.	Provide financial Report in accordance with the requirements of clause 9.	22 September 2010

B. Funding and Payment

(clauses 1.1.1, 3.1, 4)

B.1.1. The total Funding for the Activity is **$210,000** GST exclusive. Subject to the terms of this Agreement (including this Item B), the Funding will be paid as follows:

Table 2 Development of a recovery plan for the Natural Temperate Grassland of the Victorian Volcanic Plain of Victoria ecological community and the Southern Bent-wing Bat *Miniopterus schreibersii bassanii*

Payment	Condition	Amount (exclusive of GST)
Initial	Upon signing of Agreement	$84,000
Progress	Upon the Department's acceptance of the progress and performance Report (a draft recovery plan outline due 31 January 2010) detailing the performance, completion of tasks and Milestones and expenditure during the seven months to 31 December.	$84,000
Final	Upon the Department's acceptance of a final Report (a draft final recovery plan due 28 May 2010)and a draft of the financial Report as required by Clause 9.	$42,000
	Total:	$210,000

B.1.2. Each payment of Funds specified in Item B.1.1 is subject to:

s47F

a. the Recipient having completed the part of the Activity (including any Milestone) that is a condition of the payment to the satisfaction of the Department;

b. the Recipient having provided all Reports that were due on or prior to the payment date; and

c. where a taxable supply is made, the Recipient having provided a correct and complete tax invoice to the Department (except where the Department has issued a RCTI to the Recipient), or where no taxable supply is made, the Recipient providing an invoice to the Department.

B.1.3. Subject to the terms of this Agreement (including this Item B), the Department will make a payment of Funds to the Recipient within 30 Business Days of the conditions in Item B.1.2 being satisfied.

B.1.4. The Recipient is not required to comply with clause 4.2.1b.

C. Recipient Contributions and Other Contributions

(clause 6)

C.1. Recipient Contributions

C.1.1. Not applicable.

C.2. Other Contributions

C.2.1. Not applicable.

D. Budget

(clauses 4.6 and 4.7)

D.1.1 The Recipient shall provide a detailed draft budget for each Financial Year of the Activity Period (other than those covered by the Budgets already included in this Item D of the Schedule) for the consideration and acceptance of the Department two (2) months prior to the beginning of that Financial Year.

D1.3 Payment of Funds for these years is subject to the terms of this Agreement and acceptance by the Department of the draft budget for the Financial Year.

D1.4 If the Department accepts a draft budget it will become the Budget for the relevant Financial Year of the Activity Period and be deemed to be incorporated into this Item D of the Schedule as at the date the Department notifies the Recipient that the draft budget is approved.

E. Reporting

(clauses 1.1.1, 9)

E.1.1. The Recipient must provide, in accordance with clause 9 [Reporting] and this Item E [Reporting], four types of report:

s47F

a. progress and performance Reports (which will include some financial information);

b. financial Reports (as indicated in clause 9);

c. a final Report; and

d. other Reports (but only if requested by the Department).

E.2. Progress and Performance Reports

E.2.1. The Recipient must provide the Department with progress and performance Reports at the following times:

a. if the Recipient undertakes the Activity at any time during the period 1 July to 31 December in any year, and the Activity is not completed by 31 December, the Recipient must submit a half-yearly progress and performance Report by 31 January of the following year in relation to the part of the Activity undertaken during the six months to 31 December; and

b. if the Recipient does not finalise the Activity prior to 30 June, must submit a yearly progress and performance Report to the Commonwealth by 31 July, in relation to the part of the Activity undertaken during the preceding 12 months to 30 June.

E.2.2. Each progress and performance Report must include, but need not be limited to, the following information for the Reporting period:

a. the Recipient's name;

b. the names of all the Recipient's subcontractors;

c. the full Activity title;

d. the amount of Funding payable under the Agreement;

e. the Reporting period (being the part of the Activity Period to which the Report relates);

f. Activity performance information including:

   i. outline of the draft recovery plan;

   ii. a discussion and statement as to whether the timeframes and Milestones for the Activity (and specifically during the Report period) are being met and an explanation of any delays that have occurred, including the reasons for those delays and the action the Recipient proposes to take to address the delay and the expected effects (if any) the delay will have on the Activity (including subsequent Milestones and the overall completion of the Activity).

g. financial information (prepared by a Qualified Accountant who, if notified by the Department, must also be a person acceptable to the Department) including the following supporting documentation:

   i. an income and expenditure statement for the Activity for the Financial Year to date compared with the Budget, this must include details of the

receipt and expenditure of the Funds, the Recipients Contributions and Other Contributions including a statement on the amount and use of all Activity Generated Income;

ii. a schedule of the Assets created, acquired written-off or Disposed of during the Financial Year to date compared with the Budget;

iii. if requested by the Department, a list, and amounts, of debtors and creditors (if the financial statements are prepared on a cash basis) or the amount of accruals and pre-payments (if the financial statements are prepared on an accrual basis) in respect of the Activity;

iv. the balance of the account referred to in clause 4.2.1.b (if required to keep a separate account), or the balance of the Funding;

v. a statement of how much money the Recipient needs to meet current liabilities under legal commitments entered into it pursuant to this Agreement;

vi. if requested by the Department, quarterly completed business activity statements as required by the Australian Taxation Office, where applicable; and

vii. a statement as to whether the Activity is proceeding within Budget, and if it is not, an explanation of why the Budget is not being met and the action the Recipient proposes to take to address this.

E.3. Final Report

E.3.1. The final Report must be a stand-alone document that can be used for public information dissemination purposes. The final Report will be a final draft recovery plan due on 28 May 2010 or within 30 days of the earlier termination of this Agreement.

E.3.2. The final Report must include:

a. report on consultation undertaken in the development of each recovery plan;

b. have attached a draft final copy of the recovery plan endorsed by the state;

c. include a self-compliance assessment of the plans as per the Recovery Plan Checklist (at Appendix 1); and

d. evaluate the Activity and include a detailed discussion as to whether the Objectives of the Activity were achieved, including performance indicators, if any, and if not, an explanation of why any Objectives were not met.

E.3.3. The Recipient must also include in the final Report a discussion of any other matters, relating to the evaluation of the Activity, which the Department notifies the Recipient is required to be included in the final Report. Any such requirement will be notified by the Department at least 20 Business Days before the final Report is due.

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E.4. Financial Reports

E.4.1. The Recipient must also include the following financial information in the financial reports required under clause 9.2:

a. No additional financial information required.

E.4.2. Pursuant to clause 9.3.1, the audited statement referred to in clause 9.2.1c and the statement referred to in clause 9.2.2 must also contain the following requirements:

a. No additional requirements.

E.5. Other Reports

E.5.1. Throughout the Activity Period, the Department may require the Recipient to provide ad hoc Reports concerning:

a. any significant developments concerning the Activity; and

b. any significant delays or difficulties encountered in performing the Activity in accordance with the Agreement.

E.5.2. The Recipient must provide any such ad-hoc Reports within the timeframe notified by the Department.

F. Assets

(clauses 1.1.1 and 7)

F.1.1. Acquisition of assets not allowed.

G. Insurance

(clause 24.2)

G.1.1. The Recipient must maintain:

a. workers compensation insurance as required by law where the Recipient carries out activities under this Agreement;

b. public liability insurance to the value of at least $10 million for each and every claim, or occurrence giving rise to a claim, in respect to activities undertaken under this Agreement, where occurrence means either a single occurrence or a series of occurrences if these are linked or occur in connection with one another from one original cause, as the case may be; and

c. insurance against any loss or damage to an Asset for its full replacement cost including where relevant the costs of demolition and removal of debris and the cost of architects, engineers and other consultants.

s47F

H. Subcontracting

(clause 2.3)

H.1.1. The following subcontractors are approved with the stated terms and conditions:

a. None specified

I. Acknowledgement and publicity

(clause 14)

I.1.1. The Recipient must acknowledge the provision of the Funding by the Australian Government represented by the Department of the Environment, Water, Heritage and the Arts in the following way:

a. In all communications, media and reports directly related to Activities funded under this agreement, the Commonwealth government's contribution is to be highlighted and copies sent to the Department of the Environment, Water, Heritage and the Arts.

J. Specified Personnel

(clauses 1.1.1 and 2.4)

J.1.1. The following person or persons with the following skills must complete the following parts of the Activity:

a. None specified.

K. Compliance with policies

(clause 24.9)

K.1.1. The Recipient must comply with the following laws in carrying out the Activity:

a. Equal Opportunity for Women in the Workplace Act 1999;

b. Racial Discrimination Act 1984;

c. Sex Discrimination Act 1984;

d. Disability Discrimination Act 1992;

e. Crimes Act 1914;

f. Criminal Code Act 1995;

K.1.2. The Organisation must comply with the following policies in carrying out the Activity:

a. None specified

L. Corporate Governance

(clause 21)

L.1.1. Not applicable.

s47F

M. Notice

(clause 23.1)

M.1.1. The Department's details are as follows:

s47F

Policy Officer, Recovery Planning and Implementation Section, Approvals and Wildlife Division

Department of Environment, Water, Heritage and the Arts

GPO Box 787, Canberra ACT 2601.

s47F

M.1.2. The Recipient's details are as follows:

s47F

Manager Threatened Species and Communities

Biodiversity and Ecosystem Services

Department of Sustainability and Environment

Level 2/8 Nicholson St, East Melbourne, VIC 3002

s47F

N. Confidential Information

(clause 12)

N.1. Department's Confidential Information

N.1.1. Agreement Provisions/Schedules/Attachments

Item	Period of Confidentiality
None specified	

N.1.2. Agreement related material

Item	Period of Confidentiality
None specified	

N.2. Recipient's Confidential Information

N.2.1. Agreement Provisions/Schedules/Attachments

Item	Period of Confidentiality
None specified	

N.2.2. Agreement related material

Item	Period of Confidentiality
None specified	

O. Existing Material

(clause 11.3)

O.1.1. Not applicable.

P. Commonwealth Material

(clause 10)

P.1.1. Not applicable.

s47F

Signatures

This Funding Agreement is made on

SIGNED for and on behalf of the Commonwealth of Australia represented by its Department of the Environment, Water, Heritage and the Arts by:)

s47F

Name of signatory

s47F

Signature

27.5.09

In the presence of:

s47F

Name of witness

s47F

Signature of witness

SIGNED for and on behalf of the State of Victoria represented by its Department of Sustainability and Environment by:)

s47F

Name of signatory

s47F

Signature

In the presence of:

s47F

Name of witness

s47F

Signature of witness

s47F

APPENDIX 1

RECOVERY PLANNING – COMPLIANCE CHECKLIST FOR LEGISLATIVE AND PROCESS REQUIREMENTS

to be provided with recovery plans for terrestrial threatened species and ecological communities

This checklist guides assessment of a recovery plan against the legal requirements of the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) and Regulations, and policy requirements of the Department of the Environment and Heritage (DEH), Authors need to complete and submit the checklist to DEH when submitting a final draft recovery plan. At this stage, authors should ensure plans are ready for publication (proof read, formatted, page numbered, etc). If any requirements have not been met, DEH may contact the author and/or seek expert opinion on changes, so that the plan qualifies for adoption or making. Further detail on the requirements can be found in the Recovery Planning Guidelines and the explanatory notes attached.

Title of Plan:

Author: **Date of Plan:**

Requirements	**Yes/No**	**Description of how the requirement has been met; OR reasons for not meeting a requirement**
Processes To Be Followed During Development	**Process followed?**	**Provide a statement on how you have followed these processes; OR provides reasons for not following the processes**
1. Consultation with relevant State and Territory **Governments** and/or Australian Government Departments or agencies	**YES**	*How requirement met:*
2. Consultation with relevant experts, interested parties, regional NRM bodies and other **stakeholders,** including those who will be responsible for implementing proposed actions	**YES**	*How requirement met:*
3. A formal period of **consultation with the public** (NOTE: the department places plans on public exhibition for 3 months, except where public exhibition has already been undertaken by States/Territories)	**YES**	*How requirement met:*

Issues To Be Considered During Development **These do not need to be specifically stated in the plan** **Has regard been had to the following:**	**Issue considered?**	**Provide a statement on how you have considered these issues; OR provide reasons for not considering the issues**
4. the **Objects** of the EPBC Act? Object d) cooperative approach must be addressed here [a)-c) met by having Recovery plan; e) see 5 below; f)-g) see 6 below] EPBC Act s270(3)(a)	**YES**	*How considered:*
5. meeting Australia's obligations under **international agreements** relevant to the species/ecological community (EC) to which the plan	**YES**	*How considered:*

relates? EPBC Act Object e) and s270(3)(d)		
6. Indigenous People EPBC Act Objects f) and g) and s270(3)(e) - roles and interests in the conservation of Australia's biodiversity? - use of knowledge of indigenous people?	**YES**	*How considered:*
7. minimising any significant adverse **social and economic impacts**, consistently with the principles of ecologically sustainable development? EPBC Act s270(3)(c)	**YES**	*How considered:*
8. the most **efficient and effective use of resources** allocated for the conservation of species and ECs, including integration & linkages with existing management plans and programs? EPBC Act s270(3)(b)	**YES**	*How considered:*

Information to be included in the plan	**Included in Plan? & Page or Section no.**	**Provide a short summary of the relevant information from the plan; OR provide reasons for not meeting a requirement and how this will be rectified eg. an action may included in the plan to obtain the required information**
Species/Community name and conservation status: EPBC Act s269A		
9. Is the plan relevant to at least one species or EC listed as threatened under the EPBC Act? NOTE: The plan is not to review status - if the author believes at any point a status change may be warranted, contact DEH immediately (rather than when the plan is complete)	**YES** **Pg/Section:**	*Status:*
10. Are the taxonomic and common names/EC descriptions as listed in the EPBC Act included?	**YES** **Pg/Section:**	*Name/description:*
Distribution: EPBC Reg 7.11(1)(a) **11.** Does the plan adequately describe, with spatial information, the location of each species/EC within the Australian jurisdiction, OR state if the distribution is not known? (distribution outside Australia to be noted only). NOTE: If the information is confidential provide separately, and include generic information only within the plan. More detailed information eg. habitat types, tenure/landuse, population census data, should also be provided separately.	**YES** **Pg/Section:**	*Distribution:*

Population/s: EPBC Reg 7.11(1)(c) **12.** Does the plan describe with spatial information important populations necessary to long term recovery and survival OR state that important populations can't be identified/located?	**YES** **Pg/Section:**	*Population/s:*

Habitat critical to survival: EPBC Act s270(2)(d); Reg 7.11(1)(b); 7.11(3)

13. Does the plan concisely define the habitat that are critical to survival, based on matters in EPBC Reg 7.09 (see notes attached)?	**YES** **Pg/Section:**	*Definition of habitat critical to survival:*
14. Does the plan describe, with spatial information, these areas, OR state that habitat critical can't be located? NOTE: If this information is confidential, please provide separately, and include generic location information only within the plan.	**YES** **Pg/Section:**	*Location of habitat critical to survival:*

Threats: EPBC Act s270(2)(ca); s270(2)(e); Reg 7.11(1)(d)		
15. Does the plan identify the known and potential threats? NOTE: detailed analyses of threats, including relevant ecological information, should be provided separately.	**YES** **Pg/Section:**	*Threats:*
16. Does the plan identify, with spatial information, the areas affected by threats OR state that the areas affected and/or their location are not known?	**YES** **Pg/Section:**	*Location of threats:*
17. Does the plan identify populations known to be under particular pressure of survival?	**YES** **Pg/Section:**	*Populations threatened:*

Objectives: EPBC Act s270(2)(a) **18.** Does the plan state appropriate objectives directly related to the recovery of the species, which can be achieved by implementing the proposed recovery actions?	**YES** **Pg/Section:**	*Objectives:*

Performance Criteria and Evaluation: EPBC Act s270(2)(b); s270(2)(g)(ii)		
19. Does the plan state measurable criteria that provide a suitable set of measures to assess achievement of the objectives?	**YES** **Pg/Section:**	*Performance criteria:*
20. Does the plan identify who will be involved in evaluating the performance of the plan and when?	**YES** **Pg/Section:**	*Evaluation:*

Actions EPBC Act s270(1); s270(2)(a), (c), (d) & (e); Reg 7.11(2)(a) **21.** Does the plan identify appropriate on-ground actions necessary to: – stop decline and support recovery? – achieve the objectives? – measure against all performance criteria? – reduce and manage the threats? – protect and restore habitat, including habitat critical to survival? – protect important populations and populations under particular pressure? – fill critical information gaps?	**YES** **Pg/Section:**	*Actions:*

Cost EPBC Act s270(2)(f) **22.** Does the plan realistically estimate the duration and cost of the recovery process? NOTE: only costs specific to recovery should be included; funding already provided through other programs or for broader activities with indirect benefits can be identified, but should not be included as a cost of implementing the recovery plan	**YES** **Pg/Section:**	*Cost and duration:*
Management practices EPBC Act s270(1); Reg 7.11(2)(a); **(b)** **23.** Does the plan identify to the extent possible the management practices necessary to avoid a significant adverse impact on the species or EC, any actions which could result in a significant impact, and broad activities which could benefit the species but aren't targeted to its recovery?	**YES** **Pg/Section:**	*Management practices:*
Biodiversity benefits/impacts EPBC Act s270(2)(h) **24.** Does the plan specify whether there are any major benefits or negative impacts to non-target native species or ECs that will be affected by the plan's implementation?	**YES** **Pg/Section:**	*Biodiversity benefits/impacts:*
Affected Interests EPBC Act s270(2)(g)(i) **25.** Does the plan identify interests that will be affected by the plan's adoption or implementation?	**YES** **Pg/Section:**	*Affected Interests:*
Social and Economic benefits/impacts EPBC Act s270(3)(c) **26.** Does the plan briefly describe the social/economic benefits and impacts?	**YES** **Pg/Section:**	*Social and economic benefits/impacts:*

OFFICE USE ONLY

THE DEPARTMENT OF THE ENVIRONMENT AND HERITAGE RECOMMENDATION:
The recovery plan complies / does not comply with the EPBC Act and regulations
NAME: DATE:

s22

From: s47F
Sent: Wednesday, 23 June 2010 5:01 PM
To: s47F
Subject: RE: VVP draft Plan [SEC=PERSONAL]

Hs47F

Thank-you for your e-mail.

We have read the draft VVP plan and I have discussed it with s47F At this stage, we will make the final payment on the contract, but as the plan is far from finished, we need to discuss options for delivery of a final satisfactory plan. We acknowledge that the contract was for delivery of a RP for the grasslands and understand you have expended some funds towards a woodlands component. While it makes sense and is our preference to combine the two ECs into a regional type plan, at this stage we do not know our budget for next year and therefore are in no position to commit any further funding for this project at this time. In the interests of getting a completed recovery plan, we would like you to complete at this stage a RP for the grasslands only using the remaining unspent funding for that purpose. Hence we will release final payment and negotiate in good faith towards that end.

We would like to set up a phone hookup next Monday morning if possible, with yourself and s47F to discuss the direction of this plan, and negotiate a timeline for its completion. While you have provided us with an indicative breakdown of budget to date, we would also like to discuss the breakdown in detail. This will help clarify not only areas of expenditure and reasons why but will also serve as a guide for us as we develop and refine budget models for future regional recovery plan development. across Australia. We also need to tease out what proportion of funds went into actions relating to the woodlands and likely investment required to complete that component if we are to secure any future funds for that plan.

thanks

s47F

From: s47F
Sent: Tuesday, 22 June 2010 4:30 PM
To: s47F
Cc: s47F
Subject: RE: VVP draft Plan [SEC=PERSONAL]

hi s47F
Thanks for your email - sorry to hear you've been crook again, but I've been told that once you get pneumonia it takes

a while to bounce back.
Re the funding - it's pretty approximate but I at a guess:

- data collection/modelling was about 50% (this includes site visits, assessment, collection of structural data, development of BN model data). BN modelling is anticipated to be a large part of future work.
- consultation (establishing a stakeholder database, stakeholder interviews, collation of data on assorted roles) 40%,
- mapping 10%. This mapping figure is low because it was mostly a matter of collecting existing modelled data, but a large component of the ongoing project will be ground-truthing of the modelled maps. Part of the consultation exercise also involved seeking stakeholder feedback (especially local governments) on their own mapping and distributional data, and general awareness of key locations.

Re actions - as I mentioned over the phone, relevant actions are held on the ABC database. I was under the impression you didn't need to see the entire caboodle at this stage, so I just identified categories of actions. If you like, I can give you a printout of 1962 current actions but it's a whopping big document.

from
regards

s47F
Biodiversity & Ecosystem Services Division
Department of Sustainability and Environment
2nd floor 8 Nicholson Street
East Melbourne VIC 3002
s47F

s47F @environment.gov.au>

22/06/2010 01:41 PM

To s47F
cc
Subject RE: VVP draft Plan [SEC=PERSONAL]

Hi s47F

I have actually been away all of last week and yesterday off sick, i think it must be the season of winter sickness.

I have just had a look at this now, and will discuss with s47F and s47F this afternoon and get back to you.

With the costing, we just needed a very rough break down of what portion of the $170k was spend on each component of the plan. i.e. mapping, consultation, data collection and collation etc. Also if there were any workshops run? We really need this breakdown asap.

Also just double checking, we have no actions in the plan as yet?

thanks

s47F

From: s47F
Sent: Thursday, 17 June 2010 5:57 PM
To: s47F
Cc: s47F
Subject: VVP draft Plan

Hi s47F
Please find attached the Draft Plan for the VVP, including the two EPBC listed communities, the Grassland and the Grassy Woodlands, and 27 EPBC-listed species. This is NOT ready for public comment as it has not been approved

by DSE, and is not complete. Information on past management actions and future management actions are held in detail on the ABC database, but a summary is provided in this Draft.
I initially tried to send you a version of the draft including maps, but it exceeds the message size so I've had to remove the maps - I'll send them separately.

I hope this will satisfy the requirements of our contract with you, and allow you to release to us the final payment for work done to date. Please let me know if you are not satisfied with the draft so that I may be able to address problems prior to your deadline.
regards

s47F

Biodiversity & Ecosystem Services Division
Department of Sustainability and Environment
2nd floor 8 Nicholson Street
East Melbourne VIC 3002
s47F

s47F

From: s47F
Sent: Friday, 16 January 2015 9:39 AM
To: s47F
Subject: RE: FW: VVP recovery plan [SEC=UNCLASSIFIED]

Hi s47F

No worries at all, I'm sorry for taking so long to get back to you too, I have been a bit sick this week.

The recovery plan for the natural temperate grassland and grassy eucalypt woodland of the Victorian volcanic plain is currently back with DELWP. This was with us for a compliance check prior to public exhibition however was recalled by DELWP last year as they considered the plan to be sufficiently out of date that it needed reviewing (particularly to take into account the Melbourne strategic review). I believe DELWP are currently trying to find resources to undertake this review and update the plan. I can't provide any timeframes on when this will be done at this stage.

With regards to GA intention to undertake the CAP process I think it is a great idea. These processes often create a very good conservation document, however these are often difficult to fit within the recovery plan framework. For this reason it would be great to have someone with extensive recovery planning background attend the workshops and help steer them in the right direction. However obviously this depends on resources and availability of staff which is a difficult issue at the moment. s47F would probably be the best person to attend, however is away on leave at the moment for another week so I cannot discuss with him whether he would be available or if he thinks it would be appropriate – sorry I can't be more helpful here.

The plan has not yet been out for public exhibition so is not in the public domain. I am not sure where they could have gotten a copy of it from, however given it is likely to be reviewed and updated I would suggest caution in putting too much time and effort into reviewing it at this stage.

Let me know if you need any more information and how your chat with s47F goes.

Cheers

s47F
Terrestrial Species Conservation Section | Wildlife, Heritage and Marine Division
Department of the Environment
s47F A ACT 2601
www.environment.gov.au

From: s47F @delwp.vic.gov.au]
Sent: Tuesday, 13 January 2015 2:48 PM
To: s47F
Cc: s47F @delwp.vic.gov.au
Subject: Re: FW: VVP recovery plan [SEC=UNCLASSIFIED]

Hi s47F
Apols for the long delay in getting back to you. I'm now back from leave and tackling that email mountain!

See email below from GA with summary of the workshop. Note that they have wrongly identified me in the apologies as being from DEPI, and that several participants identified the need to involve Aust Govt.

Key (predictable) outcome of the workshop is agreement to proceed with the CAP process.
Interestingly, also 'All parties agreed to attend (or have a representative attend) at least the next workshop which will review the outcomes of the National Recovery Plan.' Is the (draft) recovery plan in the public domain? I thought not.

I have also attached a subsequent email from s47F with the date (19 Feb) for the first CAP workshop.

I haven't yet called s47F to touch base but plan to do so later this week so it would be good if we could have a chat first, once you have absorbed all of this.

Cheers
s47F

s47F
Assistant Director / Victoria Facilitator

Victoria Tasmania Section Biodiversity Conservation Division
PO Box 3100 Bendigo 3554
s47F www.nrm.gov.au

Australian Government
Department of the Environment

----- Forwarded by s47F /DSE/VICGOV1 on 13/01/2015 02:40 PM -----

s47F

Date: 19/12/2014 08:41 AM
Subject: Victorian Volcanic Plains Conservation Action Planning - 1st Workshop 19 February 2015.

Hi All, as mentioned previously, Greening Australia along with Trust for Nature are keen to get the 1st VVP CAP workshop underway in early 2015.

With this in mind we have decided upon **Thursday the 19th of February**, at the CCMA office in Colac (64 Dennis St), 10am - 3pm.

I will follow this email up with a calendar invite.

A draft agenda will be emailed out in late January 2015 for comment and/or additions.

As always please do not hesitate to give me a call to discuss any aspect of the CAP process.

I will be away on leave from the 22nd December, returning on the 12th of January 2015.

Can I take this opportunity to wish you all the very best for the festive season and I look forward to catching up in the new year to launch this exciting CAP process for the VVP,

Kind Regards,

s47F
Grassland Restoration Officer
s47F

----- Forwarded by s47F /DSE/VICGOV1 on 13/01/2015 02:34 PM -----

s47F

Date: 05/12/2014 12:43 PM
Subject: VVP CAP Scoping meeting - Summary of Discussion

Hi All, please find attached a summary of the discussion that took place in Colac on Tuesday the 2nd of December. Could you please take the time to read over the attached document and let me know if you feel it accurately represents the thoughts and ideas expressed on the day.

I would like to take this opportunity to thank all those involved in contributing to this early discussion around a Conservation Action Plan for the Victorian Volcanic Plains. For those of you who have been unable to participate, don't despair! We are at the very beginning of what promises to be an engaging process which I believe will deliver positive outcomes and actions for the VVP Bioregion.

Stay tuned for the workshop dates.

I look forward to your feedback,

Kind Regards,

s47F | Grassland Restoration Officer | Greening Australia
PO Box 118, LaTrobe University, Bundoora, VIC 3083
s47F | W www.greeningaustralia.org.au

From: s47F @environment.gov.au>
To: s47F @depi.vic.gov.au>,
Date: 19/12/2014 11:05 AM
Subject: FW: VVP recovery plan [SEC=UNCLASSIFIED]

Hi s47F

Sorry for taking so long to follow up on this - December has been pretty busy as I am sure you understand. Are you aware how the scoping meeting went in early December? If you can let me know the outcomes and any further information I can follow up with DEPI in the new year.

Cheers

s47F

s47F
Terrestrial Species Conservation Section | Wildlife, Heritage and Marine Division
Department of the Environment
p. 02 6274 1175 | GPO Box 787 CANBERRA ACT 2601
email s47F @environment.gov.au | www.environment.gov.au

From: s47F
Sent: Thursday, 20 November 2014 4:02 PM
To: s47F
Cc: s47F
Subject: FW: VVP recovery plan [SEC=UNCLASSIFIED]

s47F can you have a chat with s47F to see if he has any further info on the GA proposal. We might need to also have a chat with GA on their intent and how it might relate to the recovery plan. Am assuming they contributed to the recovery plan draft.

Cheers

s47F

From: s47F @depi.vic.gov.au]
Sent: Thursday, 13 November 2014 10:12 AM
To: s47F
Cc: s47F
Subject: RE: VVP recovery plan [SEC=UNCLASSIFIED]

Thanks s47F
I think s47F is returning in December
I attended the VVP Conservation Management Network meeting in Ballarat yesterday. Some good discussions, lots of good work going on, mostly funded by us through CMAs.
Interesting that Greening Australia is intending to do a Conservation Action Plan for the VVP - they are chasing $ to do it - see attached. Not sure what it will add beyond bringing stakeholders together. I think it should already be covered by the recovery plan if it ever sees the light of day. GA is running a scoping meeting in Colac on 2 Dec.
Cheers
s47F

s47F
Assistant Director / Victoria Facilitator

Victoria Tasmania Section Biodiversity Conservation Division
PO Box 3100 Bendigo 3554
s47F www.nrm.gov.au

Australian Government
Department of the Environment

From: s47F @environment.gov.au>
To: s47F @depi.vic.gov.au>,
Date: 12/11/2014 02:21 PM
Subject: RE: VVP recovery plan [SEC=UNCLASSIFIED]

Hi s47F , the draft plan went back to Vic for an update as we wanted to capture all the strategic assessment stuff. I'll need to chase up to see where it's at as I believe s47F is away on long leave.

Cheers

s47F

-----Original Message-----
From: s47F @depi.vic.gov.au]
Sent: Wednesday, 12 November 2014 10:56 AM
To: s47F
Subject: VVP recovery plan

Hi s47F
Quick question - any progress to report on the VVP plan?
Cheers
s47F

s47F

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s47F

From: s47F
Sent: Monday, 16 February 2015 6:25 PM
To: s47F @delwp.vic.gov.au'
Cc: s47F
Subject: FW: Greening Australia Conservation Action Plan [SEC=UNCLASSIFIED]

s47F FYI we contacted Vic raising concerns about the GA workshop travelling in a different direction from the draft recovery plan. Looks like s47F is now going armed with a copy of the draft plan. Hopefully that will steer the workshop in the general direction of draft objectives/actions of the RP.

Cheers

s47F

ps what's your preferred email?

From: s47F
Sent: Monday, 16 February 2015 4:27 PM
To: s47F
Subject: FW: Greening Australia Conservation Action Plan [SEC=UNCLASSIFIED]

Hi s47F

See s47F response below regarding the GA CAP process. s47F is the author of the plans so having her there should be helpful.

Cheers

s47F

From: s47F @delwp.vic.gov.au]
Sent: Monday, 16 February 2015 4:20 PM
To: s47F
Cc: s47F @delwp.vic.gov.au
Subject: Re: Greening Australia Conservation Action Plan [SEC=UNCLASSIFIED]

Hi s47F
We have spoken to s47F and she will take a copy of the plan to the CAP workshop, as she is attending. Hopefully this will avoid duplication of the work she's already done in the recovery plan.
Cheers
s47F

s47F | **Policy Officer | Environment Policy**
Land, Fire and Environment | Department of Environment, Land, Water & Planning
1/8 Nicholson St, East Melbourne, Victoria 3002
s47F @delwp.vic.gov.au

www.delwp.vic.gov.au

From: 's47F @environment.gov.au>

To: s47F @delwp.vic.gov.au>,
Date: 13/02/2015 11:15 AM
Subject: Greening Australia Conservation Action Plan [SEC=UNCLASSIFIED]

Hi s47F

We were just wondering whether you are aware that Greening Australia are planning to develop a collaborative Conservation Action Plan (CAP) for the Victorian Volcanic Plain? They have a CAP workshop meeting coming up on 19 February where I believe DELWP are being represented by s47F

Victorian have drafted the National Recovery Plan for the Natural Temperate Grassland of the Victorian Volcanic Plain and the Grassy Eucalypt Woodland of the Victorian Volcanic Plain. This plan was written by s47F and s47F but has not yet been taken through public exhibition or to the TSSC. DELWP recently recalled the plan as it is considered to be significantly out-dated and in need of substantial reworking.

We have some concerns that this CAP process may result in the duplication of a lot of work already undertaken during the recovery planning process with regards to setting objectives and actions or that the process ends up with a document that is inconsistent with the draft recovery plan. Given that this CAP process is likely to result in a way to drive community investment and involvement we see a real need to ensure that the two documents can be aligned.

Our preference would be for the CAP workshop participants to be able to work on a copy of the existing recovery plan or at least the draft objectives and actions. We have no expectation that you provide the plan, however if it is not achievable it would be good to have a mechanism to provide some guidance to the process. We feel that providing some level of guidance would value add to both the CAP process and the recovery planning process.

Give me a call if you would like to discuss further.

Cheers

s47F
Terrestrial Species Conservation Section | Wildlife, Heritage and Marine Division
Department of the Environment
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@environment.gov.au | www.environment.gov.au

FOI 181205
Document 5

s47F

From: s47F
Sent: Monday, 5 September 2016 11:29 AM
To: s47F @delwp.vic.gov.au'
Cc: s47F @delwp.vic.gov.au
Subject: RE: Query - Gippsland Red Gum and Grassy Woodland RP [SEC=UNCLASSIFIED]

Morning s47F and s47F

I've had a quick review of my notes from a couple of years ago regarding this plan (combined plan for both the Natural Temperate Grassland of the VVP and the Grassy Eucalypt Woodland of the VVP) and my understanding is that this plan was with DELWP for updating. However given your query I am guessing this is not the case and there has been a miscommunication along the line.

According to the information provided by s47F (DELWP employee working on recovery plans in 2014) the plan was provided to us for public exhibition in 2013 but some issues were identified (I believe regarding the lack of information on the Melbourne Strategic Review and potentially the length of the plan) and the plan was not released. s47F notes also state that 's47F suggested she would need to update the plan, but she is away until Dec 2014. Would we wait and try to negotiate s47F working on this? Or should another author be identified?'. I am unsure whether s47F ever discussed this with you s47F or whether she identified another author to update the plan? She has noted that s47F was the last author and that s47F should be consulted, so perhaps it is worth discussing with them whether they talked to s47F

Does DELWP have the resources to review and update the plan? If yes, then we can discuss how to progress from here. If not, then we may have to find an alternative to finalising the plan. Happy to discuss further.

Cheers

s47F

Terrestrial Species Conservation Section | Wildlife, Heritage and Marine Division
Department of the Environment and Energy
s47F @environment.gov.au | www.environment.gov.au

From: s47F @delwp.vic.gov.au]
Sent: Monday, 29 August 2016 11:57 AM
To: s47F
Cc: s47F @delwp.vic.gov.au
Subject: Re: Query - Gippsland Red Gum and Grassy Woodland RP

Hi s47F
I was actually as king about the Natural Temperate Grassland of the VVP and the Grassy Eucalypt Woodlands of the VVP, not the Gippsland communities.

regards
s47F

s47F
Biodiversity Strategy team | Biodiversity Division
Energy, Environment and Climate Change | Dept of Environment, Land, Water and Planning
Level 1, 8 Nicholson St, East Melbourne, Victoria 3002
s47F @delwp.vic.gov.au

Please Note: I work four days / week, usually every day except Wednesday.

From: s47F /DSE/VICGOV1
To: s47F @environment.gov.au>,
Cc: s47F DSE/VICGOV1@VICGOV1
Date: 29/08/2016 11:40 AM
Subject: Query - Gippsland Red Gum and Grassy Woodland RP

Hi s47F

It's a glorious sunny morning in Melbourne - hope you are getting some sunshine in Canberra. One of my colleagues s47F has had a query from the regions regarding the status of the Gippsland Red Gum and Grassy Woodland Recovery Plan. My records state that this has not yet been out for public consultation and requires an update and policy review. Are you able to give me an update on where this is at?

Thanks very much

s47F
NB: My current days of work are **Mondays, Tuesdays** and **Thursdays** only.

****

s47F **| Policy Officer | Ecological Policy Branch**
Energy, Environment and Climate Change
Department of Environment, Land, Water & Planning
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s47F @delwp.vic.gov.au

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INTERNAL COMMENT DRAFT AUGUST 2014

DRAFT

National Recovery Plan for the Natural Temperate Grassland of the Victorian Volcanic Plain and the Grassy Eucalypt Woodland of the Victorian Volcanic Plain

~~Version 6~~

~~February 2013~~

s47F and s47F

Australian Government

State Government Victoria Department of Environment and Primary Industries

Prepared by s47F and s47F
Department of Sustainability and Environment, East Melbourne, Victoria

Commented s47F Missing standard stuff – ISBN, disclaimer, citation etc.

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EXECUTIVE SUMMARY

The Victorian Volcanic Plain (VVP) bioregion occurs in he south west of Victoria, and covers over 2.3 million hectares or some 10.36 per cent% of the state. It contains two ecological communities that are listed as Critically Endangered under he Commonwealth *Environment Protection and Biodiversity Conservation Act* 1999 (EPBC Act), the *Natural Temperate Grassland of the Victorian Volcanic Plain* and he *Grassy Eucalypt Woodland of the Victorian Volcanic Plain*. Twenty-eight species of flora and fauna that have been listed under the EPBC Act are wholly or partially dependent on habitats within the VVP. A further four EPBC-listed species utilise the margins of the VVP (Spotspot-tailed Quollquoll, Greygrey-headed Flying flying Foxfox, Redred-tailed Black black Cockatoo cockatoo and Swift swift Parrotparrot).

Threats to the survival of the ecological communities and species include on-going land-clearing and agricultural intensification, altered fire regimes, weed invasion and inappropriate grazing regimes. This National Recovery Plan for the bioregion is the first recovery plan for the *Natural Temperate Grassland of the Victorian Volcanic Plain* and the *Grassy Eucalypt Woodland of the Victorian Volcanic Plain,* and complements 27 existing draft and adopted National Recovery Plans for the listed species. It describes the bioregion, listed species and ecological communities, their habitat and threats, and identifies recovery objectives and actions necessary to ensure the longterm survival of those species and ecological communities.

The plan will not address:

- other ecological communities within the geographic area of the ~~Victorian Volcanic Plain~~VVP
- other species, however threatened, that do not occur within the EPBC-listed ecological communities.

However, the actions aimed to protect and manage the two ecological communities will inevitably be relevant to other ecological communities on the VVP, and should therefore serve to improve the overall condition of biodiversity on the VVP.

The overall aim of this Recovery plan is to promote the recovery and prevent the extinction of the critically endangered ecological communities.

The specific objectives of this Recovery Plan are to:

1) Maintain and improve the condition and extent of the ecological communities throughout their geographic distribution.
2) Protect the ecological communities from threatening processes, potentially incompatible land use or catastrophic loss.
3) Increase knowledge of the ecology and management requirements of the ecological communities.
4) Improve linkages between remnants via restoration and enhancement.
5) Improve community awareness and support for the conservation and improved management of the ecological communities.

These objectives will be achieved through:

- ensuring no net loss in extent and condition of the ecological community throughout its geographic distribution
- increasing protection of good quality sites
- increasing landscape functionality of the ecological communities through management and restoration of degraded sites
- increasing transitional (i.e. margins and buffers) areas around remnants and linkages between remnants
- bringing about enduring changes in land management practices to increase the extent, integrity and function of the two ecological communities.

The Recovery Plan builds upon, and is consistent with, information in other National Recovery Plans and Action Statements for species associated with he Grassland and Grassy Woodland on the VVP. The Recovery Plan takes a multi-species approach to the recovery of the ecological communities and their component species. It does not replace individual National Recovery Plans developed under the EPBC Act or Action Statements developed under the Victorian *Flora and Fauna Guarantee Act 1988* (FFG Act) that have been prepared for threatened species and communities.

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Commented s47F Scientific names?

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PART A. COMMUNITY AND SPECIES INFORMATION

Description

1.1 Victorian Volcanic Plain Bioregion

The Victorian Volcanic Plain (VVP) has two subregions,[1] with much of the VVP found in Victoria and some near Mount Gambier in South Australia. This Recovery Plan is limited to the VVP in Victoria.

Two EPBC-listed ecological communities, the *Natural Temperate Grassland* (the Grassland) and the *Grassy Eucalypt Woodland* (the Grassy Woodland), occur within the Victorian Volcanic Plain bioregion, as identified in the Interim Biogeographic Regionalisation of Australia (IBRA). The Victorian Volcanic Plain (VVP) occurs in the south west of Victoria as shown in Figure 1, and covers over 2.3 million hectares or some 10.36~~%~~ per cent of the state, extending over 35 local government areas and five catchment management regions. The bioregion is roughly bounded by Portland to the west, Ararat to the north, Colac to the south, and Craigieburn in the east. Parts of this bioregion are also commonly referred to as the Western District, the Western Plains or the Basalt Plains.

The open and fertile grassy plains present highly productive agricultural lands for grazing and cropping. Consequently, the native grassy ecosystems have been reduced to a few small fragmented road and rail reserves and cemeteries, although some larger areas remain on private land. Much of the riparian habitat has been removed or severely reduced and almost all of the woodlands have been cleared. In all areas little regeneration occurs due to grazing and cropping practices. Throughout the 1970s incremental losses continued due to land use change such as railway realignments and development of public land.

Most of the region is private freehold dominated by agriculture, although there are some small blocks of public land. The bioregion is characterised by a volcanic plain vegetated mainly by native grasses and woodlands with many natural wetlands; of which more than 40% have been altered significantly.

The native vegetation of the Victorian Volcanic Plain bioregion is the most depleted of all the bioregions in the State, with only 15.6% native vegetation remaining (VEAC 2010).

Figure 1 - Map of the Victorian Volcanic Plain bioregion

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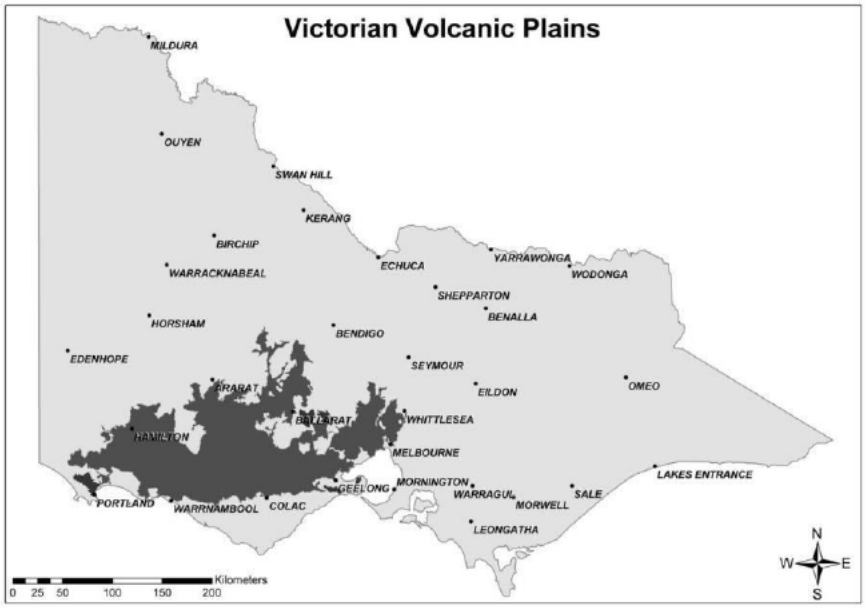
[1] The current Interim Biogeographical Regionalisation of Australia (IBRA) version 6.1 identifies 2 sub-regions of the VVP, but version 7 is anticipated to change the name of the region to *Southern Volcanic Plain*, leaving the current Victorian sub-region as the *Victorian Volcanic Plain*.



The VVP has a Mediterranean climate characterised by dry, hot summers, and cold, wet winters with frosts. January and February are the warmest months, with mean maximum temperatures ranging from 20 ° to 27°C, while the coldest temperatures occur in winter, with a mean minimum of 3 °C to a mean maximum as low as 10 °C (BOM 2010). Precipita ion is relatively consistent over the months, but with slightly more rain tending to fall in winter and spring. The average annual rainfall ranges from 500mm in he east to 700mm in the west (Stuwe 1986) , but the bioregion is subject t o a range of weather extremes, such as long periods of extreme dryness, higher than average temperatures and periods of high rainfall .

The distinctive geology of the VVP originated during the older and recent phases of the Newer Volcanics formation .

Climate

Geology

The earliest volcanic flows are dated to 4.6 million years ago, with a peak in activity around 2.4 million years ago at the beginning of the Quaternary Period, while the last eruption occurred some 7,000 years ago at Mt Napier (Joyce 1988). Today the VVP is described as an area of flat to gently undulating plains, with low peaks of long extinct volcanoes and stony rises denoting old lava flows. Much of he VVP lies beneath an elevation of 500m above sea level.

Several stages and types of lava flow have shaped the eventual drainage lines of waterways and the creation of lakes and swamps. There are over 4000 shallow, salt- and fresh-water lakes dotted across the bioregion, some included in the Ramsar Convention as wetlands of international significance (CCMA 2005). Lake Corangamite is the largest permanent and saline lake in continental Australia. Twenty-four river systems transect the Victorian Volcanic Plain (Taylor *et al.* 2003).

The soils of the plain are Quaternary basalt, heavy grey to red cracking clays, with black cracking clays common in the low-lying areas (McDougall and Kirkpatrick 1994). Differences in soils presumably reflect different lava flow events, and subsequent weathering and re-distribution of material due to drainage. The soils also vary considerably in their exposure of surface rock, depth, colouration, structure, and tendency to crack and form gilgai depressions. The pH of these basalt clay soils is moderately acidic (5.5 - 6.0) across most of the VVP (DPI 2010).

Although the soils of the plain tend to be fertile, hey drain poorly (Carter *et al.* 2003). Duplex clays, with a shallow clay and humus profile overlaying a layer of less permeable clay, restrict root development and drainage as hey can rapidly become water-logged in winter and rapidly dry out in summer forming large cracks (Conn 1993). The natural lack of dense tree cover on the VVP is thought to be caused, in part, by the heavy basaltic clays that are poorly drained, becoming water-logged in winter or extremely dry, hard and cracking in summer (Conn 1993; Stuwe 1986; Barlow and Ross 2002). The root systems of many tree species are less able to cope with these extreme seasonal differences in soil conditions compared to the fibrous root systems of perennial grasses. Naturally occurring fires and frequent patch burning by aboriginal people prior to European settlement would also have killed young tree seedlings (Lunt 1991).

Despite the soils high water uptake, relatively low levels of water are available for plant growth. This feature of the clay soils, has strongly influenced the type and distribution of the indigenous species of the VVP (McIntyre 1993), and subsequent agricultural land use.

Administration

Due to the large extent of the VVP bioregion, there are many authorities with management responsibilities relevant to the flora and fauna of the VVP, including the Department of Sustainability and Environment (DSE), Department of Primary Industries (DPI), Parks Victoria (PV), five Catchment Management Authorities (CMA), 35 Local Government Authorities (LGA), water management authorities and the Country Fire Authority (CFA). Appendix 8 contains details about the administrative authorities, whose regional boundaries occur wholly or partly within the VVP, and their various responsibilities.

Land tenure and use

Land use throughout the VVP is based on agriculture, especially sheep grazing. Cropping has become increasingly important in many parts of he bioregion, as has the development of softwood and hardwood (especially Blue Gum) plantations. The far eastern end of the VVP is utilised for urban and industrial purposes, which are continuing to expand. About 95% of land is in private ownership.

1.2 Natural Temperate Grassland of the Victorian Volcanic Plain (the Grassland).

The Natural Temperate Grassland of the Victorian Volcanic Plain (the Grassland) has been listed as a Critically Endangered ecological community under the *Environmental Protection and Biodiversity Conservation Act* (EPBC). The ecological community has been given this conservation status as it has undergone a very severe reduction in its geographic distribution, is impacted by a range of ongoing threats, and has had a considerable reduction of its community integrity through he loss of key vegetative components, key faunal components, weed invasion and fragmentation (TSSC 2008).

Ecological Vegetation Classes (EVC)

As described in the EPBC listing advice for the Natural Temperate Grassland of the VVP (TSSC 2008), the Grassland is comprised of two Ecological Vegeta ion Classes (EVCs) of the Victorian Volcanic Plain and adjacent bioregions:

- EVC 132 Plains Grassland
- 132_61 Heavier-soils Plains Grassland
- 132_62 Lighter-soils Plains Grassland
- 132_63 Low-rainfall Plains Grassland

- EVC 654 Creekline Tussock Grassland

Benchmark documents have been created for each EVC, giving a broad descrip ion of he EVC and a list of typical species. For more detail about EVC benchmarks, mapping and approximate extent see Appendix 1. Note that EVC mosaics have not been mapped and have no benchmarks.

Key diagnostic characteristics

The key defining attributes and condi ion thresholds for the Natural Temperate Grassland of the Victorian Volcanic Plain are described in detail in the listing advice for the ecological community (TSSC 2008), and are presented as an identification flowchart in Appendix 2.

Flora

The vegetation of the Grassland is mostly limited to a ground layer of grasses and herbs. Large shrubs and trees are absent to sparse. The ground layer is dominated by native tussock-forming perennial grasses, notably Kangaroo Grass *(Themeda triandra)*, and on drier sites Wallaby-grasses (*Austrodanthonia* spp.) and Speargrasses (*Austrostipa* spp.), or with Tussock-grasses (*Poa* spp) in areas of greater moisture. A variety of herbs and geophytes, mostly from the lily (various families), daisy (Asteraceae), pea (Fabaceae) and orchid (Orchidaceae) families, occupy the spaces among grass tussocks (Stuwe and Parsons 1977; Stuwe 1986; McDougall *et al*. 1994; Carr 1999; Carter *et al*. 2003; DSE 2004a). Low gradient ephemeral and intermittent drainage lines may be dominated by a dense sward of the Common Tussock-grass (*Poa labillardierei*). A list of plant species typically found in his ecological community is presented in Appendix 3.

As noted in the EPBC listing advice (TSSC 2008), the Grassland has affinities with other grasslands that have Kangaroo Grass as a significant element, such as the temperate grasslands of the southern tablelands of NSW and the ACT, the Gippsland Plain, and the lowlands of Tasmania. However, the Natural Temperate Grassland of the VVP may be distinguished from these by its association with Quaternary basalt soils, its geographic limitation to the VVP bioregion, and the greater presence of semi-arid elements, such as chenopods, *Ptilotus* spp., or *Eryngium* spp. in parts of the ecological community's range (Carter *et al*. 2003; DSE 2004a). There are also affinities with the grasslands of the southern Riverina bioregion, otherwise known as the Northern Plains, although Kangaroo Grass is not a common species in these grasslands. All these areas are regions of high fertility in the landscape.

Flora species that are threatened on both a national and state basis occur in the Grassland, and are also listed in Appendix 3. VEAC (2011) indicates that there are at least 74 plant species listed as being threatened across the whole VVP, based on the DSE threatened plants Advisory List (DSE 2005).

The grassland remnants[1] that remain on the VVP tend to fall into two distinct types, depending on past management history:

1. *Small, often linear remnants with a management history of regular burning for fuel management purposes (e.g.* on roadsides, rail reserves and other public land such as cemeteries, racing tracks, or town commons).

Except where prescribed burning has been specifically applied as an ecological management tool, the regime of regular burning can be described as "benign neglect" i.e. management for purposes other than conservation but has nevertheless had a beneficial impact on the vegetation. This has allowed many small high quality, floristically diverse remnants to survive. These tend to be rich in threatened plant species that require regular biomass removal, but are sensitive to stock grazing. They tend to provide sub-optimal fauna habitat because of the small size of the remnant and the frequency of fire. However, recent surveys on roadsides in the centre and west of the VVP have revealed extensive use of larger road reserves by Striped Legless Lizards (*Delma impar*) and Fat-tailed Dunnarts (*Sminthopsis crassicaudata*).

Despite their small size, intact remnants tend to be resistant to weed invasion and edge effects if there is no deleterious soil disturbance. One of the most floristically diverse and intact grassland remnants on public land on the VVP is the 4 ha Evans Street Grassland, in Sunbury. Since 1993 the condition of this reserve has been improved, as DSE, the City of Hume, Trust for Nature (TFN) and the Friends group have cooperatively undertaken long-term monitoring, weed control and regular mosaic burns.

2. *Large areas of private land with a history of grazing*.

These sites retain high quality grassy remnants if they have been grazed lightly, with periodic rest, and are uncultivated and unfertilised. They may contain native herbs hat are fire-sensitive but tolerant of light grazing. The best sites have generally had stock removed in spring (rested), to allow flowering and seed set. Sites that have received historic ploughing without being sown down to exotic species, or have been heavily grazed, may retain a native grass cover though with poor herb species diversity.

[1] For the purposes of this Plan, the term "remnant" or "remnant patch" is used in the strict dictionary term i.e. a remaining piece or sample. In the *Native Vegetation Guide for assessment of referred planning permit applications* (DSE 2007a) these terms are clearly defined and have implications for planning decisions; this is not the case in this Plan.

The majority of Grassland remnants on private land can be classified into three categories – high quality grasslands, good quality grasslands and degraded grasslands. The degraded remnants are often referred to as "native pastures", though private landholders tend to use this term to describe all grassland remnants. Most of the remnants of the Grassland ecological community now exist as native pasture. Although they satisfy the condition thresholds that allow them to be regarded as part of the EPBC-listed ecological community, they may consist of little more than a few grass species (usually Wallaby and Spear-grasses) with few or no herbs. Previously, these grasslands may have been intensively grazed, and may have undergone some level of deliberate pasture modification (sowing of introduced species including crops, legumes or perennial pasture species, and application of fertiliser). Such native pastures may also have a high content of introduced perennial species, such as Phalaris (*Phalaris aquatica)*, African Lovegrass (*Eragrostis curvula)*, Serrated Tussock (*Nassella trichotoma)* and Chilean Needle-grass (*Nassella neesiana)*. These pastures may have low value for native flora, but provide habitat for fauna species such as the Striped Legless Lizard, Golden Sun-moth (*Synemon plana*) or Eastern Barred Bandicoot (*Perameles gunnii*), whose habitats require structural diversity. These pastures have lit le capacity for natural rehabilitation, and require long-term active management if their quality is to improve.

Fauna

The ecological community supports a diversity of animal species, notably skinks, snakes, insects, birds of prey and ground-dwelling birds (DSE 2004a). Some 100 vertebrate species found on the entire VVP bioregion are listed as threatened species (VEAC 2011), based on he DSE Fauna Advisory List (DSE 2007b). The faunal component includes eight nationally threatened species, including the Plains-wanderer (*Pedionomus torquatus*). This species was stated in the listing advice (TSSC 2008) to be effectively extinct on the VVP, but there have been several confirmed sightings of Plains-wanderer in Werribee and Melton since 2008 (see Table 1 notes). A list of native terrestrial fauna on the VVP is in Appendix 3.

Grassland remnants now support very few native mammal species. The groups which have par icularly declined in species richness across the VVP are the smaller mammals, such as rodents, small macropods and bandicoots (NLWRA 2007). The Common Wombat (*Vombatus ursinus*) has also become effectively extinct on the VVP (Seebeck 1984). Those mammals that remain are ei her large enough (e.g. Grey Kangaroos *Macropus giganteus*) to escape predation by introduced predators, or small and cryptic (e.g. Dunnarts).

Thirty-eight species of bird occur preferentially in the Grassland and another thirty-three species u ilise it but are not reliant on it for habitat. There was a marked decline in the recording rate of birds that are reliant on grasslands between successive bird atlas surveys (undertaken in 1977-1981 and 1998-2001 (NLWRA 2007).

The invertebrate fauna remains poorly known (Yen 1999). An exception is the Golden Sun Moth, a critically endangered species that feeds on Wallaby-grass tussocks within remnants of both the Grassland and the Grassy Woodland (DEWHA 2008b).

1.3 Grassy Eucalypt Woodland of the Victorian Volcanic Plain (the Grassy Woodland)

The Grassy Eucalypt Woodland of the Victorian Volcanic Plain (the Grassy Woodland) has been listed as a Critically Endangered ecological community under the EPBC Act. Similarly to the Grassland, the Grassy Woodland has also undergone a very severe reduc ion in its geographic distribution, is impacted by a range of ongoing threats, and has had a considerable reduction of its community integrity through the loss of key vegetative components, key faunal components, weed invasion and fragmentation (TSSC 2009a).

Ecological Vegetation Classes (EVC)

As described in the EPBC listing advice for the Grassy Eucalypt Woodland (TSSC 2009a) the ecological community is comprised of four EVCs from the Victorian Volcanic Plain:

- 55 Plains Grassy Woodland, comprising
  - 55_61 Western Basalt Plains Grassy Woodland – comprises the bulk of the ecological community, occurring in areas receiving approximately 500-700 mm of rainfall per annum.
  - 55_04 Western Basalt Plains Grassy Woodland – easternmost extent of he ecological community
  - 55_63 Higher Rainfall Plains Grassy Woodland – occurrences of the ecological community on wetter sites
- 651 Plains Swampy Woodland – wettest occurrences of the ecological community on wetland margins and soils which are subject to more prolonged seasonal water logging.
- 649 Stony Knoll Shrubland – localised stony knoll shrublands and low non-eucalypt woodland
- 897 Plains Grassland/Plains Grassy Woodland Mosaic – a mix of the Grassy Woodland and the Grassland.

For EVC benchmarks, mapping and approximate extent see Appendix 1. Note that EVC mosaics are mapping units containing two or more EVCs that cannot be differentiated at the scale of mapping.

Key diagnostic characteristics

The key defining attributes and condi ion thresholds for the Grassy Eucalypt Woodland of the Victorian Volcanic Plain are described in detail in the listing advice (TSSC 2009a), and presented as an identification flowchart in Appendix 2.

Stands of a further EPBC-listed ecological community, *Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-Eastern Australia,* occur around Sunbury and Melton on the eastern part of the VVP. However species that occur with Grey Box in these stands such as *Allocasuarina luehmannii* (Buloke) and *E. leucoxylon* (Yellow Gum) do not occur in either the Grassland or Grassy Woodland and are contra-indica ive of these ecological communities. These stands are therefore not addressed in his Plan.

Flora

The Grassy Eucalypt Woodland of the Victorian Volcanic Plain has affinities wi h other eucalypt woodlands with a grassy understorey from the lower slopes and plains of mainland eastern Australia, but is specifically limited to the Quaternary basalt soils of the VVP.

Similar to the Grassland, the Grassy Woodland exhibits a degree of natural variation in its appearance and composition across its range, due to variations in rainfall and landscape features such as changes in elevation, drainage patterns, the presence of rocky outcrops and land use history. The Grassy Woodland also exhibits seasonal variations, characterised by a spring to early summer flowering period of the understorey. Seasonal conditions may further influence the appearance of the ecological community, as flowering and germination of understorey species can vary markedly between long-term drought and a season with good rainfall. These variations can be compounded by the nature of past and ongoing land management practices.

The Grassland and the Grassy Woodland intergrade, so in some areas it may not be possible, because of past management history and seasonal variables, to determine whether the vegetation belongs to one or the other, but this is not relevant to management actions.

The list of typical plant species in Appendix 3 given for the Grassland is also pertinent for the Grassy Woodland ecological community. The list of threatened flora that occurs in the Grassy Woodland is also included in Appendix 3.

Canopy layer

The Grassy Woodland is an open eucalypt woodland with a predominantly grassy understorey. The tree canopy is typically up to 15m tall and dominated by *Eucalyptus camaldulensis (*River Red Gum) with 5-30% tree canopy cover.

At higher rainfall sites of greater than 700mm per annum, *Eucalyptus ovata* (Swamp Gum) or *E. viminalis* (Manna Gum) may replace River Red Gum as the dominant species in the canopy layer. These sites tend to be located in the higher rainfall zone of the western end of the VVP, for example south of Hamilton. At sites that receive less than 600mm per annum, *Eucalyptus microcarpa* (Grey Box) or *E. melliodora* (Yellow Box) may replace River Red Gum as the dominant canopy species. These sites are restricted to isolated occurrences in the rain shadow area to the west of Melbourne, for instance on the Keilor-Werribee Plain.

Other tree species (5m or more in height) that have been depleted but may be present in he canopy layer include *Acacia implexa* (Lightwood), *A. mearnsii* (Black Wattle), *A. melanoxylon* (Blackwood), *Allocasuarina verticillata* (Drooping Sheoak) and *Banksia marginata* (Silver Banksia).

Mid layer

Typically, the mid layer is composed of various *Acacia* species (Oates and Taranto 2001), notably *A. paradoxa* (Hedge Wattle), but may include other genera depending on the nature of the site. At the wettest sites, the mid layer may contain a scattered *Leptospermum continentale* (Prickly Tea-tree), *Melaleuca gibbosa* (Slender Honeymyrtle) or *Ozothamnus ferrugineus* (Tree Everlasting).

The crown cover of shrubs underneath the tree canopy is typically less than 30%, not including regenerating native canopy trees.

Ground layer

The ground layer is dominated by native grasses and/or other herbs. Native grasses that commonly occur in the ground layer include Wallaby-grasses, Spear-grasses, Weeping Grass (*Microlaena stipoides*), Tussock Grasses and Kangaroo Grass. Of these, Kangaroo Grass is considered to have been the dominant graminoid component of the ground layer over much of the pre-European range of the ecological community (DNRE 2000). Kangaroo Grass, along with Common Tussock Grass, remain the dominant grass species at relatively intact sites (Oates and Taranto 2001; SAC 2004). Wallaby-grasses and Spear-grasses dominate at sites that have undergone degradation such as heavy grazing.

The forb component of the ground layer is species-rich in the more intact sites and typically contains native species from the following genera: *Acaena*, *Arthropodium*, *Calocephalus*, *Chrysocephalum*, *Dianella*, *Dichondra*, *Geranium*, *Leptorhynchos* or *Solenogyne*. In swampier sites, grasses, sedges and other herbs indicative of more sustained water logging may be present e.g. *Amphibromus* spp., *Lobelia* spp., *Schoenus apogon*.

Stony knolls

On localised low stony or rocky rises, the canopy of River Red Gum may be replaced by a shrubland of *Acacia* species, *Melicytus dentatus* (Tree Violet) and/or *Bursaria spinosa* (Sweet Bursaria), or a low woodland of Drooping Sheoak (DSE 2010a – EVC benchmarks). The understorey comprises a mix of grasses and other herbs. These low stony rises on basalt flows have soils that are fertile and well drained but shallow, with outcropping rock, causing severe summer dryness. Only occurrences of stony knolls that lie within, or adjacent to, a patch of Grassy Woodland are included in the EPBC-listed ecological community.

Regenerating woodland

The presence of dense, regenerating tree saplings (less than 5m tall) may temporarily increase the tree crown cover up to 70%, which is beyond that expected for an open grassy woodland structure. This may arise through the removal of grazing, or from the occurrence of fire or other disturbance that stimulates mass germination of canopy species from the soil seed bank. The definition of the ecological community takes this into account as being a temporary state.

Derived grassland

Some patches of the Grassy Woodland have been influenced by management history to the extent that the tree and/or shrub layers have been largely removed and the patches more closely resemble the Grassland. These are described as "derived" or "secondary grassland" but are still of biodiversity value. The presence of derived grasslands as part of the Grassy Woodland can generally be indicated by the evidence of tree stumps or fallen logs, or historical records, photographs, or reliable modelling of pre-European vegeta ion.

Fauna

The Grassy Woodland supports a similar suite of ground-dwelling fauna to the Grassland, but includes arboreal species that require trees for nes ing/roosting sites or a source of food for winter foraging.

Woodland birds and mammals such as parrots, possums and bats rely on trees and tree hollows for shelter and/or food resources. Successive bird atlas surveys undertaken in 1977-1981 and 1998-2001 indicate that, across the VVP bioregion, there are 26 bird species that require a temperate woodland habitat and another 107 species that occur in woodland but are not reliant on it for habitat (NLWRA 2007).

The faunal component includes four nationally threatened species, two of which also occur in the Grassland, as shown in Table 1 below. The listing advice (TSSC 2009a) included Grey-headed Flying-fox (*Pteropus poliocephalus*), Swift Parrot (*Lathamus discolor*), Spot-tailed Quoll (*Dasyurus maculatus maculatus)* and Red-tailed Black Cockatoo (*Calyptorhynchus banksii graptogyne)* as being faunal components of the community, but these species tend to utilise only the margins of the Grassy Woodland habitat and are not considered to be dependent on it to any significant extent (Recovery Plans, DECCW 2009; Swift Parrot Recovery Team 2001; Long and Nelson 2010; Commonwealth of Australia 2007).

For a full list of the native terrestrial fauna recorded on the VVP, see Appendix 3.

1.4 EPBC-listed Threatened Species of the Victorian Volcanic Plain

Table 1 contains the threatened species listed under the EPBC Act that occur in or near the Grassland and Grassy Woodland. All species information is sourced from the approved or draft Recovery Plans.

Table 1 - EPBC listed Threatened Species that occur within the EPBC-listed communities

Species	Common name	Notes	EPBC Status	Recovery Plan status*	Reference	Community
Isoodon obesulus subsp. *obesulus*	Southern Brown Bandicoot	Once widespread and abundant across eastern Australia, as one of the most numerous bandicoot species. Vegetation clearance has reduced its grassy habitat, required for foraging and protection from predators.	Endangered	In draft	Brown and Main (2010)	GW
Perameles gunnii subsp. unnamed	Eastern Barred Bandicoot (Mainland)	Iconic bandicoot species of the VVP, with only a few protected populations now remaining in Victoria. Habitat fragmentation and feral predators are greatest threats. Uses perennial tussock grasslands for foraging and nesting.	Endangered	Adopted	Hill *et al.* (2010)	G
Pedionomus torquatus	Plains-wanderer	A cryptic nocturnal quail-like bird that can be nomadic. Found in grassy areas and makes daytime resting spots in depressions in grasses. Previously thought to be extinct on the VVP, but there have been recent scattered records.	Vulnerable	Recovery Plan 2002 – 2006	Baker-Gabb (2002)	G
Delma impar	Striped Legless Lizard	Legless lizard about 300 mm total length. This grassland specialist tends to inhabit Kangaroo Grass, Wallaby-grass and Spear-grass tussocks, as well as some weedier sites.	Vulnerable	In draft	Robertson and Smith (2010)	G
Eulamprus tympanum subsp. *Marnieae*	Corangamite Water Skink	Skink to 250 mm total length. Found in open grassy areas with basalt soils and rock mounds, adjacent to either permanent or temporary water bodies. Main threats are habitat loss and fragmentation, with ongoing habitat degradation.	Endangered	Adopted	Peterson and Robertson (2011)	G, GW
Tympanocryptis pinguicolla	Grassland Earless Dragon	Lizard up to 150 mm long. Known from tussock grasslands on basalt soils, preferring more open sites with both taller tussock and shorter grasses. Utilises invertebrate burrows (e.g. spider holes) and rocks as shelter.	Endangered	Adopted April 2009	Robertson and Evans (2008)	G
Litoria raniformis	Growling Grass Frog	Large frog species (up to 104 mm), known to use clay soil and grassland sites where dense emergent vegetation exists near permanent or ephemeral water sources. Distinctive growling call made by males.	Vulnerable	In draft	Clemann and Gillespie (2010)	GW, G
Synemon plana	Golden Sun Moth	A day-flying moth with 30 mm wingspan. Formerly widespread through south eastern Australia, but now has a highly reduced and fragmented distribution. Larvae graze on tillers of certain species of Wallaby-grass.	Critically Endangered	In draft	DEC (2006)	GW, G
Carex tasmanica	Curly Sedge	In Victoria, only some 20 small populations (<100 plants per population). Usually associated with drainage lines or marshes, so altered hydrology and climate change threaten this plant.	Vulnerable	Adopted Feb 2010	Carter (2010a)	GW, G
Dianella amoena	Matted Flax-lily	Endemic to Victoria, this summer flowering and rhizomatous herb can spread up to 5m and has flower spikes to 90cm tall. It is pollinated by native bees, and the fruits are eaten by birds and lizards.	Endangered	Adopted	Carter (2010b)	GW
Diuris basaltica	Small Golden Moths Orchid	Known only from Victoria on basalt plains north and west of Melbourne, with three wild populations containing some 400 plants. Flowering in September and October. Previously listed as *Diuris* sp. aff. *chryseopsis*.	Endangered	Adopted	Backhouse and Lester (2010)	G

Species	Common name	Notes	EPBC Status	Recovery Plan status*	Reference	Community
Diuris fragrantissima	Sunshine Diuris	From thirty plants remaining in the last wild population, several hundred have since been propagated and planted. Flowering October to November, earlier settlers described the flowering display as like "snow in summer".	Endangered	Adopted Mar 2008	Murphy *et al.* (2008)	G
Dodonaea procumbens	Trailing Hop-bush	Weed invasion, habitat destruction, grazing, and altered fire regimes linked to the species decline in Victoria, SA and NSW. Flowering November to February and fruits may take up to 12 months to mature.	Vulnerable	Adopted July 2010	Carter (2010c)	GW, G
Glycine latrobeana	Clover Glycine	Grows mostly in grasslands and grassy woodlands, flowering in September to December.	Vulnerable	Adopted	Carter and Sutter (2010)	GW, G
Lachnagrostis adamsonii	Adamson's Blown-grass	Endemic to south-central and south-western Victoria. Tufted annual grass to 70cm high prefers saline wetlands. Previously known as *Agrostis adamsonii*.	Endangered	Adopted	Murphy (2010)	GW, G
Lepidium aschersonii	Spiny Pepper-cress	Occurs in the south west of Victoria, but only a few known stands. This branched perennial herb, to 30cm high, arises from underground rootstock and is only visible during the spring-summer growth period.	Vulnerable	Adopted July 2010	Carter (2009)	GW, G
Lepidium hyssopifolium	Basalt Pepper-cress	Approximately 500 plants in 7 populations, mostly to the west of Melbourne. Perennial herb to 50cm high flowering from December to February.	Endangered	Adopted July 2010	Tumino (2009)	GW, G
Leucochrysum albicans var. *tricolor*	Hoary Sunray	Once widely spread across south eastern Australia, it occurs in 5 local government areas in south-western Victoria. This attractive perennial straw daisy prefers more open areas and flowers in spring to summer.	Endangered	Adopted	Sinclair (2010)	GW, G
Pimelea spinescens subsp. *spinescens*	Spiny Rice-flower	Endemic to south-western and central Victoria, stunted shrub to 300 mm, flowers in April to August and is estimated to live for up to 100 years. Is palatable to grazing stock, so now mostly found on linear road and rail reserves.	Critically Endangered	Adopted Nov 2006	Carter and Walsh (2006b)	GW, G
Poa sallacustris	Salt-lake Tussock-grass	Currently there are 9 known populations around the margins of lakes. Major threats to populations include weed invasion and grazing.	Vulnerable	Adopted January 2007	Carter and Walsh (2006a)	G
Prasophyllum diversiflorum	Gorae Leek-orchid	Found in 6 isolated populations, the total range of this orchid is only 75km^2. It grows to 600 mm high, flowering from December to February.	Endangered	In draft	Pitts and Pritchard (2010)	GW, G
Prasophyllum frenchii	Maroon Leek-orchid	Prefers generally damp situations, with seasonal inundation. Some 1000 plants distributed in 6 Victorian populations. Perennial orchid to 600 mm arises from tuber in late autumn, and flowers October to December.	Endangered	Adopted July 2010	Duncan (2009)	GW
Prasophyllum suaveolens	Fragrant Leek-orchid	Known only from western Victoria. Slender orchid to 250 mm, flowering October and November.	Endangered	Adopted	Coates *et al.* (2002)	GW, G
Pterostylis basaltica	Basalt Greenhood	Highly palatable to grazing animals, so only 2 endemic populations of 1000 orchids remain in western Victoria. Flowering November to January.	Endangered	Adopted	Vlcek and Pritchard (2010)	G

Species	Common name	Notes	EPBC Status	Recovery Plan status*	Reference	Community
Rutidosis leptorrhynchoides	Button Wrinklewort	Once widely distributed in south eastern Australia, mostly in grasslands, its total area of occupancy is now estimated to be less than 14 hectares. Flowering October to January.	Endangered	In draft	DECCW (2010a)	G
Senecio macrocarpus	Large-fruited Groundsel	Herb to 700 mm tall, flowers September to November and produces large seeds that may limit its dispersal. Only some 1000 plants left in Victoria.	Vulnerable	Adopted July 2010	Sinclair (2009)	GW, G
Senecio psilocarpus	Swamp Fireweed	Occurs in south-eastern SA and western Vic.	Vulnerable	Not prepared		GW, G
Xerochrysum palustre	Swamp Everlasting	Occurs in southern Victoria and a few sites in northern Tasmania. Perennial herb, flowering November to March dying off in late summer.	Vulnerable	Adopted	Carter and Walsh (2010)	G

* "In draft", incorporates several separate stages in the production of a national Recovery Plan, including drafting the plan, seeking endorsement from stakeholders, period of public exhibition, final review, and awaiting official adoption.

G – Natural Temperate Grassland of the VVP; GW – Grassy Eucalypt Woodland of the VVP

Notes:

The listing advice for the Grassland (TSSC 2008) includes Austral Toadflax (*Thesium australe)* as previously occurring within the community, but no longer. Therefore this species is not covered by this Plan. Small Scurf-pea (*Cullen tenax*) has been de-listed under the EPBC, so is not covered by this Plan.

The listing advice also states that the Plains-wanderer is considered extinct in south western Victoria, but there was a confirmed record of a Plains-wanderer on the VVP in 2008. (Chris Tzaros, Birds Australia "Sunday Age" 15/06/08 p.8 per Tim Dolby 16/6/08). A confirmed sighting at Melton also reported by Birdline Victoria on 18 March 2011 (www.eremaea.com/BirdlineRecentSightings.aspx?Birdline=1).

The listing advice for the Grassy Woodland (TSSC 2009a) includes other species that may utilise the Grassy Woodland as habitat. Of these, the Grey-headed Flying-fox (*Pteropus poliocephalus*) and the Red-tailed Black-Cockatoo (south-eastern) (*Calyptorhynchus banksii graptogyne)* are believed to be utilising the margins of the communities and are not considered to be residents of or dependant upon the communities. Likewise the Spot-tailed Quoll (*Dasyurus maculatus maculatus)* occurs on the VVP at Mt Eccles, but its preferred habitat is forest. (Long and Nelson 2010).

The preferred diet for Swift Parrots (*Lathamus discolor*) is box-ironbark eucalypts, but Yellow Gum can provide a secondary food source (Webster *et al*. 2003). Since these are contra-indicative of the Grassy Woodland, Swift Parrots are not regarded as being dependent on the Grassy Woodland community.

1.5 Victorian jurisdiction

In Victoria, the Grassland ecological community can be equated with *Western (Basalt) Plains Grassland Community,* listed under the FFG Act (DSE 2004). However, for the Grassy Woodland ecological community only the north-eastern component EVC 55-04 has been listed under the FFG Act as *Floristic Community 55-04 Western Basalt Plains (River Red Gum) Grassy Woodland* (SAC 2004). Several EPBC-listed taxa on the VVP are also FFG-listed and appear on the *Advisory List of Threatened Invertebrate Fauna in Victoria* (DSE 2009), the *Advisory List of Threatened Vertebrate Fauna in Victoria* (DSE 2007b) or the *Advisory List of Rare or Threatened Plants in Victoria* (DSE 2005) (see Appendix 3).

2. Distribution

The Grassy Woodland is strictly limited to the Victorian Volcanic Plain bioregion (TSSC 2009a), but small occurrences of the Grassland may extend into the bioregions adjacent to the Victorian Volcanic Plain, including the Otway Plain, Central Victorian Uplands and Dundas Tablelands. Figure 2 below shows the modelled pre-1750s distr bution of the two ecological communities on the VVP. Figure 3 shows the estimated current extent.

A number of studies have been undertaken to map the distribution of the Grassland (e.g. Stuwe 1986; Department of Conservation and Environment 1992 flora survey; oss unpub.). The distribution on public land is reasonably well known, but there are still many sites on private land that have not been mapped, making it difficult to assess the overall condition (i.e. average and range) of the Grassland on private land. The Grassy Woodland sites are poorly mapped throughout, with the exception of those immediately to the north of Melbourne.

The ecological communities occur on a range of land tenures; on public land (conservation reserves, Crown land reserves, roadsides, rail reserves, cemeteries) and on freehold land, including publicly and privately-owned parcels. Remnants of lowland grasslands and grassy woodlands on private land are mostly larger than those on public land and generally non-linear, but are also likely to be more degraded due to disturbance history (VEAC 2010).

For the purpose of this Plan, the mapping focus is only on the EVC (2005) extent vegetation layer held by DSE. The modelled EVC extent prior to the 1750s and the current Bioregional Conservation Status of EVCs are available as alternative vegetation layers on the Biodiversity Interactive Map (BIM). These datasets are extracted from EVCs from NV1750_EVC BCS and NV2005_EVC BCS. They are designed for use at a landscape scale (1:25,000 to 1:100,000). They are not intended to be used at a site or property scale

EVC maps can be accessed and created using the Biodiversity Interactive Map (BIM) available on the DSE website (www.dse.vic.gov.au). See Appendix 1 for more information about EVC mapping and BIM.

F

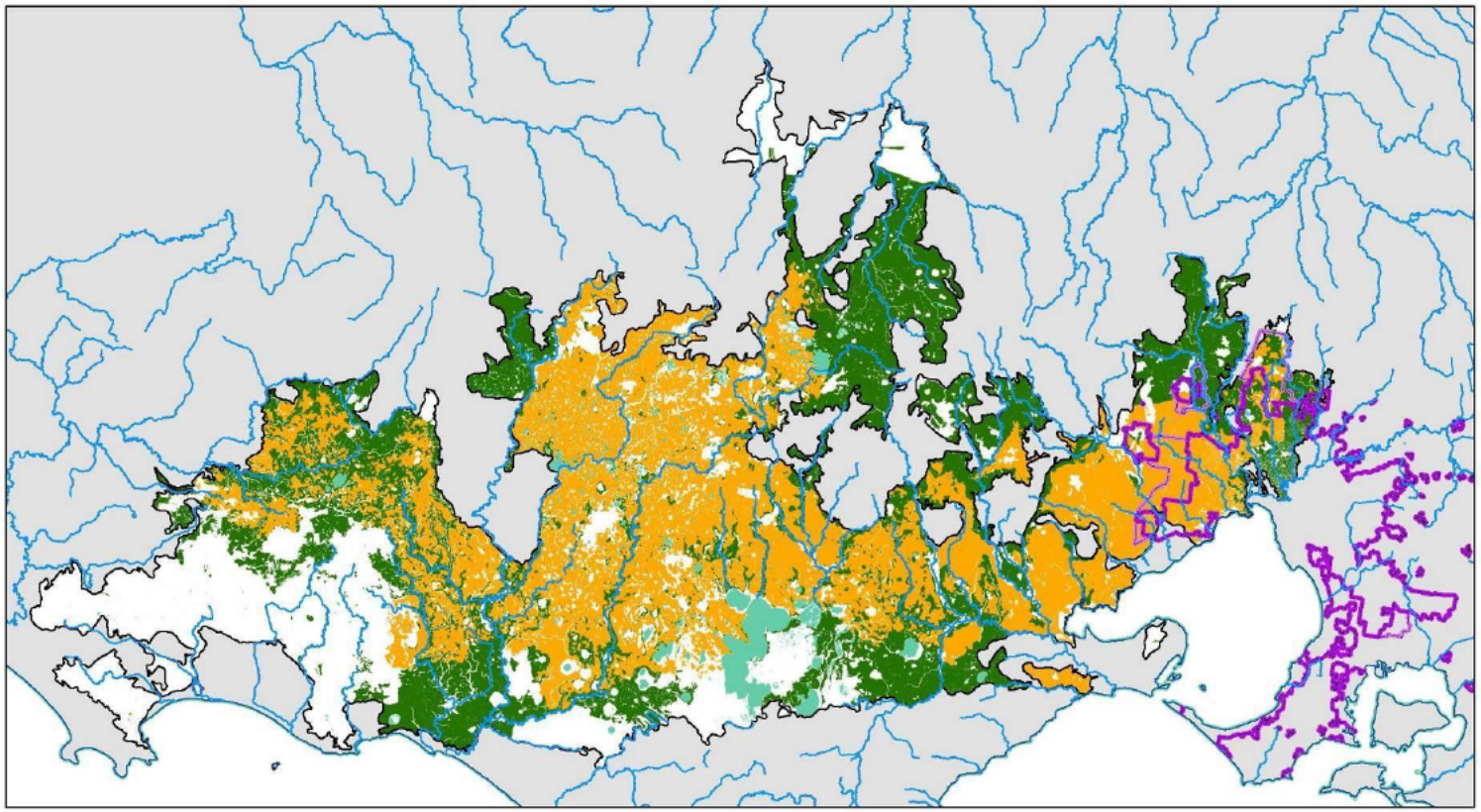
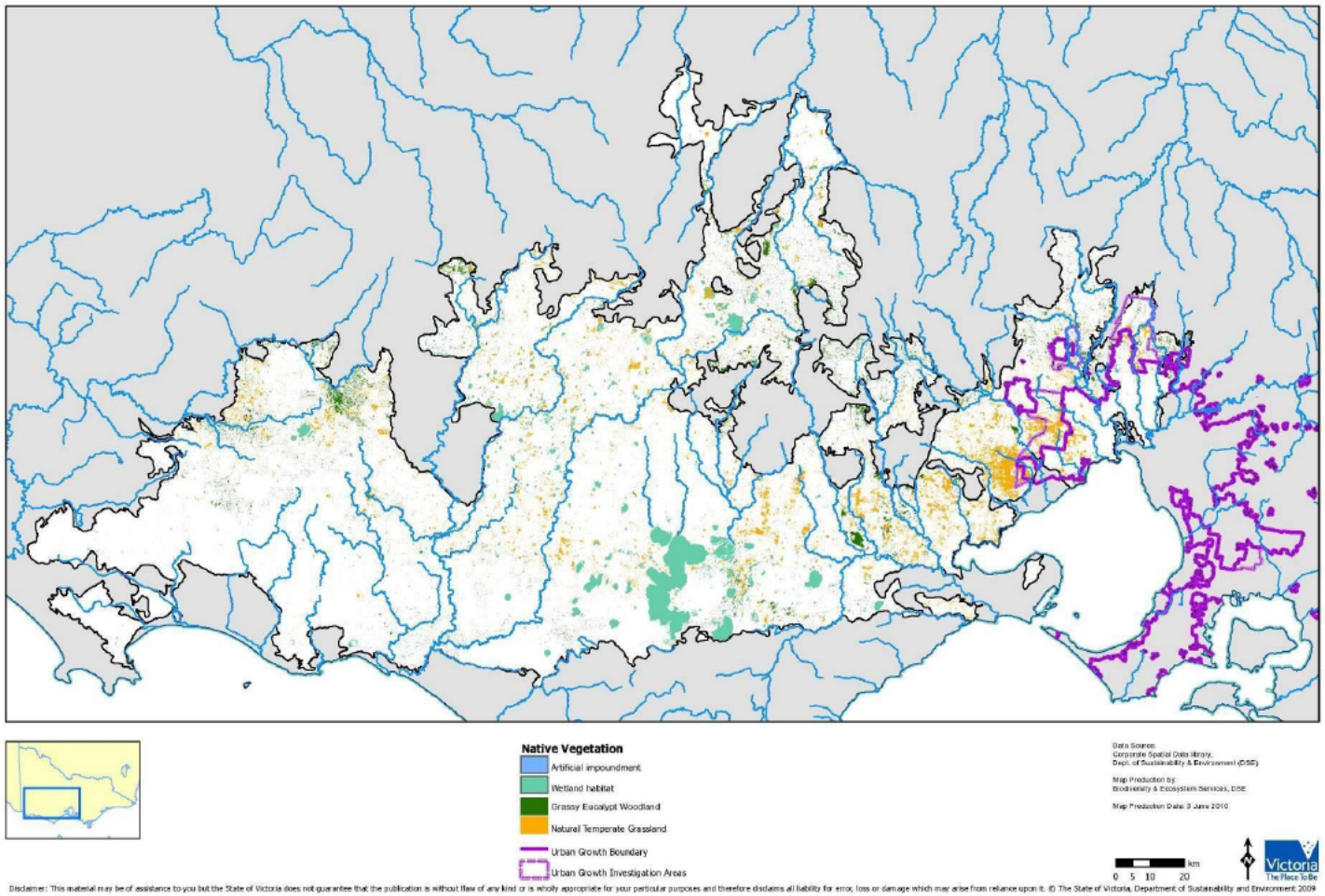


Figure 3 -



Modelled map of current extent of two EPBC listed communities within the Victorian Volcanic Plain bioregion Source: Biodiversity and Ecosystem Services division, DSE, created May 2009, edited June 2010.

2.1 EVC mapping

Figure 2 and 3 above were generated from a modelled dataset of Native Vegetation and major water-based habitats, created by DSE (Arthur Rylah Institute), and completed July 15th, 2007. The Grassland datset has been created from:

- spatial data including radiometric signature data for soil types;
- digital elevation modelling – slope, aspect, terrain, hydrology;
- time-series (between 1989-2005) satellite imaging (Landsat Imagery) that showed seasonal variation, colour signatures (e.g. cropped land varies widely throughout the year); □ many thousands of ground-truthing points.

The datasets are intended to indicate native vegetation presemnce and type, but do not model species diversity. Nor do they identify the level of relative significance. For grassland vegetation, the dataset simply identifies priority areas for assessment. To generate the dataset, the definition of "native" was set as 50% of the cover of perennial grasses, so a modelled parcel may include just one or two species of Spear-grass (i.e. it should be considered as native pasture and not native grassland). However, these 'low diversity / quality' areas are still useful when developing landscape-scale scenarios for increasing the amount of habitat, particularly for mobile fauna.

The datasets provide a consistent view of native vegetation extent across the state of Victoria at a broad landscape scale, primarily to inform and assist in native vegetation management. In particular, this grassland dataset will be used for strategic landscape-scale considerations and to identify potential native vegetation implications associated with planning decisions.

It is a good interpretation of native vegetation extent, but must be used with care, as it is only a predictive model, and in some cases based on old data and can give no indication of quality. Planning or investment decisions at the site-scale may require some form of on-ground validation, depending on the relative impact / benefit of a proposed action.

2.2 Habitat of the Ecological Communities

Determining the habitat that supports the survival of these ecological communities is not straightforward. The Grassland and Grassy Woodland are considered to be critically endangered precisely because they have been cleared, fragmented and degraded to the point where their medium- and long-term survival is threatened. Given the currently highly fragmented and degraded state of the ecological communities, all areas which meet the minimum condition criteria outlined in the listing advice (TSSC 2008, TSSC 2009a) could be considered vital to the survival of the ecological communities.

However, in very broad terms, habitat important for the survival of the ecological communities is on the moderate to highly fertile soils of the VVP. Of the Grassland ecological community that existed on the VVP at the time of European settlement, probably less than 0.5% retains a moderate to high level of ecological integrity. Other areas exist in lower condition states and may have the capacity to rehabilitate under appropriate management. Such sites have varying conservation value related to their species composition and position in the landscape, with potential as fauna habitat or as buffers to higher quality sites.

In the absence of on-ground mapping, the amount of remaining Grassy Woodland on the VVP (i.e. that with any sort of predominantly native understorey) cannot be accurately determined, but anecdotal information suggests it may be as little as 0.1% of its pre-European distribution. Other Grassy Woodland areas where a native understorey is poor or absent may not meet the condition criteria but may be essential to the longterm conservation of the ecological community. This is by virtue of their landscape setting (e.g. providing connectivity) or remaining flora/fauna habitat features (e.g. occurrence of rare or threatened species, tree hollows). The importance of degraded areas of the Grassy Woodland to the survival of the ecological community should therefore be assessed on a priority basis using tree cover, provided by the modelled maps.

3. Important Populations

DSE has developed a database called the Actions for Biodiversity Conservation (ABC). This contains management information for a large number of threatened species, ecological communities and potentially threatening processes in Victoria. Many of these items are listed as threatened at a state level under the FFG Act and nationally under the EPBC Act. ABC identifies some or all of the priority locations for species and ecological communities and identifies priority actions to be undertaken for that item at each location. (ABC further records details of the action, whether an action was undertaken and results of each action.)

More than two hundred individual locations have been identified in ABC as important sites for the two ecological communities and their EPBC-listed species on the VVP. This is not a list of every occurrence, but of locations where specific on-ground actions are to be undertaken. Locations that have more than one asset (i.e., where one or more species co-exists with an ecological community), may be regarded as a high priority for management investment by virtue of their multiple values.

ABC contains detailed information for each location such as land tenure, geographic location, physical details, and where possible, the size of the population, or area of the community.

The coverage of locations in ABC, and assessments of their strategic context will be improved by reference to "NaturePrint", a product that is being developed by DSE. NaturePrint is developing a spatially-optimised view of biodiversity conservation prospects, taking account of distribution models for threatened and non-threatened species, models of ecosystem condition and context (e.g. connectivity, threatening processes), models of costs, and how climate change scenarios might influence all of these factors. NaturePrint can be used to identify strategic gaps in ABC coverage and to improve how locations are ranked.

A selection of multiple-asset locations generated from the ABC system is shown in Table 2. Such location information is included in DSE spatial layers and used to generate species and community distribution maps.

Table 2 - Examples of locations on the VVP that contain multiple assets

Location Name	Item Name (EPBC-listed)
Ararat Western Highway Road reserve and Middle Creek Rail Reserves	Button Wrinklewort
	Spiny Rice-flower
	Natural Temperate Grassland of the VVP
Bannockburn Rail Reserve	Spiny Rice-flower
	Button Wrinklewort
	Large-fruit Groundsel
	Natural Temperate Grassland of the VVP
Blacks Creek Nature Conservation Reserve (NCR)	Spiny Rice-flower
	Striped Legless Lizard
	Natural Temperate Grassland of the VVP
Burns Road Environs	Small Golden Moths
	Spiny Rice-flower
	Natural Temperate Grassland of the VVP
Chatsworth Road, Derrinallum	Spiny Rice-flower
	Fragrant Leek-orchid
	Striped Legless Lizard
	Natural Temperate Grassland of the VVP
Craigieburn Grassland NCR	Grassland Earless Dragon*
	Natural Temperate Grassland of the VVP
	Curly Sedge
	Matted Flax-lily
	Golden Sun Moth
	Plains-wanderer*
	Striped Legless Lizard
Cressy - Shelford Rd	Adamson's Blown-grass
	Spiny Rice-flower
	Striped Legless Lizard
	Natural Temperate Grassland of the VVP
Hamilton Community Parkland	Eastern Barred Bandicoot
	Golden Sun Moth
	Natural Temperate Grassland of the VVP
Inverleigh Flora Reserve	Clover Glycine
	White Sunray
	Natural Temperate Grassland of the VVP
Dunkeld Private Property	Striped Legless Lizard
	Clover Glycine
	Golden Sun Moth
	Grassy Eucalypt Woodland of the VVP

* old record _ may be locally extinct

Appendix 4 provides more details on the important populations. Additional lists of key sites include:

- Grassland and Grassy Woodland sites on ABC, and the number of sites recorded on the BioSites (Sites of biological significance) database.
- Sites on ABC where management actions occur for each EPBC-listed threatened species.
- Lists of parks and reserves managed by DSE and PV, along with an indication of the number of parks and reserves managed by LGA and other public authorities. Cemeteries which are likely to contain grassy values.

Other important populations also occur on private property; however privacy laws prevent details from being published. These important sites include those on properties:

- involved with the PlainsTender market-based incentive scheme (see Table 17 in Appendix 5.)
- covered by a Section 69 covenant on title under the Victorian *Conservation Forests and Lands Act* 1987. There are seven agreements covering grassland EVCs totalling 99.04 ha, and 2 agreements covering non-grasslands (escarpment shrubland and stony rises woodland) which total 102.5 ha.
- partnering with TFN on the VVP. There are 53 registered conservation covenants, totalling 1593 hectares, although this will include any vegetation type on the VVP, not just the Grassland and Grassy Woodland ecological communities. For instance, there are covenants of Stony Rises Woodlands, Herb-rich Foothill Forest, and other EVC. Some covenants will have a mix of vegetation types, so obtaining the exact figures for specific EVC would either be based on incomplete knowledge or EVC models associated with the Land for Wildlife Scheme.

PART B. THREATS

4. Historic and Ongoing Threats

The activities and processes implicated in the decline of the Natural Temperate Grassland and the Grassy Eucalypt Woodland of the Victorian Volcanic Plain are ongoing, and are generally having an impact across the entire geographical distribution of these ecological communities. The main identified threats are vegetation clearance for agriculture and urban development, fragmentation of remnants, weed invasion, and management regimes (e.g. fire, grazing, mowing) that are inappropriate to the long-term conservation of biodiversity.

4.1 Habitat Degradation and Loss

Clearing of native vegetation

The significant decline of grassy ecosystems on the VVP is largely attributed to the widespread clearance and modification of native vegetation. Recognising the seriousness of ongoing clearance to native flora and fauna, *Habitat fragmentation as a threatening process for fauna in Victoria* has been listed in Victoria as Potentially Threatening Process under the FFG Act, and nationally *Land clearance* is an EPBC-listed Key Threatening Process.

Agricultural impacts

Clearance of the VVP commenced with European settlement and continued during the 19th and 20th centuries, as the fertile and lightly timbered plains provided ideal farming land for newly arrived settlers. The site for the city of Melbourne was chosen, in part, because of the extensive grasslands that existed to the west of the growing settlement (Presland 2009). Waves of immigration, l ke the soldier settlements that occurred after both World Wars, further accelerated the loss of native grasslands and grassy woodlands.

Vegetation clearance occurred as trees were cut to provide open paddocks for crops, and timber for building, fencing and firewood. The land was ploughed for crops, while high stocking rates of introduced domestic stock with hard hooves lead to overgrazing and trampling, especially in times of drought. Numerous exotic plants were del berately or accidentally introduced, replacing the native vegetation. Sutton (1916) recorded that the plains had *"been put so thoroughly to pastoral and agricultural uses that hardly any part remains in the virgin state"*. This clearance was exacerbated by the use of fertilisers, when in the 1940s and early 1950s, the practice of pasture improvement based on superphosphate and introduced clover and grasses became widespread (Stuwe 1986).

Agricultural intensification still poses a threat to grassy remnants. Land use trends in recent decades include shifting from grazing to cropping enterprises due to a fall in wool prices and the increased availability of new cropping techniques such as laser levelling of paddocks, raised-bed cropping, and use of heavy machinery for rock-removal and crushing. This latter practice poses a significant threat to populations of grounddwelling fauna on private land, such as Striped Legless Lizard and Corangamite Water Skink. Establishment of olive groves, vineyards, and agro-forestry, usually in the wetter south-western part of the VVP, is also contributing to clearing and leads to off-site impacts involving fertiliser and pesticide use, hydrological changes, and invasion of native remnants by wild olives or pine seedlings.

The economic advantages of retaining native vegetation have been acknowledged and promoted for twenty years, and recently more intensively (e.g. Crosthwaite 1997). Anecdotal information suggests that what graziers describe as "native country" has proven to be more persistent and resilient than sown annual pasture over the 2000-2010 decade of drought. Native pastures demonstrate salinity tolerance, less need for fertilisers and quick recovery after fire. They are also regarded as being superior to improved pastures for very fine wool production. However these advantages do not provide immediate short-term gains, and economic imperatives more often than not over-ride even the best intentions towards native vegetation retention.

The clearance of deep-rooted perennial trees and grasses also contr butes to soil degradation processes, such as that caused by wind and water erosion, and the emergence of dryland salinity. The full extent of dryland salinity as a threat to the Grassland and the Grassy Woodland require further investigation. However the National Land and Water Resources Audit predicts that by 2050 as much as 40% of the agricultural land on the VVP could be affected by shallow saline water-tables, costing the region approximately $90 million per annum in lost production (NLWRA 2001).

Urban impacts

Urban development is also contr buting to loss and degradation of the ecological communities. Building of residential suburbs, industrial precincts, and associated infrastructure (road, rail, water and power), gradually displaces most native vegetation. Large blocks of land are being divided into smaller peri-urban parcels for "tree-changers" or hobby farmers, many of whom do not have the knowledge or skills to manage pests and weeds. Grassland clearance is also occurring on properties that are providing permanent stock agistment in small runs.

Recent studies (Williams *et al.* 2005a, 2005b and Williams 2007) found that the frequency and intensity of human disturbance was higher in urban areas, and the frequency of natural disturbance (i.e. fire) was reduced, leading to the inability of Grassland remnants to recover from or persist in the face of frequent disturbance. Native grasslands recorded in the 1980s and early 1990s were compared with those present in 2005. Between 1985 and 2000 44% of Me bourne's native grasslands were lost, and between 1985 and 2005 approximately 3540 hectares were destroyed.

While native grassy ecosystems are protected by legislation and planning frameworks, remnants near Melbourne continue to undergo incremental losses. This is partially because present legislation is not designed to address small cumulative losses (Hawke Report, Commonwealth of Australia (2009), although if all the small losses were added up they would be more than enough to trigger permit requirements. A precinct planning approach has been undertaken by Victorian authorities in an attempt to address incremental loss (see section 5.3).

Increase in Melbourne's Urban Growth Boundary

The expansion of Melbourne's Urban Growth Boundary (UGB) and associated urban development is anticipated to require the clearance of approximately 4700 ha of Grassland and some 830 ha of Grassy Woodland (DSE 2009b). All of this Grassland is presumed to be actual or potential habitat for Striped Legless Lizard and Golden Sun-moth. Protocols for salvage and translocation of Striped Legless Lizards (SLL) have been developed by DSE in consultation with the SLL Recovery Team (DSE 2011).This clearing will be offset by the establishment of two large reserves to the west of Melbourne. Not all the grassland in the proposed reserves has been assessed to determine whether it satisfies the condition thresholds for the EPBC-listed ecological communities, but it is likely that 50-60% will satisfy the Grassland thresholds.

Prescriptions for EPBC-listed species and communities affected by the UGB expansion have been approved by the Federal Minister for the Environment. Clearing of native vegetation on land parcels confirmed to have Golden Sun-moth, Matted Flax-lily or Spiny Rice-flower may not occur until, for each species, there is "protection across the relevant bioregion (through appropriate management) of at least 80% of the total area of places where 'high contribution to species persistence' and 'confirmed habitat' intersect." (DSE 2009b). However, before this long term target is met, the prescriptions provide for some clearing of these species' habitat, particularly where population size is small or habitat quality is poor. For most of the relevant prescriptions, an exemption is provided for situations where "the clearance is unavoidable for the provision of infrastructure of state significance" (DSE 2009b).

Habitat fragmentation

The majority of Grassland and Grassy Woodland remnants on public land occur as small, often linear patches along roadsides, railways, on cemeteries, racing tracks, or town commons. For instance, it is estimated that 12% of the VVP grassland remnants are found on roadsides (VEAC 2010). In recent years some of these areas of public land have been converted into conservation reserves, but most remain unprotected, and are managed for purposes other than conservation. For example, as populations in some regional towns increase, cemeteries with grassland values are pressured to provide more burial sites or have cheaper and more access ble lawn plots for the interment of cremated remains.

The remnants also tend to be isolated, which impedes or prevents plants and animals from being able to disperse and colonise naturally. The small size and isolation of habitats eventually leads to small, disjunct populations of plants and animals with limited genetic diversity. Inbreeding depressions further reduces the resilience of grassy ecosystem-dependent species, or their ability to reproduce fit offspring and adapt to changing conditions, and thus increases their vulnerability to extinction.

It should be stated, however, that although many high quality remnants are small, linear and have high "edge to area" ratio, the assumption that small size or a high edge/area ratio makes a remnant more fragile and prone to extinction, is not borne out by recent work. Williams *et al.* (2006) determined that linear reserves can resist weed invasion from adjacent weedy areas and retain high biodiversity values if suitably managed, generally by a regime of frequent burning. They observed that area and isolation had little effect on the probability of local extinction, but urbanisation and longer intervals between fires increased extinction risk. This assumption that "small is bad" has led to losses of small remnants, particularly on urban margins, because they are not regarded as viable in the long term.

The general decline in tree health in rural areas combined with reduced or lack of recruitment is a serious threat to the long-term viability of the Grassy Eucalypt Woodland. This ecological community is now typified by a few old scattered trees in a paddock across much of its former range. Isolated trees in such landscapes are adversely impacted by factors such as increased insect attack, altered soil nutrient profiles and hydrological regimes, compaction and root disturbance, excessive mistletoe infestations and increased spray drift. These impacts are further exacerbated by a lack of regeneration caused by changing climatic conditions, conflicting grazing regimes, or weed competition. The ramifications for this ecological community are serious if the rate of regeneration cannot exceed the rate at which these isolated trees and small remnants succumb either through old age (senescence) or ill health (dieback).

The fragmentation of the Grassland and Grassy Woodland into small isolated remnants within largely agricultural and urbanised landscapes, and the associated site degradation arising from it, may now represent the greatest threat to the long-term conservation of these ecological communities. These remnants now require active management. It will be difficult to overcome this threat even with immediate human intervention to create biolinks to reconnect and expand these areas of habitat.

Utilities maintenance

Many of the most florally diverse sites that occur on roadsides or rail reserves have historically had a management regime of frequent burning. During the 1980s, around 50% of high quality rail reserve remnants were lost, as ploughing widened bare-earth firebreaks and controlling weeds with herbicide spraying began to replace burning as the typical fuel reduction method (Craigie 1999). Some local governments and CFA brigades have previously sprayed out roadside grasslands with herbicide to "cure" them first, in attempts to ensure successful fuel reduction burns. As a consequence, "cured" roadsides were invaded by weeds that in turn led to higher fuel loads, greater fire risk and on-going weed control costs. Remnants continued to be lost as maintenance works began to rely more heavily on larger machinery, and linear corridors became utilised for establishment of infrastructure such as piping and telecommunications.

Native vegetation on linear reserves continues to be under threat from utilities upgrades and poorly-managed maintenance activities.

4.2 Pest plants and animals

The impact of pest plants and animals is a major ongoing threat to the Grassland and Grassy Woodland of the VVP. Unfortunately, numerous introduced and invasive species have become established on the VVP.

Weed invasion

Invasion of native vegetation by environmental weeds has been listed as a Potentially Threatening Process (PTP) under the FFG Act. *Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants* has also recently been listed under the EPBC Act as a Key Threatening Process (TSSC 2010).

Even very small remnants of native grassy ecosystems will generally maintain their integrity if properly managed on an ongoing basis (i.e. biomass management and weed control). Soil disturbance from agricultural (e.g. stock) and machinery use tends to exacerbate invasion by fast-growing exotic weeds, including otherwise desirable pasture species. Invasion by grassy weeds, especially perennial grasses, leads to the native groundcovers being out-competed and smothered. In this instance, the gaps between tussocks that are necessary for recruitment by native species become occupied by weeds instead.

Some fauna, l ke Striped Legless Lizards, Eastern Barred Bandicoots and Golden Sun-moths, are less dependent on species composition than habitat structure. These species can occupy grassy habitat that is partially or almost entirely composed of exotic tussock grasses, but such habitat does not appear to be optimal (Robertson and Smith 2010; Hill *et al.* 2009; DEC 2006). However, Faithfull (2010) found reductions in invertebrate species richness and population sizes in areas infested with Chilean Needle-grass.

Once significant weed invasion has occurred, immediate control is necessary or the native groundcovers will be out-competed and smothered by fast-growing exotics. For example, Chilean Needle-grass in degraded grasslands has been observed to expand its range by greater than 5m annually while reducing native vascular plant richness (Faithful 2010). It should be noted that budgets and schedules for weed control can be scaled, so that more money and time is allocated for weed control initially, with costs and efforts reducing over time as weed diversity and abundance is reduced.

Numerous established and emerging weeds are threatening the Grassland and Grassy Woodland, including:

- exotic perennial grasses such as *Nassella* species (e.g. Serrated Tussock, Chilean Needle-grass, Texas Needle-grass *N. leucotricha*, Cane Needle-grass *N. hyalina*), Phalaris, African Love-grass, Paspalum (*Paspalum dilatum*), Sweet Vernal Grass (*Anthoxanthum odoratum*) and Cocksfoot *(Dactylis glomerata*);
- annual grasses such as Wild Oats (*Avena fatua*), Rye-grass (*Lolium rigidum*) Quaking Grasses (*Briza major*, *Briza minor*) and Fescue (*Vulpia* spp.);
- exotic woody weeds such as Gorse (*Ulex europaeus*), African Boxthorn (*Lycium ferocissimum*), Fennel (*Foeniculum vulgare*), Montpellier Broom (*Genista monspessulana*) and Sweet Briar Rose (*Rosa rubiginosa*);
- herbaceous weeds such as Cat's Ear (*Hypochaeris radicata*), Blanketweed (*Galenia pubescens*), Capeweed (*Arctotheca calendula*), Paterson's Curse (*Echium plantagineum*), Onion Weed (*Romulea rosea*) plus a variety of thistles (*Cynara cardunculus, Sonchus oleraceus, Cirsum vulgare*);
- native weeds such as the over-proliferation of regenerating shrub and tree saplings that form a closed canopy layer (e.g. several *Acacia* species), or Bracken Fern (*Pteridium esculentum*) to the detriment of the native ground layer.

Other weed-related threats to grassy ecosystems arise from management actions including:

- Broad-acre application of herbicides, using non-selective methods such as boom or aerial spraying resulting in the death of non-target species in swards of mixed natives and exotics, or death of nontarget species from spray drift.
- Poor weed management practices, such as the inappropriate selection, application and over-use of herbicides, and poor identification of target species (e.g. native Poa and Spear-grass tussocks accidentally killed under the guise of Serrated Tussock or Chilean Needle-grass control), as well as the possible emergence of herbicide-resistant weeds (e.g. Glyphosate and Flupropanate based herbicides).
- Lack of integration of weed control with restoration efforts so that a new suite of weeds appear after broadscale herbicide application unless there is follow-up replacement by weed-resistant native species.
- Planting of trees for shelter belts, landscaping or amenity in the Grassland where historically no trees occurred, resulting in soil disturbance, weed invasion, modified soil nutrient and hydrological regimes, and shading out of native grassland species.
- Lack of appropriate hygiene practices for vehicles, mowers, slashers and earth-moving machinery facilitating the spread of weed propagules.

Introduced predators and other pests

Significant impacts by introduced pest animals have been recognised with the following listed as Key Threatening Processes under the EPBC Act and PTPs under the FFG Act:

- *Predation by European Red Fox* (EPBC) and *Predation of native wildlife by the red fox, Vulpes vulpes* (FFG)
- *Predation by feral cats* (EPBC) and *Predation of native wildlife by the cat, Felis catus* (FFG)
- *Competition and land degradation by rabbits* (EPBC) and *Reduction in biomass and biodiversity of native vegetation through grazing by the Rabbit Oryctolagus cuniculus* (FFG)

Threat Abatement Plans have been produced for each of these Key Threatening Processes and outline a national response to mitigate the impacts of these pest animals on Australia's biodiversity (DEWHA 2008c-
e). Threatened species on the VVP that are adversely affected by predation from foxes and feral cats include Eastern Barred Bandicoot, Striped Legless Lizard, and Plains-wanderer (DEWHA 2008d, e). Rabbits and Hares selectively graze palatable groundcover species and tree seedlings, and have the potential to degrade habitat for the Eastern Barred Bandicoot, Plains Wanderer, Grassland Earless Dragon and Golden Sun Moth (DEWHA 2008c). House Mice (*Mus musculus*) are known to graze on orchid tubers (Murphy *et al.* 2008).

Less clear is the extent of the impact caused by exotic invertebrates (e.g. slugs, snails, red-legged earth mites) although it is known that introduced slugs and Portuguese millipedes graze on tubers of orchids

such as the critically endangered Sunshine Diuris (Murphy *et al.* 2008). Furthermore, the ramifications of pest control actions on indigenous fauna and flora, such as spraying for locusts, still need to be fully investigated.

4.3 Lack of biomass management or inappropriate biomass management techniques

The Grassland and Grassy Woodland require some type of biomass management, in the form of ecological burns, grazing or mowing/slashing. In the absence of suitable biomass management, dominant grass species will generally out-compete and smother smaller flowering herbs and/or biological soil crusts. In turn, the grass tussocks will then senesce. A senescent grass is not able to respond quickly to a change in available resources once dead biomass has been removed. This leaves gaps in the stand of grass and resources available above ground (i.e. light) and below ground (i.e. nutrients, moisture). Any weed seed present in the soil profile is then able to germinate within these favourable conditions and compete with existing grasses. In this situation the weed species eventually become dominant.

Another biomass-related threat is the excessive regeneration of shrub and tree saplings, especially *Acacia* species whose dense cover shades out the grassy understorey. This is probably due to the lack of regular burning or removal of grazing.

Inappropriate fire regimes

Generally grassland plant and animal species are well adapted to natural fire regimes, particularly if fire occurs after seed set (Eddy 2002) and where fauna refugia are available (e.g. soil cracks in summer, under rocks). Frequent, low intensity fires are typical. Fire is important in maintaining species diversity and controlling invasion by woody species. Weed infestation of grasslands may alter the fire regime by increasing the intensity of fire.

Fire is usually the preferred biomass management tool, particularly in the Kangaroo Grass-dominated Grassland and Grassy Woodland on public land where burning has been the historical form of management. *Inappropriate fire regimes causing disruption to sustainable ecosystem processes and resultant loss of biodiversity* has been listed as a PTP under the FFG Act. Furthermore, *High frequency fire resulting in disruption of life cycle processes in plants and animals and loss of vegetation structure and composition* has also been FFG-listed as a PTP. Too-frequent fire, especially in the Grassy Woodland, can also lead to degradation and loss of diversity.

A lack of fire in grassland ecosystems can result in increased biomass represented by increased fuel loads and increased fire intensity. This subsequently increases the risk of uncontrollable fire and loss of patchiness of burning required to maintain habitat heterogeneity essential for fauna and flora viability. High biomass levels have also been correlated with increased pest invertebrates (e.g. exotic slugs) and vertebrate populations (e.g. mice) (Wong and Morgan 2007). In the absence of bushfire, ecologically appropriate planned burning can be used to maintain grassland ecosystems.

Due to recent catastrophic bushfire events and recommendations by the 2010 Victorian Bushfires Royal Commission, government policy is to increase significantly the amount of planned burning in Victoria. As grassland ecological communities generally respond favourably to fire, this increased extent of treatment is not considered to be a threat if conducted appropriately. Instead it will present an opportunity to carry out more ecologically appropriate burns in locations where grasslands persist such as roadsides, rail reserves and cemeteries. However, there is a possibility that increased fire treatment may be associated with ploughing or some other form of soil disturbance when creating firebreaks. This can have negative consequences for grasslands, leading to weed invasion and loss of native species. Other techniques, such as slashing fuel breaks and back burning edges, overcome the need for bare earth fuel breaks.

If burning in the country area of Victoria is to increase, the capacity of the Country Fire Authority (CFA) to undertake controlled burns at the best time of year and to complete their region's burn schedule will need to be supported. For instance, some roadsides are burnt in December when volunteer CFA members have time available, but from an ecological point of view, this is usually not an advantageous time of year to be burning native grasslands, just as they are flowering and setting seed. This type of pressure on the CFA can lead to the use of herbicides to promote early curing to enable effective burns. As discussed earlier, curing techniques are associated with the destruction and degradation of grassy ecosystems.

Grazing pressure

It is well established that grazing by hard-hoofed domestic livestock is a major degrading activity in many Australian ecosystems (e.g. Dorrough *et al.* 2004, Kirkpatrick 1999, McIntyre *et al.* 2002, Young 2000),

impacting ecosystem function via soil disturbance and compaction, destruction of biological soil crusts (lichens and bryophytes), nutrient shifting, and the introduction and dispersal of weeds (Lunt *et al.* 2007).

Livestock grazing has converted open grasslands and woodland understories originally dominated by native perennial tussock grasses (e.g. Kangaroo Grass) to dominance by exotic annuals (e.g. *Avena*, *Bromus, Hordeum* and *Trifolium* spp.), with losses of native herbs (e.g. Prober and Thiele 1995, Dorrough *et al.* 2004).

However suitably managed grazing has a role to play in grassland and grassy woodland management. Most Grassland and Grassy Woodland on private land, and many reserves on public land, have had an extensive history of grazing (by kangaroos and stock). Maintaining the past management regime, whether it be fire or grazing, has been the conventional wisdom for biomass management.

Wong and Morgan (2007) have challenged this, observing that grazing simplifies the complexity, age and size structure of derived grasslands, which already consist of grazing-tolerant species. The level of degradation caused by grazing may not be discernable as species loss in the short to mid term, but even under light grazing regimes, the overall health, population numbers and/or functional resilience of species may decline.

On the other hand, Lunt *et al.* (2007) note that although stock grazing has been retained in some reserves in south-eastern Australia as a conservation management tool, there is no existing framework to assess whether under what circumstances (and in what ecosystems) is livestock grazing – or the removal of grazing – likely to have positive, negative, neutral or uncertain impacts on native plant diversity and composition.
There is no existing clear evidence that burning or **carefully managed** grazing is better than the other, but Lunt *et al.* (2007) conclude by saying "…livestock grazing is expected to give positive conservation outcomes in a relatively small range of ecological circumstances."

Many private landholders utilise grazing management as part of their farm plan. Several studies and reviews have focused on utilising grazing to manage biomass (e.g. Dorrough *et al.* 2004; Lunt 2005; Wong and Morgan 2007; Turner *et al.* 2008; Zimmer *et al.* 2010). Grazing regimes using a suitable rest period can maintain grassland diversity (Lunt *et al.* 2007), but set stocking encourages selective grazing and at high densities can cause damage as cited above. The following issues should be closely monitored:

- Overgrazing at either too high stocking densities or for too long a period must be avoided. Targets should be set to achieve either light stocking with a rest period, or high intensity crash grazing with a rest period, depending on management objectives.
- Highly palatable species may be selectively grazed and may require individual protection.
- Stock camping, where stock sleep and congregate, become areas of disturbed, bare soil that are susceptible to weed invasion, notably on hilly country and around water points.
- Grazing should be timed to reduce seed set of annual weeds, and optimise native species flowering and reproductive cycles

Grazing pressure from native macropods also needs to be managed and taken into account in site management plans. For example, in closed systems such as fenced wildlife reserves, large numbers of Eastern Grey Kangaroos can strip vegetation cover and reduce habitat for threatened species such as Eastern Barred Bandicoots.

Slashing

Roadside grassland remnants and the understory of grassy woodlands may be slashed to manage native vegetation as part of fire mitigation works or for amenity purposes. The issues created by this form of biomass management include:

- Spreading weed propagules unless vehicle and machinery hygiene practices are fully undertaken.
- Promoting weed species that are adapted to slashing (e.g. weeds with flat rosettes, Chilean Needle Grass as it can produce basal cleistogene seeds), unless slashing used intermittently with other biomass control methods such as burning.
- Cutting plants prevents them from reaching natural heights and removes or prevents the development of seed heads
- Cut material smothering indigenous plants (use of a flail slasher is recommended to overcome this).

- Vehicle access causing considerable soil disturbance (especially when the ground is wet), and thus promoting weed invasion.

4.4 Loss of key component species

Perhaps the most unquantifiable threat to temperate grasslands and grassy woodlands has been the loss of key component species, also termed keystone species. Grassland and Grassy Woodland plants and animals can play diverse ecological roles as pollinators, predators, mutualists or environmental engineers, and may be involved in nutrient recycling, promoting suitable vegetation disturbance, or transforming other essential elements of structural habitat or species composition. The loss of some of these species may lead to poor pollination and germination rates, removal of essential host plants or animals, disruption of critical life stages and vulnerability to stochastic events.

The loss of mammalian fauna from the lowland grasslands and grassy woodlands of Victoria has had unknown effects, with a number of species becoming extinct or endangered at a statewide or regional level (Seebeck 1984). At least four species which are believed to have occurred on the VVP are extinct (Mansergh and Seebeck 1992, Seebeck and Mansergh 1992). Predators such as the Eastern Quoll (*Dasyurus viverrenus*), now extinct on the mainland, have been replaced by larger, more abundant and more effective predators (e.g. foxes and cats).

The digging and scratching (i.e. bioperturbation) of ground foraging marsupials, such as bandicoots and bettongs, had positive effects on soil fertility, structure and moisture levels, as well as:

- opening up inter-tussock spaces and providing a micro-topography that assisted seedling germination;
- maintaining tussock health by scratching out dead thatch for nesting material;
- dispersal of seeds and beneficial soil biota such as hypogeal fungi;
- reducing vegetative fuel loads through grazing and incorporating leaf litter back into the soil, thus also playing positive roles in fire ecology.

The lack of seedling recruitment in a wide range of native forb species, observed in both wild and revegetated populations (Morgan 1995, 1999), could be due to the loss of pollinators or symbiotic associations with mycorrhizal fungi, or a combination of several other possible factors.

Much more information about the fungi kingdom, species distribution and fungal associations is required, as their important functional roles in the detritus cycle, nitrogen fixing, soil stabilisation, and seedling germination are well recognised.

Similarly, little is known of grassland invertebrate associations, species diversity and ecological function, representing another major knowledge gap. Invertebrates are critical components of the grassy communities, as pollinators, prey items and beneficial predators of exotic invertebrates (Horne *et al.* 1995). Where studied, invertebrates are abundant in grassy ecosystems; twenty-six beetle families (114 morphospecies) were collected from twelve grassland sites (Yen and Kobelt 2009), and in an unpublished survey of roadside grasslands near Shelford (A. Yen pers. comm. 2010), over 150 species of wasp were found, including pollinators and parasites. The effect of broad-scale locust-spraying on other classes of invertebrates and broader grassy food-webs needs to be investigated.

4.5 Poor reservation status

Despite recent acquisitions, the Grassland is still poorly reserved. On the VVP, an estimated 1.3% of the native vegetation occurs in reserves (VEAC 2010), but this includes all vegetation types, not just the Grassland and Grassy Woodland. There are still opportunities to secure and manage grasslands on private property by means of covenants and agreements, but the economic costs to do this are growing over time (N. Wong pers. comm. 2010). A program on the Northern Plains to purchase grassland/grassy woodland properties for reservation has been successful, partly because of lower land prices. On the Northern Plains, prices are approximately $300-$400/ha. By contrast, on the VVP, higher fertility soils and higher rainfall mean that prices are of the order of $3000-4000/ha.

It is unlikely that there remains on the VVP, large undiscovered areas of high quality Grassland and Grassy Woodland, so the focus of management needs to be on protecting the remnants that are currently known.

4.6 Knowledge gaps

Vegetation mapping is still inadequate in some LGAs or requires ground-truthing of vegetative models, and the mapping of EVC may need to be updated in other LGAs. Areas mapped over 20 years ago may

no longer contain grassy values due to clearance or degradation. The incomplete or inaccurate mapping of the Grassland and Grassy Woodland is perceived as a hindrance to identification of priorities for targeted action, as well as the enforcement and prosecution of illegal native vegetation clearance.

Consultation with a range of stakeholders on the VVP identified that while the Grassland is generally recognised as a conservation priority, the Grassy Woodland does not enjoy the same profile. The distribution of the Grassy Woodland EVCs has been modelled (see Figure 3) but little of this has been verified on the ground, especially the quality of the ground layer in meeting condition thresholds for the EPBC-listed ecological community.

There are also significant gaps in ecological knowledge, such as the interaction between burning and grazing regimes as management tools and the use of fire and stock grazing as management tools to reduce weed abundance. The current level of monitoring of management regimes is also inadequate across the entire bioregion.

As mentioned above, more information is required to determine the nature of extinction debt created by the loss of species, as well as establishing baseline data about fungal and invertebrate taxa in these grassy ecosystems. The significant developments in optimisation analysis techniques need to be more routinely applied to decision-making for VVP species and ecosystems.

4.7 Legislation and planning protection

All native fauna are protected under the *Wildlife Act* 1975 unless specifically excluded. The flora of the Grassland community are protected under the FFG Act, and a permit is required for their removal from public land. Not all taxa of the Grassy Woodland are protected because only a part of its distr bution is currently FFG-listed, as EVC 55-04. Many FFG-listed taxa of both communities are listed in their own right, or are members of protected families or genera. These controls are limited because:

- They only apply to public land, or land owned by a public authority.
- There is lack of awareness among stakeholders about permit requirements.
- There is confusion about what is actually protected. Protected flora can be
  (1) members of a FFG-listed taxon;
  (2) members of a FFG-listed community, but unless protected as a species, are only protected where they occur within that community; and
  (3) are not FFG-listed, but are held on the Protected Flora List (DSE 2010b), which includes all native orchids in the state, all daisies, all heaths, most of the wattles, and other common genera. □ Enforcement is variable.

In Victoria, under Clause 52.17 of all Victorian planning schemes, a permit is required to remove native vegetation unless the activity is exempt. Vegetation Protection Overlays or Environmental Significance Overlays may be applied by local councils to particular environmental assets. Generally the exemptions provided by these overlays are more limited than those provided by Clause 52.17. Work still needs to be done to investigate the effectiveness of planning controls at protecting Grassland and Grassy Woodland.

Enforcement of the Native Vegetation Retention controls under the *Planning and Environment Act* 1987 (P&E Act) is also variable.

Requirements under the EPBC Act are generally widely known, and penalties under the EPBC Act may deter potential offenders. There can be difficulties in determining proof, and the requirement to identify a "significant impact" has only been quantified for three VVP species (Golden Sun Moth, Growling Grass Frog, Spiny Rice-flower), which are impediments to prosecution.

Stakeholders also experience some confusion about where these three legislative controls apply. For example:

- EPBC and Planning controls operate on both public and private land. The FFG Act is limited to public land[2].
- Routine maintenance or minor works are currently exempt (with conditions) from native vegetation planning permits on rail lines and major roads. There are no exemptions under the FFG Act.
- For EPBC authorisation, a significant impact must be identified. Under the FFG Act, this is not necessary. Removal or destruction of any part of a plant may trigger requirements for FFG authorisation.

[2] Unless a "critical habitat" has been determined for a species on private land. No such determination currently exists.

- EPBC authorisation and planning permits are not needed for activities that are part of an ongoing lawful land use i.e. there is no change in land use or intensification of past activities. Under the FFG Act, there is no exemption (D. McLean, pers. comm.).

4.8 Lack of public awareness and limited stakeholder capacity

Work undertaken over the past twenty years indicates that land managers generally have a good knowledge of threats to grassy ecosystems and how to ameliorate them (e.g. DCE 1990; DCE 1992; Craigie and Ross 1995), but there is still an urgent need to increase the awareness of the general public and the capacity of stakeholders. Limited awareness of, or appreciation of the biodiversity values of these ecological communities and their legal status, is implicated in:

- Poor compliance with legislation and planning controls, and hence, the deliberate and accidental removal or degradation of grasslands continues.
- Illegal collection of wildlife or flora (e.g. *Collection of native orchids* is listed as a PTP under the FFG Act).
- Conflicting advice given to landholders by conservation and agricultural productivity experts.
- The dumping of rubbish and green waste; use of motorised recreational activities such as trail-bike riding; and vandalism to fencing and signage.
- Contractors not performing due diligence or following best practice guidelines when they undertake weed control, or engaged in installing or managing public infrastructure.
- Public perception that grasslands are uninteresting and unattractive, are unused “waste” land or are a harbour for snakes.
- Lack of uniformity of definitions and management advice.

In discussions with several grassland experts and land managers, the most commonly cited barrier or perceived threat to grassland conservation is stakeholder capacity and lack of resources. The following range of issues has been raised by stakeholders regarding their capacity:

- Many remnants are managed for purposes other than conservation (e.g. cemeteries, railways, agricultural production), or by committees or agencies with limited conservation management expertise. Several local government representatives also commented that they do not have the specialist grassland expertise and plant identification skills required.
- Some rural shires do not have a sufficient rate-payer base to fund environmental officers to carry out management, often over a very large region.
- The large size of the VVP bioregion makes the distance and travel time a difficulty for people attending meetings and events, and/or for carrying out on-ground management actions and monitoring.
- Engaging with a broad diversity of stakeholders, with varying needs, priorities and values, is challenging. This is also reflected in the fact that there are several authorities who have administrative responsibilities and roles on the VVP, and where strategies are being developed independently and possibly limiting the flow of information amongst all stakeholders. Liaison with stakeholders needs to be more strategic and effective.
- Lack of funding and resources affects all stakeholders, whether they are people working in state or local government, public or private land managers, indigenous communities, or even as volunteers for community groups, leading to a sense of frustration of not being able to do what they know needs doing.

4.9 Climate Change

Climate change is a potential future threat to these threatened grassy ecological communities and species. The predicted increase of average temperatures, and increasing periods of extreme heat and drought, will impact on plants and animals in various ways.

More frequent drought in south-eastern Australia is one of the modelled predictions resulting from climate change and this may be an ongoing impact on species such as Button Wrinklewort. The recent dry conditions, particularly in spring are believed to have had an impact on germinant survival. Button Wrinklewort flowers from mid-spring to summer, and germinants are especially vulnerable to hot, dry conditions and increasing intervals between rain periods (DECCW 2010a). This phenomenon has also been implicated in early data from a PhD study on Spiny Rice-flower (D. Reynolds, pers. comm. 2010).

From their anecdotal observations over the last decade of predominantly ongoing drought, several stakeholders involved in seed collection and seedling propagation raised concerns about climate change as a threat. They observed that numerous native grasses and wildflowers were not producing many flowers, with flower-heads prone to wilting on extremely hot days, or that the plants did not produce viable seed (Stakeholder surveys and forums, pers. comm. 2010).

Climate change predictions across Victoria suggest that dry springs and hot summers may become more common and lead to reduced recruitment. Other predictions associated with climate change, such as trends towards more frequent and intense bushfires, and for more intense storms, may also potentially impact on Grassland and Grassy Woodland biodiversity.

5. Recovery Actions to Date

A great deal of work has been undertaken over the last thirty years to assist the recovery of the Grassland and Grassy Woodland. Contributions have been made by a range of Natural Resource Management (NRM) agencies, non-government organisations (NGO), researchers, community groups and individual landholders to accumulate baseline information, undertake necessary scientific studies, protect and manage these ecological communities, and engage the public.

Current conservation initiatives are stated in detail on DSE's Actions for Biodiversity Conservation (ABC) database. This contains details of each action, whether an action was undertaken and results of the action. Reports can be generated from ABC for the EPBC-listed ecological communities and species on the VVP. Such reports can inform the effort put into recovery actions and identify where gaps and efficiencies may be possible. Appendix 5.5 summarises a recent report, where a total of 4742 standard actions have been completed or partially completed for these ecological communities and species from 2004 to 2010 (note that some actions occur on an annual basis and are hence counted repeatedly). Of the 4742 actions recorded on ABC, 686 actions were undertaken for the ecological communities, 2216 actions for fauna species and 1840 actions for flora taxa.

Broad categories of actions on ABC that have been undertaken include:

- Baseline data gathering (survey and mapping, site, habitat and threat assessment)
- On-ground management (pest plant and animal control, burning, fencing, signing)
- Habitat management
- Land management planning
- Population manipulation (artificial polliation, collection of reproductive material, translocation, ex-situ conservation, captive breeding)
- Monitoring (of species, communities, developing monitoring protocols)
- Statutory planning
- Management agreements, covenants, reservation
- Research
- Stakeholder awareness and engagement

Specific details of current initiatives for the EPBC-listed threatened species are documented in the individual National Recovery Plans.

Past recovery actions fall under the following headings. Details of these are provided in Appendix 5.

5.1 Baseline Information

- **Baseline data** for the location, quality and management regimes of key remnant sites, are retained in species databases (the Victorian Biodiversity Atlas), sites of biological significance databases (Biosites) and the ABC.
- **EVC mapping** – Mapping of Ecological Vegetation Classes (EVCs) and native vegetation modelling has resulted in estimates of Grassland and Grassy Woodland extent. However the current figures are probably an overestimation of the extent of the ecological communities remaining, because the understorey condition of remnants in the EVC modelled data has generally not been considered.
- **Biodiversity mapping** - Production of comprehensive biodiversity maps for much of the south western part of the VVP bioregion.
- **Other inventories and surveys** e.g.mapping of extent and condition of the ecological communities on rail reserves, roadsides, parks and reserves.

- **Component species surveys** have focused on several threatened species. See the relevant Recovery Plans and Action Statements for more details about previous threatened species research. Refer to Appendix 5 for data that has been accumulated for EPBC-listed threatened species.

5.2 Management Research

- **Grassland Management reviews -** work undertaken to study the effects of management regimes on lowland grassy ecosystems e.g. Lunt (2001), Lunt (2005), Lunt *et al.* (2007), Wong and Morgan (2007).
- **Biomass monitoring** e.g. trials of a field assessment technique (Schultz and Morgan (2007), Morgan unpub.)
- **Long-term Ecological Grazing** project to determine the influence of grazing management on native pastures of the VVP. (Turner and Zimmer 2007, Turner *et al.* 2007, and Zimmer *et al.* 2008).
- **Grassy Ground Cover Research** on the recruitment and long-term establishment of a range of grassy groundcover species (Gibson-Roy et al. 2007; Gibson-Roy 2008).

As a result of these and other projects, recommended management approaches have been developed, and are stated in detail in Appendix

5.3 Protection and Management

- **Land purchases** for inclusion within conservation reserves.
- **Western Grassland Reserves** – establishment of reserves to offset the losses of Grassland and Grassy Woodland resulting from the expansion of Melbourne's UGB. Two grassland reserves are being established to the west of Melbourne, totalling 14,405 ha. Of this area, 2650 ha (18%) is considered to be of high quality, 7779 ha (54%) of moderate quality and the remainder is poor or completely lacking in native vegetation (DSE 2009b).
- **Planning Provisions** set out policies and requirements for the use, development and protection of land, including native vegetation
- **Use of strategic assessments** e.g. the strategic assessment of the potential impact of expanding Melbourne's growth boundary. (DPCD 2009, Gordon *et al.* 2009).
- **Provision of Market-based Instruments** e.g. PlainsTender, BushBroker
- **Covenants and agreements** e.g. Trust for Nature covenants and property management plans
- **Strategic planning and management investment** e.g. Technical Advisory Groups, Victorian Environmental Assessment Committee investigation into remnant native vegetation on public land (VEAC 2010, 2011), Assessment of the drivers of land use change project (Ipsos 2007).
- Numerous other strategies and management initiatives, such as plans, strategies, grants and incentives have been undertaken over the last twenty years. Examples of of these are provided in Appendix 5.

5.4 Stakeholder Engagement and Extension

Stakeholder and broader community involvement is vital for the recovery of the Grassland and Grassy Woodland. Projects to promote these include:

- **Community networks** e.g. VVP Conservation Management Network, Victorian Volcanic Plain Biosphere Inc., DSE's South West Integrated Flora Fauna Team (SWIFFT) programs by local governments, research organisations, schools, zoos
- **Biodiversity in Agriculture** – a range of resources to assist land managers and stakeholders to retain biodiversity within agricultural systems e.g. Bioregional Action Plans, *Land for Wildlife Notes*, A *Living Systems Resource Kit* (Straker and Platt, 2002), A *Native Biodiversity Resource Kit* (DSE 2004b)
- **Conferences** (e.g. IFFA unpub. Craigie and Hocking 1999, Barlow and Thorburn 2000, Wyndham City Council (online)
- **Publications** e.g. *Plains Wandering* (Lunt *et al.* 1998), *Grassy Guidelines* (Barlow 1999), brochures, management kits, posters.

PART C: RECOVERY OBJECTIVES AND ACTIONS

6. Recovery Objectives

This Recovery Plan provides a vision to secure and improve the integrity of the Natural Temperate Grassland ecological community and the Grassy Eucalypt Woodland ecological community on the VVP. It establishes a broad strategy to achieve this vision, identifies recovery actions, and sets general priorities.

The objectives of this recovery Plan are to:

1) Maintain and improve the condition and extent of the ecological communities throughout their geographic distribution.
2) Protect the ecological communities from threatening processes, potentially incompatible land use or catastrophic loss.
3) Increase knowledge of the ecology and management requirements of the ecological communities.
4) Improve linkages between remnants via restoration and enhancement.
5) Improve community awareness and support for the conservation and improved management of the ecological communities.

These objectives are based on a broad strategy of continuing to maintain and protect existing remnants of the communities by a range of tools and mechanisms, while gathering information to identify target areas for actions, using new information to set clear priorities and targets, and measuring success. A broad summary of each objective is provided below. **Objective 1 – Maintain and improve.**

In the short term, all existing remnants of the communities that are believed to be high to medium quality must be managed for long-term maintenance, particularly for biomass management and pest plant and animal control. Existing levels of information on important sites and management techniques are adequate for this task, but as better information is gathered, priorities for areas, sites and actions can be better refined.

Objective 2 - Protection.

Existing remnants require ongoing protection through a variety of tools and activities, such as direct protection (e.g. fencing), reservation, land purchase, management agreements, incentives (particularly on private land), regulation and compliance, and stakeholder engagement and provision of information. As with objective 1, these efforts will become more focussed as relevant information is collected and clear targets are set.

Objective 3 – Increase knowledge.

Actions relating to management protection are currently undertaken on a relatively ad hoc basis. The ABC system identifies important sites containing remnants of the ecological communities, and assigns priorities to both locations and actions, but these assessments are not based on comprehensive data. In order to identify priority landscape zones or specific sites, and identify clear targets and priorities, information is needed to:

- determine the location, extent and condition of remnants by survey and mapping
- identify key threats
- fill in knowledge gaps
- identify the most effective management strategies
- Better optimise the selection and ranking of locations by quantitative assessment of comprehensive models of assets and processes (e.g. NaturePrint)

This information will be used to set priorities for action. Across the VVP:

› Landholders and land managers will be made aware of the presence of the ecological communities on their land, informing them of their obligations and respons bilities, but also their opportunities to take up incentives, grants and provide offsets.

› Compliance efforts will be strengthened to prevent illegal clearing.

› Programs of incentives and agreements will be increased to support the conservation of the ecological community.

› 'Focus' or 'target' areas will be identified. These will be where recovery efforts (on-ground management, site protection, creating linkages, targeted land purchases, incentives and education programs) will be

concentrated. When identifying focus areas, all biodiversity values of the ecological communities will need to be included, even if such values exist only in isolated areas. Focus areas will be identified across the entire range of the ecological communities, ranging from the higher rainfall grey clays of the far west, through the mid-rainfall areas in the central VVP and to the lower rainfall areas of the east.

› State and transition models (see section 9.1) will be developed to identify the various condition states of remnants, the desirable and/or undesirable processes influencing those states, and achievable management targets.

Objective 4 Improve linkages

The information-collecting process will also drive opportunities for enhancing connectivity within the landscape, by focusing on core areas of high actual and potential biodiversity value and creating links within these areas.

It should be noted, however, that isolated remnants will not be excluded from management simply by being isolated. As stated in section 4.2, small isolated remnants are able to retain high biodiversity values if suitably managed, although the cost-effectiveness of managing isolated small remnants must be considered.

Objective 5 Improve community awareness and support

Ongoing stakeholder engagement will be critical to the success of this Plan. Engagement, education and information exchange will be an important ongoing element of the ecological communities' recovery. Such engagement continues to occur on a mostly ad hoc basis, but target audiences, messages and methods of delivery will be refined as part of the information gathering and prioritisation process.

Benefits to other Plans/programs

There are currently 27 draft or adopted Recovery Plans for the EPBC-listed species that occur within the Grassland and the Grassy Woodland. Actions outlined in this Plan to improve the long-term viability of these two communities will overlap or complement actions in the species Plans and can be expected to improve conservation outcomes for these species. The implementation costs stated in these Plans (for Victoria) are approximately $20 million. A significant proportion of this, especially for flora species, would be be covered by implementing this Plan.

The majority of the actions and objectives are the same as or complementary to the objectives and actions of these Recovery Plans, but there are some potential conflicts (e.g. habitat requirements for some species may not be suitable for another). The main area of concern is determining an appropriate level of biomass and method of biomass management, as some taxa prefer a more open and sparse vegetative structure (e.g. Plains Wanderer, Grassland Earless Dragon), while others prefer a more closed structure (e.g. Eastern Barred Bandicoot, Striped Legless Lizard). No situations were cited by consulted experts where species coexist that have distinctly different habitat requirements. However, optimisation at the landscape-scale of potentially conflicting needs could be considered using tools such as NaturePrint.

Decisions about recovery actions need to be made on a site-by-site basis, and take into consideration variables like the presence of grazing and fire sensitive species, in line with management objectives to retain several different habitat states. Management prescriptions will be at the site level due to the large variation in condition.

Potential contributors to implementation of actions include relevant state nature conservation agencies, educational institutions, regional natural resource management authorities and community groups. The Recovery Plan will run for a period of five years from the date of its adoption under the EPBC Act, and will be reviewed and revised within five years of the date of its adoption.

7. Recovery Actions

7.1 List of Actions

The recovery actions considered critical to achieving the objectives, and the performance criteria against which success or failure will be determined, are summarised in Table 3 below. Details of individual actions, the locations where they are to be undertaken and the agencies/managers responsible are held on the ABC system. It contains nearly 2000 detailed on-going actions for the ecological communities and EPBC-listed species (see Appendix 5).

The priorities and estimated cost of each action are discussed in more detail in section 8 and Table 6. Actions will be implemented as resources are obtained. All the listed actions are considered to be necessary to achieve the recovery goals of this Plan.

Table 3 - Recovery objectives and actions for the Grassland and Grassy Woodland

Objective 1	**Maintain and improve the condition and extent of the ecological communities throughout their geographic distribution**
Actions and Priorities:	1.1 At all priority locations, assess and document threats to the ecological communities and species. 1.2 At all priority locations, undertake appropriate, targeted pest plant and animal control. 1.3 At all priority locations, undertake appropriate forms of biomass management (e.g. ecological burning, targeted grazing) to improve and / or maintain vegetation quality. 1.4 Incorporate ecological outcomes in all fire treatment programs. 1.5 Manage threats by establishing and maintaining fencing and infrastructure as needed. 1.6 Install and maintain markers and signs, including utilising current signage programmes, to indicate the location of high quality occurrences of Grassland and Grassy Woodland along linear reserves including roads, tracks, rail and utility easements. 1.7 Develop and implement integrated management plans for all conservation reserves.
Potential Contributors:	DSE, PV, LGAs, TFN, VicRoads
Partners:	CFA, CMAs, VVP CMN, Universities and research institutions, NRM NGOs (e.g. Greening Australia, Landcare Groups)
Performance Criteria:	□ Increased area and number of locations managed and achieving an improvement in extent and condition. □ Improvement in or maintenance of quality of both protected sites and sites where conservation is secondary.
Objective 2	**Protect the ecological communities from threatening processes, potentially incompatible land use or catastrophic loss**
Actions:	2.1 Employ a Lowland Grassy Ecosystem Coordinator to undertake/participate in actions 1.4, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 2.9, 2.17, 3.1, 3.3, 3.5, 3.7, 3.8, 3.9, 3.10, 4.1, 5.2. 2.2 Employ two VVP field officers to undertake/participate in actions 1.2, 1.3, 1.4, 1.5, 1.6, 2.9, 2.10, 2.11, 2.14, 2.18, 3.1, 3.2 3.3, 3.4, 3.5, 3.6, 3.7, 3.9, 3.10, 4.2, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, 5.8. Provide operating costs to undertake priority management actions 1.2 and 1.3. 2.3 Establish a Victorian Lowland Grassy Ecosystem Strategic Group. 2.4 Establish a VVP Technical Advisory Group under the auspices of the Recovery Team to advise on management decisions and to promote greater knowledge sharing. 2.5 Develop a "state and transition' model to identify condition classes of remnants of various Grassland and Grassy Woodland types and set targets for improvement. 2.6 Using the outcomes of 2.5, develop targets for all existing sites/areas reserved and managed for conservation purposes. 2.7 Using the results of 3.2 and 3.3, identify and prioritise "target areas" and sites for management and recovery activities. 2.8 Identify gaps in current reserve and off-reserve conservation protection in representing the geographic and ecological variation within the ecological communities. 2.9 Using the results of 2.7 and 2.8, identify key sites to be considered for voluntary acquisition by government and non-government acquisition programs, for inclusion in reserves.

	2.10 Using the results of 2.7 and 2.8, identify key sites important to the maintenance/improvement of landscape connectivity of remnants to be managed under conservation agreements or similar protection mechanisms.
	2.11 Negotiate voluntary acquisition or exchange of land (as opportunities arise). Target areas identified from 2.7 and 2.8. 2.12 Amend public land tenure to provide for greater reservation (as opportunities arise). 2.13 Establish management agreements with managers of unreserved public land. Target areas identified from 2.7 and 2.8. 2.14 Undertake protection for private land remnants through a range of NGO and Government in-perpetuity conservation and management agreements and protective covenants. Target areas identified from 2.7 and 2.8. 2.15 Continue to encourage provision of funding for incentive and long-term stewardship schemes e.g. Plains Tender, that target protection of remnants, especially on private land. 2.16 Ensure that planning processes consider the conservation of the ecological communities, and amend planning schemes and overlays as appropriate to incorporate actions into planning, management and development controls in the bioregion. 2.17 Liaise with stakeholders and land managers to avoid accidental damage and breaches of legislation. 2.18 Further promote and enforce the legislative controls over the taking of protected flora on public land and the provisions of the Native Vegetation Framework.
Potential Contributors:	DSE, PV, CMAs, LGAs, TFN, CFA
Partners:	Utility agencies, Local government, Schools, Landcare groups, CFA
Performance Criteria:	□ Target areas identified as priorities for management/protection. □ A network of remnants of the ecological communities is protected under reservation and/or conservation agreements across their geographic extent and incorporating the ecological variation within the communities. □ Stewardship funding available for land managers managing areas of Grassland and Grassy Woodland for conservation outcomes. □ Annual review of protection mechanisms, and where appropriate modification of preferred protection mechanisms in response to monitoring and research results. □ Increased area and number of locations managed and achieving an improvement in extent and condition.
Objective 3:	**Increase knowledge of the ecology and management requirements of the ecological communities**
Actions:	3.1 Review condition thresholds for both ecological communities. 3.2 Ground-truth the indicative maps of the two ecological communities. 3.3 Identify gaps in survey and mapping data across the predicted distribution of the communities, especially Grassy Woodland, within the VVP and adjacent bioregions and conduct future surveys to fill these gaps. 3.4 Review the coverage and ranking of ABC sites using NaturePrint. 3.5 For all priority locations, collect baseline data on area of occupancy, quality of community remnants and presence of threatened species. 3.6 Establish and apply protocols for non-technical monitoring of remnant sites. 3.7 Undertake on-going monitoring of important populations/locations and responses to management actions. Identify any regional differences in Grassland and Grassy Woodland in response to management.

	3.8 Assess the effectiveness of incentives programs, agreements, community education and management interventions in improving the conservation and quality of remnants of the ecological community 3.9 Promote and continue research into appropriate biomass management techniques and the impacts of various management regimes, notably burning and grazing. 3.10 Investigate established cost effective techniques for restoring degraded remnants, to improve functionality and restoration of understorey species. 3.11 Measure the effectiveness of management activities by developing Bayesian Network models on ABC, for priority locations for the ecological communities and threatened species. 3.12 Promote and utilise the Indigenous Ecological Knowledge project to improve on-ground management of remnant sites.
Potential Contributors:	DSE, Universities and research institutions, PV, CMAs, Committee of Management, NRM NGOs, DSEWPC
Partners:	CFA, Private land managers, NRM NGOs, VVP CMN
Performance Criteria:	• Results of all research projects are documented and appropriately published. Results are incorporated into "best practice" management guidelines and distributed to land-managers. • "Best practice" guidelines continue to be developed, reviewed and/or modified in light of research/monitoring results. • Monitoring programs are in place and results show an improvement in the quality (condition) of protected Grassland and Grassy Woodland sites. • On-going improvement in the knowledge of the extent and quality of the Grassland and Grassy Woodland including the filling of information gaps as they become apparent. • Build further Bayesian Network models to assess management outcomes.
Objective 4:	**Improve linkages between remnants via restoration and enhancement**
Actions:	4.1 Using the NaturePrint approach, analyse landscape-scale opportunities and risks to identify optimised locations for restoration and enhancement. 4.2 Restore and enhance habitat and increase habitat complexity by appropriate revegetation and enrichment planting. 4.3 For populations of threatened species, undertake re-introduction, translocation, artificial pollination, *ex-situ* conservation or captive breeding, as described in species' Recovery Plans.
Potential Contributors:	DSE, PV, LGAs
Partners:	NRM NGOs (e.g. Greening Australia, Landcare Groups), CMAs, VVP CMN, TFN, research institutions, Zoos Victoria, Royal Botanical Gardens
Performance Criteria:	• Sites identified for enhancement and guidelines for restoration work prepared. • Restoration activities based on vegetation condition/habitat enhancement are underway. • Current approaches to landscape restoration validated, particularly models identifying where to increase the extent and connection of remnants.
Objective 5	**Improve community awareness and support for the conservation and improved management of the ecological communities**
Actions:	5.1 Promote and expand the VVP CMN and provide ongoing full-time funding for a facilitator.

	5.2 Support the continued operation of NRM biodiversity networks. Improve links and information exchange with the Gippsland and the Northern Plains CMNs. 5.3 Continue to educate private and public stakeholders in the identification, management, monitoring and benefits of Grassland and Grassy Woodland remnants, including local government and State government infrastructure management agencies, through the distribution of information material, newsletters, exhibits at field days, workshops and training. 5.4 Facilitate information and skills exchange between landholders, land managers, government agencies, community groups and other stakeholders aimed at achieving best practice management. 5.5 Identify sites where current management practices are beneficial to biodiversity and promote these as models for best practice management and/or as research sites. 5.6 Continue to disseminate results of research, management and restoration programmes to stakeholders via mechanisms such as SWIFFT, VVP CMN, conferences and publications. 5.7 Continue to promote cooperative programs such as Landcare as well as competitive market based programs such as BushBroker, BushTender, PlainsTender and EcoTender, to provide for the differing goals of landholders. 5.8 Identify Aboriginal interest in Grassland and Grassy Woodland sites and facilitate indigenous involvement in conservation management of remnant Grassland and Grassy Woodland on Aboriginal and public land. 5.9 Ensure that extension/education material, including identification and management guides is kept current and relevant.
Potential Contributors:	DSE, PV, TFN, LGAs, VVP CMN
Partners:	CMAs, Indigenous organisations, Utility agencies, Schools, Landcare groups
Performance Criteria:	□ Funding for the CMN is secure and on-going. □ CMN facilitator is employed. □ All organisations involved in planning, management, development and control of land/vegetation in the region are aware of the issue of Grassland and Grassy Woodland conservation and have incorporated this matter into their functions. □ Increasing land manager, community and indigenous involvement in conservation of the Grassland and Grassy Woodland and increasing numbers accessing incentive and stewardship funding for Grassland and Grassy Woodland conservation management. □ An increasing number of land managers are implementing "best practice" management on Grassland and Grassy Woodland sites.

Many of the actions listed in the table above are underway and have been pursued for many years. However the proposed actions include s number of new initiatives that are expected to contribute to the recovery of the communities. The following provides more detail on these initiatives.

7.2 New Initiatives

Actions 2.1 and 2.2 - new Grassy Ecosystem staff

Three new positions are proposed:

A *Grassy Ecosystem Coordinator*, who will provide a facilitator role for the Strategic Group, and undertake high-level strategy work, such as development of a state/transition model, survey coordination, prioritising 'focus areas' and actions, establishing monitoring protocols, facilitating information exchange, etc. (see Table 4 and 7.)

Two VVP field officers, who will undertake coordination of on-ground works, mapping, survey, condition assessment, monitoring, provision of information to stakeholders and community engagement (see Table 4 and 7). More detail of how these people will operate to implement the Plan is provided in part 8.1.

Action 2.3 – the 'Victorian Lowland Grassy Ecosystem Strategic Group'

As a new initiative, the Plan proposes to establish an over-arching group or committee to provide strategic guidance and integrate information and actions across all the key threatened lowland grassy ecosystems in Victoria, including the:

- Natural Temperate Grassland and the Grassy Eucalypt Woodland of the Victorian Volcanic Plain
- Gippsland Red Gum Grassy Woodland and Associated Native Grassland
- EPBC-nominated Murray Valley Natural Grasslands of the Southern Riverina Bioregion
- the grassland communities included in the EPBC-listed Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of Southeastern Australia, and White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland.

These ecological communities, although in some cases disjunct, have significant overlap in terms of Nationally and State listed species, threatening processes, ecological functions, socio-economic influences and reservation status.

The role of the Strategic Group is to improve administration, integration and links with other existing TAGs and Recovery Teams (RT), to optimise knowledge and research exchanges between groups and bioregions, and guide activities that will benefit not just the ecological communities but also the large number of EPBC listed species that are dependent on or occur within them. In the long term, the Group could develop a strategic 'road map' outlining the key directions, goals, activities and funding.

New Recovery Teams, for the Grassland, Grassy Woodland and the Gippsland Grassy Woodland, would be formed as one of the several sub-groups under the overall guidance of the Group (See Figure 4)

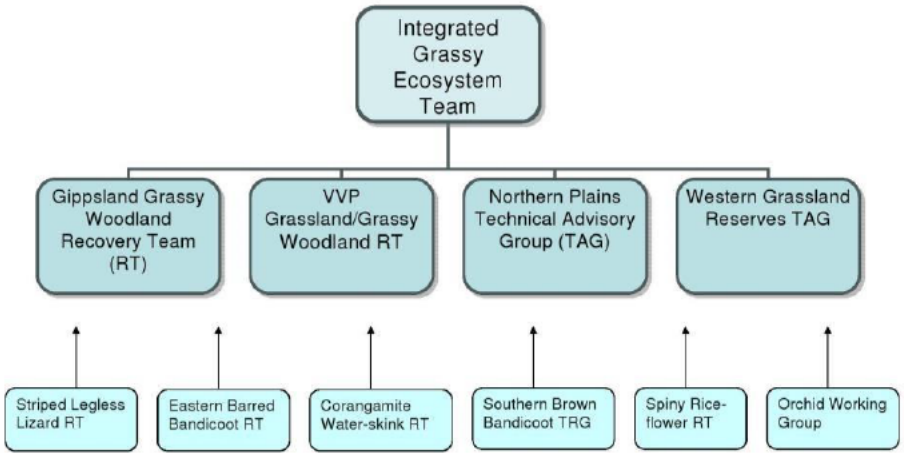


Figure 4 - Proposed model for a Victorian Lowland Grassy Ecosystem Strategic Group

Action 2.5 - Developing a state and transition model

A high priority action for this Recovery Plan is the development of state and transition models for the ecological communities. A state and transition model is a tool used to identify and quantify the states (i.e. properties or condition classes) of remnants of a particular ecosystem, and the transitions or changes that are occurring within that ecosystem in response to land uses. States can range from more or less intact remnants, to varying conditions of weediness, species richness, diversity, and all the way down to near total destruction of the remnant.

The model identifies the transitions that drive these changes. They can be deleterious transitions (e.g. fertilising, introduction of exotics, over-grazing, de-rocking and cropping), or advantageous (e.g. removal of grazing, changes to biomass management, weed removal or active restoration). Once states and transitions are described and quantified, the model can be used to predict the changes in states following land use or management actions. (For more information on state and transition models, see Appendix 6.)

The models will be used to quantify the amount of each state on the VVP, to set targets for the future amount of each state, and identify the key transitions that management actions will address.

Action 3.1 - Review of the communities' key diagnostic characteristics

The key diagnostic characteristics for the ecological communities stated in the listing advices (TSSC 2008, 2009a) require review, for several reasons. Firstly, the listing advices are inconsistent in their identification of the geographic distribution of the ecological communities, stating that the Grassy Woodland is strictly limited to the VVP bioregion, while the Grassland can occur as outliers on adjacent bioregions. The distribution of both of the ecological communities should be defined by their biological character, such as vegetative attr butes and affinity to basalt soils, rather than by arbitrary boundary lines on a map. It is therefore suggested that patches of Grassy Woodland in adjacent bioregions should also be considered as part of the ecological community.

Secondly, stakeholder comments and ad hoc surveys have revealed that the criteria covering understorey conditions and re-growth heights might be excluding areas that merit inclusion in the Grassy Woodland. Of particular concern is that many areas of Grassy Woodland with a history of grazing have understorey vegetation that is of insufficient diversity and/or cover to be included in the ecological community. Another scenario causing consternation is the temporal changes observed in the canopy cover of regenerating Grassy Woodland. For example, Bannockburn Bush Reserve had an open grassy woodland structure 15-20 years ago that would have satisfied the current condition criterion, but even though the understorey condition is currently good, this reserve would be excluded because the density and cover of the mature tree canopy is now too enclosed. It is anticipated that with appropriate management and restoration, the quality of the understorey could be improved or the canopy thinned to the point where patches would meet the key diagnostic criteria. However, unless the remnant is first identified as being part of the listed ecological community, land managers may not be able to justify such an investment.

Thirdly, since the production of the listing advice for the Grassy Eucalypt Woodland (TSSC 2009a), several additional EVCs have been suggested for inclusion within the ecological community. Benchmarks for the following EVC indicate they have the appropriate canopy species and percentage canopy cover, and the species commonly present in these EVC are also typical of the Grassy Woodland:

- EVC 68 Creekline Grassy Woodland - 4179 ha of this EVC currently mapped across the entire VVP
- EVC 175 Grassy Woodland - 2924 ha mapped across the entire VVP
- EVC 203 Stony Rises Woodland - 26,358 ha mapped in the central and far west of the VVP, but should be included only where the understorey meets the condition thresholds (i.e. excluding areas dominated by Bracken Fern)
- EVC 642 Basalt Shrubby Woodland - 1496 ha mapped in the far west of the VVP
- EVC 894 Scoria Cone Woodland - 764 ha mapped across the entire VVP

For the Natural Temperate Grassland of the VVP, the following EVC should be considered for inclusion in the ecological community, but only where this EVC occurs on basalt soils:

- EVC 934 Brackish Grassland - 0.5 ha mapped in the far east of the VVP

The listing advice for those communities should be amended so as not to restrict the ecological communities to within the mapped EVC boundaries, and should include statements to allow for reference to other EVCs which may meet the definition under some circumstances or for subsequent revisions to EVC classifications. The advice should allow for the incorporation of new units or units that are variable and, whilst not consistent with the listing definition in most cases, may meet it under some circumstances.

Action 5.1 - VVP Conservation Management Network

The CMN has the potential to contribute to a significant reduction in the threat to inadvertent loss and degradation of key biodiversity assets on the VVP through an increase in the range and effectiveness of community and agency engagement activities. By further developing the CMN and funding a full-time facilitator, the CMN could build on the substantial increase in the cooperation and communication that has been generated through its 18 month existence.

7.3 Expanded Initiatives

Action 1.3 - Biomass management

Increasing the amount of appropriate biomass management is a high priority. Lowland grassy ecosystems provide comparatively low risk environments in which to undertake burning regimes and the training of new fire crews. Opportunities for more partnerships with CFA brigades should be explored.

Action 2.15 - Incentives

Practical landholder incentives are an essential part of encouraging widespread participation and cooperation from private landholders. These incentives may include MBIs, council rate relief/rebates, pest and weed control grants, fencing grants, providing access to extension officers, property management plans and stewardship payments.

Ongoing engagement is needed to promote the use of both cooperative (e.g. Landcare grants) and competitive (e.g. market-based incentives) instruments as different tools in a larger program.

Action 3.6 - Monitoring

Monitoring the outcomes of both on-ground management and incentives programs are needed to accurately measure the gains they provide.

Targeted monitoring to detect vegetation change at both paddock- and plot-scale is a high priority. The Northern Plains TAG have proposed a four-tiered monitoring program as part of the Strategic Operational Plan (Blue Devil Consulting 2011), for the NPG Protected Area Network. Primary monitoring provides a rapid non-technical assessment of key vegetation structural indices on a seasonal or annual basis to inform more immediate management decisions, such as implementing biomass control (e.g. grazing, burning regimes). Secondary and tertiary monitoring is more intensive, so occurs less frequently and at fewer sites. They require a higher level of expertise and resources to assess ecological variables, which capture functional and structural changes in the different vegetation community types (secondary monitoring), and population attributes of focal species (tertiary monitoring). A fourth level, based on remote sensing requires further refinement to help profile and track the dynamics of the various states of the NPG across the landscape, as well as monitor the ecological outcomes in response to conservation efforts.

The rationale for this monitoring program is applicable to all temperate lowland grassland and grassy woodland communities, so has been reproduced with permission of the TAG in Appendix 7.

8. Plan Implementation

8.1 Action Priorities

Actions were prioritised in terms of cost-effectiveness, using a similar approach to the "Project Prioritisation Protocol" developed by the Australian Environmental Decision Analysis research hub, and based on Joseph *et al.* (2009). This attempts to rank projects by their cost-effectiveness, by calculating the costs of each project, predicting its benefit to assets and estimating the likelihood of success. This has been adapted for this Plan and uses the formula:

B x S x M

C where B = benefits i.e. value of the action towards recovery; S = probability of success of the action (i.e. feasibility, known techniques, technical ability), M = multiple benefits to other species and C = action cost (this includes contractors' costs as noted below). Using this formula, the top twenty actions are listed in Table 4 below. ("Wholly" and "partially" refer to actions that would be completely or partially carried out by the proposed new staff.) The complete list of actions and costs is shown in Table 6.

Table 4 Actions ranked using an adapted project prioritisation protocol.

No.	Action	Est. cost ($,000)	wholly	partially	Priority
2.4 1	Establish a VVP Technical Advisory Group under the auspices of the Recovery Team to advise on management decisions and to promote greater knowledge sharing.	**$25**	✓		
3.1	Review condition thresholds for both ecological communities.	**$20**	✓	✓	2
2.17 3	Liaise with stakeholders and land managers to avoid accidental damage and breaches of legislation.	**$25**		✓	
2.5	Develop a "state and transition' model to identify condition classes of remnants of various Grassland and Grassy Woodland types and set targets for improvement.	**$70**	✓		4
3.3	Identify gaps in survey and mapping data across the predicted distribution of predicted distribution of the communities, especially				

		$60	✓	✓	5
	Grassy Woodland, within the VVP and adjacent bioregions and conduct future surveys to fill these gaps.				
2.3	Establish a Victorian Lowland Grassy Ecosystem Strategic Group.	**$100**	✓		6

2.18	Further promote and fully enforce the legislative controls (e.g. Wildlife Act, FFG Act, EPBC Act, Native Vegetation Framework).	**$25**			7
2.7	Using the results of 3.2 and 3.3, identify and prioritise "target areas" and sites for management and recovery activities	**$100**	✓		8
2.9	Using the results of 2.7 and 2.8, identify key sites to be considered for voluntary acquisition by government and non-government acquisition programs, for inclusion in reserves.	**$50**	✓	✓	9
3.11	Investigate established cost effective techniques for restoring degraded remnants, to improve functionality and restoration of understorey species.	**$50**	✓		10
5.2	Support the continued operation of NRM biodiversity networks. Improve links and information exchange with the Gippsland and the Northern Plains CMNs	**$50**	✓	✓	11
2.8	Identify gaps in current reserve and off-reserve conservation protection in representing the geographic and ecological variation within the ecological communities.	**$50**	✓		12
3.6	Establish and apply protocols for non-technical monitoring of remnant areas.	**$60**	✓	✓	13
3.5	For all priority locations, collect baseline data on area of occupancy, quality of community remnants and presence of threatened species.	**$100**		✓	14
4.1	Using tools such as NaturePrint, establish criteria for identifying key sites for restoration/enhancement, and identify sites.	**$20**	✓		15
2.10	Using the results of 2.7 and 2.8, identify key sites important to the maintenance/improvement of landscape connectivity of remnants to be managed under conservation agreements or similar protection mechanisms.	**$60**		✓	16
3.4	Review the coverage and ranking of ABC sites using NaturePrint	**$10**			17
1.1	At all priority locations, assess and document threats to the ecological communities and species.	**$180**		✓	18
3.7	Undertake on-going monitoring of important populations/locations and responses to management actions. Identify any regional differences in Grassland and Grassy Woodland in response to management.	**$150**		✓	19
2.13	Establish management agreements with other public land managers. Target areas identified from 2.7 and 2.8.	**$50**			20

8.2 Implementation of Priorities

Few of the actions stated in Table 4 above are new. Most of the on-ground actions are already being undertaken, to a greater or lesser degree, as part of the overall land management responsibilities of public and private managers. Essential, high priority actions such as weed control and biomass management continue to be regularly undertaken by management agencies. The budgeted costs for these are based on an 'ideal world' scenario, where every community remnant receives such treatment. In the absence of increased funding, these activities will continue to be funded and undertaken as staff and resources allow.

Actions such as covenants, agreements and community education are being undertaken as **existing and on-going programs** by organisations such as TfN. These programs will continue, but like the on-ground actions will require more resources to expand them.

The role of this Recovery Plan is to target existing and new programs to provide the greatest biodiversity gains in the most economic manner. While some actions may provide biodiversity gains at a relatively low cost, as shown above, these are only fragments of a whole. The objectives of the Plan will be best met by pursuing **all** actions in accord with the logical program stated in chapter 6.

Of the priorities listed in this Plan and detailed on ABC, the actions that are considered most critical to the recovery of the Grassland and Grassy Woodland communities are (1) employment of new staff and (2) continuing on-ground management. The reasons for this statement are described below.

New staff

The key strategic actions that will set priorities, criteria, targets and increase community engagement, cannot be undertaken by land management agencies, especially DSE and PV, at present levels of staffing and resourcing. At least three new staff positions that are dedicated solely to lowlands grassy ecosystem

management will be needed to fully implement these actions, even with the ongoing assistance of biodiversity management staff within all relevant NRM agencies. They may be based in DSE, PV or some other suitable organisation.

If these positions are not provided, then the Plan is unl kely be implemented. NRM agencies are spread very thinly, and are not resourced to take on the additional workload that the Plan would require. Without the new staff, management would continue to be undertaken on an ad hoc basis as resources allowed, but without the benefits of clear priorities, targets and specialist expertise.

These three people would provide clearly identified points of contact for stakeholders. Anecdotal observations state that personal contacts are essential to the success of any community engagement program; websites or brochures can never match the value of regular personal contacts. People can provide the 'face' of a program, reinforce messages and explain strategies and policies. In an environment such as the VVP where land uses are such an important factor in the survival of grassy ecosystems, a dedicated onground presence can have a strong influence on perceptions and values. As noted in the Ipsos study (Ipsos 2007), advocacy is recognised as one of the strongest drivers in the adoption of new land management practices. Relationship building is critical in developing trust, encouraging change, and fostering landholder advocacy of programs and initiatives. The study also noted the value of long-term relationships, emphasising that retaining an on-ground presence in the long term is critical to the on-going engagement of landholders and their communities.

These proposed staff roles will not duplicate the existing programs of the various stakeholder organisations, but integrate them and enhance opportunities for collaboration. They will undertake activities that will assist the conservation of not just the Grassland and Grassy Woodland ecological communities, but also other threatened species on the VVP, particularly the EPBC-listed species shown in Table 1, and other communities, such as the EPBC-nominated *Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains*.

The Grassy Ecosystem Coordinator will facilitate the statewide Lowland Grassy Ecosystem Strategic Group, and undertake not just the strategic work for the Grassland and Grassy Woodland, but also undertake similar tasks for the Gippsland Red Gum Grassy Woodland and Grassland, and, if EPBC-listed, the Murray Valley Natural Grasslands and the Wetlands on the Lowland Plains of Temperate South-eastern Australia. Consequently there will be a need to retain this position for more than the five years of this Plan.

Of the two field officers, one is proposed to concentrate on the eastern part of the VVP and one on the western part. These positions would be needed for a minimum of five years, and then reviewed to determine whether one person would be adequate in the longer term.

On-ground management

The strategic tasks descr bed above are critical to establish a targeted, effective recovery program, but undertaking them will be of little value if there is nothing left to recover. Therefore management of weeds and biomass must continue to ensure that all remnants of the ecological communities can persist in the short term.

8.3 Implementation Cost

An indicative implementation schedule and costs for the five year life of this Recovery Plan is outlined in Table 6.

The costing for the proposed new Grassy Ecosystem Coordinator (VPS-5 or equivalent) is based on a salary of $76,424 p.a. (2010-11) rising to $92,467 (based on Victorian salary levels and future workplace agreement based salary rises), plus 25% on-costs and an annual budget of $30,000 for operating costs and additional contractor expertise.

The costing for the proposed new VVP Field Officers (VPS-4 or equivalent) is based on a salary of $66,235 p.a. (2010-11) rising to $75,151 (based on Victorian salary levels and future workplace agreement based salary rises), plus 25% on-costs and a budget of $40,000 pp/year for on-ground management (approx. $130,00 pp/year).

Based on the estimated scope and duration of the actions outlined, it is proposed to employ the three staff initially for five years full-time, with the likelihood of an extension, contingent on a review of progress and achievements.

Actions to be undertaken wholly or partially by the new staff are identified in Table 6. The costs associated with these actions are presented on the basis of them being undertaken by contractors in the absence of the new staff, so the bulk of these expenses **would not be incurred** if the three new staff are provided. Contractor expenses are identified at $800-$1000/day.

8.4 Performance Criteria

The criteria against which these objectives will be measured are outlined above in detail in Table 4. In general terms, however, the performance criteria for the objectives of this Plan include:

- An increase in the area of the listed ecological communities and degraded sites under conservation management agreements and/or within the formal reserve system.
- An increase in areas which meet the minimum condition criteria for the nationally listed ecological communities.
- Maintenance of floristic diversity, structural complexity and ecological function of the ecological communities across its distr bution.
- A reduction in the level of specific threats.
- An improvement in the landscape connectivity for remnants of the listed ecological communities.
- An improvement in the overall condition of the Grassland and Grassy Woodland remnants within formally reserved areas, areas protected under various conservation agreements and priority areas on publicly managed land (e.g. road reserves) across its geographic range.
- An increase in the broader community's understanding and appreciation of the values of the ecological communities, as demonstrated by achieving the above criteria.

8.5 Evaluation

The Recovery Plan will run for five years from the date of its adoption, under the EPBC Act, and will be reviewed by Victorian State agencies and revised within five years from the adoption date. However it is recognised that many of the desired ecological outcomes for the ecological communities will need to be measured over a much longer time-frame than the intended duration of this Plan.

A Recovery Team, consisting of representatives from Victorian state government and other relevant agencies and experts, will advise on improvements to the Plan as required to better target the objectives. The Recovery Team will also advise on implementation progress to adjust the implementation strategy if necessary.

8.6 Role of the ABC

The Plan will be implemented via the Actions for Biodiversity Conservation (ABC) system. For each item (species or community), ABC identifies priorities for individual locations and for each action at a location. Broad criteria for determining priorities are described in Appendix 4, but in the future NaturePrint will be used to guide expansion of the coverage of ABC sites, and to review location priorities. Priorities for individual ABC actions are based on the contribution an action makes to ameliorate the priority threats at that location for that item.

For details of locations, location priorities and categories of actions, see Appendix 4 and Table 18 in Appendix 5.

Results of actions will be recorded on ABC, and ABC will be used to build site-specific models (Bayesian network models) to be used as part of the monitoring, evaluation and reporting components of Plan's implementation.

PART D: BENEFITS AND IMPACTS

9. Biodiversity Benefits

The preparation and long-term implementation of Recovery Plans for threatened species, populations and ecological communities contribute to, and highlight the importance of, conserving biodiversity. The conservation of biodiversity has a number of wider community benefits, such as the provision and maintenance of a range of ecosystem functions and services and landscape health.

As this Recovery Plan is focusing on the conservation of two related ecological communities, it is assumed that the diverse array of species which constitute these communities (see Appendix 3) will also be benefited. Principally, this will be achieved through the protection, management and restoration of habitat, and the mitigation of threatening processes. There will be substantial local benefits for specific taxa and vegetation communities if native vegetation is re-instated or improved.

The ecological communities extend across the VVP, intergrading with and surrounding other highly endangered ecological communities, such as grassy wetlands. The threats and land uses that impact on the Grassland and Grassy Woodland apply across the entire bioregion and on other species and ecological communities. Actions to ameliorate threats to and conserve the two ecological communities will assist in the conservation of these other biodiversity assets.

In general, the habitat management requirements for threatened fauna (e.g. Eastern Barred Bandicoot, Striped Legless Lizard) are sympathetic with those for associated native flora species and communities (e.g. ecological burning, pest plant and animal control). Use of poison baits to control exotic predators may potentially impact on exotic non-target species (e.g. domestic dogs and cats), but respons ble pet ownership would limit exposure to baits. Management of biomass levels will need to be determined on a site by site basis, to ensure that the method and timing of biomass removal has a positive or at least a negligible adverse impact on the lifecycles of coexisting flora and fauna.

For threatened flora, the germination and cultivation techniques developed during the recovery phase may be of use for other threatened taxa elsewhere in south-eastern Australia, particularly those species with similar life forms and/or flowering responses. For instance, the mycorrhizal fungus associated with Basalt Greenhood has been found to effectively germinate seed of the nationally threatened Gorae Leek-orchid and Scented Leek-orchid, representing a major breakthrough in *Prasophyllum ex-situ* propagation and cultivation techniques (Vlcek and Pritchard 2010).

The Recovery Plan will also provide an important public education role as there are several threatened species with the potential to act as VVP 'icon' or 'flagship' species (e.g. Eastern Barred Bandicoot, Growling Grass Frog, Corangamite Water Skink, Curly Sedge, Button Wrinklewort, Hoary Sunray). Iconic species provide the broad public appeal that the Grassland does not; plains grasslands cannot compete with forests, rivers or mountains for landscape popularity. Iconic species help highlight broader nature conservation and biodiversity issues such as land clearing, grazing, weed invasions and habitat degradation. Well-known 'flagship species' can be invaluable in the overall conservation of the Grassland and Grassy Woodland.

10. Affected Interests

11.1 Stakeholders

The Grassland and the Grassy Woodland and their associated threatened species occur on both public and private land, under a range of tenures and land uses. Remnants and populations can be found on roadsides, railway reserves and other utility easements, agricultural land, industrial land, town commons, in cemeteries, urban parks, under Aboriginal title, or on National Parks, conservation reserves and other Crown land parcels. Consequently, there is an extensive network of agencies and stakeholders (see Appendix 8) with an interest in the recovery program for these ecological communities including:

Australian Government

- Department of the Sustainability, Environment, Water, Population and Communities
- Department of Defence

Victorian Government

Budget-sector agencies

- Department of Sustainability and Environment
- Department of Primary Industries
- Department Planning and Community Development
- Department of Transport
- Department of Human Services

Statutory authorities

- Parks Victoria
- VicRoads
- Rail authorities
- Water authorities
- Local Government Authorities
- Catchment Management Authorities
- Country Fire Authority
- Trust for Nature Zoos Victoria

Commercial entities

- Utilities providers (power, gas, telecommunications)
- Business (developers, manufacturers, transport operators, construction companies, environmental consultants, offset/incentive facilitators, planning and engineering consultants)

Community groups

- Indigenous Traditional Owners and other Aboriginal custodians
- National conservation groups (e.g. World Wide Fund for Nature)
- State-wide conservation groups and networks
- Local community and conservation groups (e.g. Landcare, Friends, etc)

Primary producers

- Private landholders and lessees
- Victorian Farmers Federation

Educational institutions

- Universities
- TAFE
- Primary and secondary schools

10.2 Legislative responsibilities

At a national level, the ecological communities and associated species are listed as threatened under the EPBC Act, and administered by DSEWPC. Any action that will have, or is likely to have, a significant impact on these listed communities and species requires approval from the Commonwealth Environment Minister.

In Victoria, the FFG Act provides the main legal framework for the protection of Victoria's biodiversity. The two ecological communities and many of their component species are listed under the FFG Act, wholly or in part. All flora that are a member of a listed taxon or community are protected on public land, and any activities which impact upon them require authorisation. In addition, when a taxon or ecological community is listed, an Action Statement must be prepared, to identify actions that will be taken to conserve and manage that taxon or community.

DSE has ultimate responsibility for the management of threatened species in Victoria, and is the primary agency involved in management on public and private land, with the exception of the parks and reserves system managed by PV. It is assumed that this Recovery Plan will help inform the preparation of other sitespecific management plans, whether the sites are managed by PV, LGAs, other public authorities, or with the assistance of community groups, as well as broader strategies such as Regional Catchment Strategies for the specific CMAs on the VVP.

Private landowners also have a responsibility under the EPBC Act to ensure that any development on their properties does not impact on remnants of these ecological communities or populations of threatened species. Private landowners can facilitate monitoring and recovery actions for threatened species by permitting access to habitat on their land, consulting with agencies and individuals involved in these activities, and ensuring that their own activities do not negatively impact grassy values on or near their properties.

Interested community organisations will continue to be involved in the conservation activities, such as monitoring, propagation, translocation, ameliorating threats and raising awareness. Educational and research institutions also have a significant role to play by increasing knowledge about the ecology and

management of these grassy ecosystems and/or component species, and developing the skills of the practitioners who work in these ecological communities.

11 Role and Interests of Indigenous People

11.1 Acknowledgement of Indigenous People

This Recovery Plan acknowledges and pays respect to the diversity of Indigenous communities on whose traditional lands these ecological communities are found, and for their rich culture and intrinsic connections they all have to their country. It also appreciates the strong interest and the valuable contr bution that indigenous people and organisations make to the management of the land, water and other natural resources across the VVP. All levels of government must also acknowledge that past injustices and continuing inequalities experienced by indigenous people have limited, and continue to limit, their proper participation in NRM.

In accordance with a range of federal and state legislation and strategies (e.g. National Biodiversity Strategy Review Task Group 2009), and to provide the Aboriginal people on the VVP an opportunity to speak for country, the indigenous consultation process for this Plan was made a high priority. DSE has implemented the *Indigenous Partnerships Framework* (2007-2010) and developed *Guidelines for Indigenous NRM Partnerships and Engagement* to help deliver more authentic and effective consultation processes. Some DSE regions are also developing *Regional Indigenous Action Plans* that include actions to consult with indigenous communities on land management and threatened species programs.

Several regional indigenous facilitators within DSE and the CMA were informed about the development of this Plan, and asked to provide advice about the various indigenous communities and appropriate people to contact.

In Victoria, those indigenous communities who can clearly demonstrate their ancestral connection to country are identified as the Traditional Owners and given status as a Recognised Aboriginal Party (RAP), with the authority to manage cultural heritage issues. There are also indigenous communities whose RAP application is still to be approved, or has been declined or withdrawn for a variety of reasons, but who still consider themselves to be traditional custodians of the land. All these groups, RAPS and non-RAPs, were consulted as far as poss ble, including personal meetings with representatives from many of the VVP indigenous communities as listed in Table 5. It is envisaged that these representatives will inform their broader community members of this Recovery Plan and the opportunity for public comment.

Table 5 - Recognised Aboriginal Parties and other Indigenous communities on the VVP Recognised

Aboriginal Parties (RAPs)	**Consultation**
Dja Dja Wurrung Clans Aboriginal Corporation	Yes
Gunditj Mirring Traditional Owners Aboriginal Corporation	Yes
Martang Pty Ltd (representing the Djab Wurrung Owner group)	No – could not be contacted Traditional
Wathaurung Aboriginal Corporation (trading as Wadawurrung)	Yes
Wurundjeri Tribe Land and Compensation Cultural Heritage Council Inc	Yes
Current RAP applicants, and declined or withdrawn applicants for RAP status	
Ballarat and District Aboriginal Co-operative (declined)	No – not relevant as they don't work on NRM or cultural heritage issues
Framlingham Aboriginal Trust (withdrawn and	Yes declined)
Kuuyang Maar Aboriginal Corporation (current)	No – DSE unable to pay consultancy fee requested, as then not equitable for numerous other stakeholders involved
Wathaurong Aboriginal Co-operative (withdrawn)	Yes
Wadda Wurrung Aboriginal Corporation (declined)	No – unaware of this group until after consultation stage completed
Boon Wurrung Foundation (declined)	No – unaware of this group until after consultation stage completed
Bunurong Land Council Aboriginal Corporation (declined)	No – unaware of this group until after consultation stage completed

All of the indigenous parties consulted expressed considerable concern about the extent to which the Grassland and Grassy Woodland have been destroyed following European invasion. The loss of so much natural heritage correlates to a significant loss of indigenous cultural heritage. These landscapes and natural resources were vitally important to their ancestors, and were managed over countless generations to provide for their physical and spiritual needs. The majority of Indigenous communities have a very strong desire to be involved in all aspects of NRM, and some RAPs have made more progress on this than others.

Access to country is poss ble for some of the Indigenous communities on the VVP, while others do not currently own or help manage any land. The Indigenous Land Corporation (ILC) has purchased several properties across the VVP due to their high cultural significance and the title to the land has been, or will be, granted to the relevant indigenous community. For example, the Wathaurong own the 369 ha Wurdi Youang property which has a very important stone circle arrangement, while the Wurundjeri are negotiating with ILC to take over management of the Sunbury Earthen Rings and Mt William Axe Quarry. The Gunditjmara are the Traditional Owners of nine properties totalling some 3000 ha. These properties all potentially contain grassy values. Some land has also been ratified as Indigenous Protected Areas (IPA), such as the Gunditjmara properties called Tyrendarra and Kurtonitj. The Framlingham Forest is an IPA and was once descr bed as open grassy woodland.

Due to the lengthy and expensive process of seeking Native Title from the Commonwealth, the Victorian Government has recently introduced the *Traditional Owner Settlement Act* (2010) as an alternative avenue for RAPs to seek a formal Recognition and Settlement Agreement. To date, no Traditional Owners on the VVP have yet entered into such an agreement, but poss ble outcomes include transfer of freehold title from some land tenures to Aboriginal title; joint management of some public land like parks and reserves; access to land for cultural activities and the sustainable use of resources; as well as funding and other economic development opportunities including training and employment. Opinions differ widely within and amongst indigenous communities about this new Act. While they can gain a greater stake in NRM and access to country, this comes at the cost of waiving any future claim to Native Title. With an aboriginal perspective of history and past government policies, there is also a level of scepticism that while their communities are encouraged to develop aspirations, they are being set-up to fail unless adequate resourcing and support are provided.

11.2 Priorities of Indigenous People

Ideally, each Indigenous community will determine for themselves what proposed recovery actions they will be able to implement in their country, depending on their objectives, resources, capacity, and/or desire to form project partnerships with other stakeholders. The consultation process revealed that many, if not all of the Indigenous communities hold similar aspirations and encounter the same types of issues. The following priorities broadly align with this Plan.

Reconnecting to the Land

Enabling Elders and community members to be on country (i.e. reside or regularly visit traditional lands) is fundamental to conserving cultural practices, language, and history, as well as enhancing communities' and individuals' sense of pride, identity, well-being and social cohesion. For example, a suggested project is to compile the different aboriginal language names (and cultural uses) for the same plants and animals which are distributed across the VVP.

Indigenous Ecological Knowledge

The amount of ecological knowledge retained by specific communities on the VVP and their Elders varies considerably. This is a historical consequence of the forc ble dispossession of traditional lands, the institutionalised segregation in missions where cultural practices were proh bited, and finally assimilation and integration into mainstream society. By being reunited with country, indigenous people may naturally rediscover this ecological knowledge or learn it afresh. Communities with land have the opportunity to explore the indigenous NRM practices that benefit Grassland and Grassy Woodland (e.g. ecological burns), that can enrich and be incorporated with modern scientific NRM techniques. The Gunditjmara are working to compile their Elders' stories with Monash University, to be stored in a secure database, with certain information made publicly available or only disseminated to the appropriate indigenous people in their community.

Protection of Cultural Heritage

When managing Grassland and Grassy Woodland, it is important that any indigenous cultural heritage sites and artefacts are also appropriately protected and managed, such as ensuring that sites are fenced off from grazing and possibly have signage. In cultural heritage sites, the use of fire is the preferred method of biomass control, rather than grazing, with the provisions that firebreaks do not destroy cultural artefacts (e.g. stone scatters) and that significant vegetation (e.g. scar trees) is protected from the fire. Ripping of rabbit warrens should not be done around significant sites, as minimising soil disturbance is the major aim in conserving cultural heritage. Raising awareness about indigenous cultural heritage may also help

increase the profile and appreciation of the Grassland and Grassy Woodland among the wider public, and vice versa.

Forming effective partnerships with state, regional and local NRM organisations

All Indigenous communities would welcome better partnerships with DSE, DPI, PV, CMAs, and LGAs, and some are open to providing indigenous representation on Technical Advisory Groups, Recovery Teams, and Committees of Management for parks and reserves. Several communities also have existing Indigenous Land Use Agreements with other public authorities such as road, rail and water managers. Understandably, they want to be consulted and engaged at the beginning of projects, and be part of the decision making process so they can have more ownership. Opportunities to be involved in threatened species recovery are strongly sought. Revegetation with plants that had cultural use as food (e.g. Murnong or Yam Daisy *Microseris* sp.), medicine and fibre (e.g. Native Flax *Linum marginale*) was enthusiastically mentioned by several groups.

Training programs

All of the Indigenous communities consulted have, or are keen to start NRM training programs, for youth in particular. They require training programs that provide productive partnerships with other NRM organisations, a high level of support and community involvement, offer a variety of jobs that develop specialist technical and practical skills, while being adequately supervised and resourced with equipment and facilities. Trained indigenous NRM crews will be employed by their community to manage traditional lands, or they could seek work with other NRM providers, as well as employment opportunities in tourism and education. A suggestion is to provide scholarships so indigenous youth can learn about grassland NRM and restoration. The need for plant identification skills training was frequently referred to in the consultation process. EVCs could be mapped, threatened species identified, property/heritage management planning undertaken, and indigenous adaptive management practices and restoration implemented by NRM crews on traditional lands.

Survey protocols

Cultural heritage surveys provide an income stream for RAPs, but other Indigenous communities without this official status may be limited financially in what they can do on-ground. Indigenous organisations also have other priorities to focus on, notably health, education, employment, and social justice. But all agree that indigenous cultural heritage includes the plants, animals and broader landscapes. When developments are proposed, site surveys may need to be first undertaken to identify any cultural and natural values, normally by a range of specialist consultants. Protocols could be implemented so these surveys are done more holistically; that the various survey consultants be inducted together and informed about all of the potential values on site. For example, RAP surveyors should be told about the possible existence of threatened species and ecological communities prior to them driving over the site and digging cultural heritage survey pits that could accidentally damage these natural values (and ecological consultants made aware of possible cultural heritage values). There should also be prescriptions on how to best restore the survey pits when

finished. Another example cited was about better vehicle hygiene practices needing to be implemented due to the presence of noxious weeds. If the people doing cultural heritage surveys were also trained to observe other natural values, then they could also be reporting the presence of threatened species.

12. Social and Economic Impacts

Land on which the Grassland and Grassy Woodland occur is fertile and productive. This land was of great importance to numerous indigenous communities prior to European settlement, and still is. It now supports a diversity of agricultural industries, which are essential to the economic and social viability of towns and communities across the VVP. The expansion of the Urban Growth Boundary will also bring substantial economic and social benefits to Melbourne.

Where conflict occurs between actions outlined in this Recovery Plan and the interests of others, consultation between the appropriate land management agency and the affected individuals shall occur, with the aim of negotiating a desirable outcome for all parties. The majority of Recovery Plans written for the individual EPBC-listed species do not foresee any major adverse outcomes arising from recovery actions, although a range of social and economic impacts are possible.

12.1 Social Impacts

Numerous social benefits will flow from building and maintaining relationships with a diverse array of stakeholders through the implementation of this Recovery Plan:

- Fulfilment of broad community expectations for the maintenance of biodiversity, and the long-term protection of the Grassland and Grassy Woodland for the enjoyment of present and future Australians.
- Informing and supporting community groups like Indigenous traditional owners and custodians, environmental-based and agricultural-based networks with a passion for protecting and restoring natural landscapes, while fostering a sense of pride in their contribution to conservation programs.
- Acknowledgement and respect of the various Indigenous communities on the VVP and their history, with on-going connections to traditional lands and cultural practices including NRM.
- Identification of landholder motivations and the range extension measures required to effectively educate landholders in wider conservation issues (i.e. a consistent message across various sources); that inspires positive changes in landholder perceptions and actions regarding biodiversity conservation (e.g. Ipsos 2007).
- Demonstrating sustainable farm practices and the value of ecosystem services, while enhancing the long-term productivity of agricultural systems to hand to following generations of farmers.
- Addressing landholder/farmer concerns about the control of weeds and other pests.
- Negotiating with private landholders to adopt voluntary conservation measures for sites with populations of threatened species and ecological communities.
- Negotiating with public land managers such as CMA, LGA, and various water, road, rail, and cemetery authorities to adopt best practice management guidelines, or supported by legal instruments such as Public Authority Management Agreements, for the protection of key sites and populations.
- Promoting the work of community-based organisations, such as the CFA who by conducting fuel reductions burns are helping to protect local communities from fire, as well as providing ecological benefits for grasslands.
- Any protection measures required at sites (e.g. fencing, signage, track closures) will generally have minimal impact on current recreational activities.
- Improving the intrinsic natural values and visual amenity enjoyed by visitors to such areas, and increasing opportunities for tourism and education.

The negative social impacts are mostly associated with the restriction of rural and residential, agricultural and infrastructure development on land containing threatened populations or ecological communities:

- Where any alteration or rejection of development proposals under the P&E Act or the EPBC Act will prevent or reduce the delivery of essential services that are required by the community, although the extent of this impact will vary from site to site and will depend upon the location and type of the proposed development. For example, developments that include the construction of roads, irrigation channels, the alteration of flooding regimes, or the allocation of water resources can impact on habitat for Growling Grass Frog (Clemann and Gillespie 2010).
- Where there is a need to conserve remnant grasslands on cemeteries, this may limit the availability of burial plots.

- The way some reserves are managed in relation to public recreational activities may also be affected. For instance, restrictions on companion animals and leashing laws around areas utilised by Southern Brown Bandicoot may influence the use of such areas by the community (Brown and Main 2010).

12.2 Economic Impacts

The recovery actions stated in this Recovery Plan may have various economic implications. The following consequences are primarily related to the establishment of a network of reserves or managed lands for the long-term conservation of the ecological communities and associated threatened species:

- Land acquisitions or changes to proposed developments under the P&E Act have implications for government authorities, land holders, developers and parties serviced by the land and/or development (DEC 2006). Habitat conservation may increase restrictions on particular land-uses such as reduced grazing opportunities, or prevent some agricultural enterprises from converting to cropping or introduced pastures.
- Adequate protection and conservation of critical habitat, that is also prime land for development, will be expensive to acquire for the parks and reserve system (Carter 2010b, Robertson and Evans 2008, Robertson and Smith 2010). The need to establish buffer zones around critical habitat may also cause a trade-off in economic returns (Baker-Gabb 2002).
- Population protection and threat mitigation can be expensive due to the extent of threats (e.g. weed diversity and coverage), and the on-going need for management (e.g. fox baiting programs).
- Reserve management costs are l kely to be much high per unit area due to the patchy quality and degraded condition of many remaining sites. Remnants are often isolated and so present logistical issues, such as the distance and time to travel to sites.
- Surveying for the presence of threatened species can be costly and time consuming, and access to private lands for this purpose is sometimes problematic. Therefore, it may not be practical to survey all potential sites and habitats within the time frame of this Recovery Plan. Conservation agencies should use all other means at their disposal for obtaining this information, including the survey work undertaken by consultants and students, and then incorporate this information into the databases of conservation agencies (Robertson and Evans 2008, Robertson and Smith 2010) such as Flora Information System ABC.
- Some of the costs of retaining native grasslands on farms include lower economic returns, a decrease in pasture production over winter, under-employed resources, and research and marketing needs to establish and run new enterprises (Crosthwaite 1997).
- There are also considerable costs involved in establishing a grassland restoration industry, including the need to purchase or retire farmland, develop specialist equipment for soil bed preparation, sowing and harvesting, along with procuring sufficient seed sources and the skilled labour required. But this initial significant investment would reduce the long-term costs of restoration, which are required if large tracts of Grassland and Grassy Woodland are to be created on the VVP, and elsewhere (P. Gibson-Roy, pers. comm. August 2010).

However, there are considerable economic benefits to also take into account:

- Many populations of threatened species or remnants of the ecological communities are at sites (e.g. parks and reserves) where management for biodiversity conservation is already a high priority (Brown and Main 2010, Duncan 2009, Sinclair 2009, Sinclair 2010).
- An asset-based approach is normally taken by NRM agencies, where a cost-benefit analysis can reveal the greatest biodiversity outcomes for the least investment. Management efforts that take a whole-ofecosystem perspective naturally tend to benefit numerous co-existing species.
- Current extant sites represent long established populations, indicating that past management regimes had minimal impact, so it is probably not necessary to alter these management practices and thus the economic burden is likely to be minimal (DEC 2006).
- Protection measures such as providing information to managers, erection and maintenance of fencing and signposts can generally be achieved at minimal cost (Carter 2009).
- Financial and other incentives are available through various schemes run by regional NRM authorities to assist conservation measures. These funds provide assistance and help offset costs associated with protection (e.g. fencing, signage), and/or reduced grazing opportunities. On the VVP, "Plains Tender" (a version of the "Bush Tender" program) operates whereby private landholders establish their own price for management services they are prepared to offer to improve their native vegetation. Landholders whose bids offer the best value for money will receive periodic payments for their management services over a five-year contract. Some LGA (e.g. Melton, Hume) also have rate rebate schemes for landholders who undertake weed control.

- Visitors to these natural areas provide economic benefits for the local districts (Baker-Gabb 2002, Clemann and Gillespie 2010), and the landscape amenity can also help increase property re-sale values.
- Other economic benefits of maintaining native grasslands on farms include: their low use of inputs such as fertilisers, enhanced response to summer rain, improved animal health, reduced need for supplementary feeding, production of finer wool, reduced drought risk, reduced fire risk, enhanced land and water protection, improved human health through reduced use of chemicals and reduced stress, opportunities for new farming enterprises such as seed collection and native plant harvesting, and enhanced opportunities for recreation, tourism, and biodiversity conservation (Crosthwaite 1997).
- Finally, any investment in the protection and enhancement of the Grassland and the Grassy Woodland will be more than compensated by the value of the ecosystem services provided, including:
  - Habitat for beneficial native species – woodland birds, bats, predatory insects (which control pest insects) and native insects (for pollination of crops)
  - Maintenance of soil structure, fertility and prevention of erosion
  - Contribution to the maintenance of water quality
  - Assisting in the prevention of soil and water salinity
  - Provision of a carbon sink
  - Shade and shelter for crops and livestock
  - Drought resistant, low-input grazing resources
  - Provision of resources for the apiary industry
  - A source of seeds for regeneration
  - Maintenance of wild gene pool

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ABBREVIATIONS

ABC Actions for Biodiversity Conservation – database

AM Adaptive Management

BIM Biodiversity Interactive Map

CFA Country Fire Authority

CCMA Corangamite Catchment Management Authority

CMA Catchment Management Authority

CMN Conservation Management Network

DPI Department of Primary Industries

DSE Department of Sustainability and Environment

DSEWPC Department of Sustainability, Environment, Water, Populations and Communities

EPBC Environmental Protection and Biodiversity Conservation Act

ESO Environmental Significance Overlay

EVC Ecological Vegetation Class

FFG Flora and Fauna Guarantee Act

GEW Grassy Eucalypt Woodland

GGRP Grassy Groundcover Research Project

GIS Geographical Information Systems

IBRA Interim Biogeographic Regionalisation of Australia

ILC Indigenous Land Corporation

KTP Key Threatening Process (EPBC Act)

LGA Local Government Authority DSE

LTEG Long-term Ecological Grazing Project

MBI Market Based Instrument

NCR Nature Conservation Reserve

NGO Non-Government Organisations

NHT Natural Heritage Trust

NRM Natural Resource Management

NTG Natural Temperate Grassland

PTP Potentially Threatening Process (FFG Act)

PV Parks Victoria

RAP Recognised Aboriginal Party

SAC Scientific Advisory Committee (Victoria)

SLL Striped Legless Lizard

TAG Technical Advisory Group

TAP Threat Abatement Plans

TFN Trust for Nature

TSSC Threatened Species Scientific Committee (Federal)

UGB Urban Growth Boundary

VEAC Victorian Environmental Assessment Council

VPO Vegetation Protection Overlay

VVP Victorian Volcanic Plains

WRG Western Grasslands Reserves

WWF World Wide Fund

GLOSSARY

Adaptive Management
A systematic process for continually improving policies and practices, by learning from outcomes of management programs and information.

Biodiversity
Biodiversity, or biological diversity, is the variety of all life-forms on earth, including the different genes, and their terrestrial, marine and freshwater ecosystems.

Biolinks
Areas identified for targeted action to increase ecological function and connectivity, improving of plants and animals to disperse, adapt naturally.

Biological soil crust
A hard layer formed on the soil surface by a moss and lichen (algal and fungal and soil particles (also see Bryophyte). Often contains no vertical structure.

Bioperturbation
The disturbance soil by digging and ground-foraging animals including invertebrates (e.g. beetles) and vertebrates (e.g. bandicoots, bettongs).

Bioregion
A landscape-scale approach to classifying the using a range of attr butes such as geomorphology, geology, soils and bioregions and subregions are Biogeographic Regionalisation for Australia (IBRA) version 6.1.

Bryophyte
Any green, seedless plant that is one of the hornworts or liverworts. They are a biological soil crusts.

BushBroker
A system to facilitate the location of sites that generate Native Vegetation Credits. These could potentially be used as offsets, on different properties to where the native vegetation is being (this is called a third party offset).

BushTender
An auction-based approach to protecting and management of native vegetation on private land. Under this system, landholders

Conservation Covenant
A permanent, legally-binding, voluntary management agreement between a landowner and an authorised body to help the landowner protect and manage the environment on their property. It is usually registered on the title of the land and can apply to all or part of a property.

Cure
A method to allow for early-season controlled burns, by spraying the vegetation with herbicide to kill and dry it out.

Ecological community
A naturally occurring assemblage of interacting species adapted to particular conditions of soil, potential topography, water availability and climate. recolonise, evolve and

Ecological connectivity
The links between different ecosystems and species within a landscape. The degree of combination of connectivity affects ecological and evolutionary symbionts) life forms processes.

Ecological processes
The interactions and connections between living and non-living systems including movements of energy, nutrients and species. worms, dung

Ecological Vegetation Class (EVC)
Native vegetation in Victoria has been classified according to Ecological Vegetation Classes (EVCs). These are descr bed through a environment combination of floristics, life form, and ecological climate, characteristics, and through an inferred fidelity to vegetation. The particular environmental attr butes. There are described in the Interim approximately 300 EVCs in Victoria.

Ecosystem
A diverse and changing set of living organisms within a community, interacting with each other mosses, and with the physical elements of the environment component of in which they are found.

Ecosystem services
The goods and services provided by natural could ecosystems that are valued because of the role they play in creating a healthy environment for humans. This includes the provision of clean cleared water, the maintenance of liveable climates, the pollination of crops and native vegetation, and the fulfilment of people's cultural, spiritual and improving the intellectual needs.

EcoTender

competitively tender for contracts to better protect and improve their native vegetation.

Catchment Management Authorities

Statutory authorities established under the *Catchment and Land Protection Act* 1994 to provide coordinated management of land and water resources, using catchments as a basis.

EcoTender is an auction-based approach that expands upon BushTender to include multiple environmental outcomes. It introduces a more detailed way to evaluate tenders, based on potential improvements in salinity, biodiversity, carbon sequestration and water quality.

Endangered species
A species facing a very high risk of extinction in the wild in the near future

Endemic
Having a natural distribution confined to a particular geographic region.

Environmental weed
Exotic or Australian native flora growing beyond their natural range that have, or have the potential to have, a detrimental effect on natural values.

Environmental Significance Overlay (ESO) Victorian Planning Provisions (VPP) may apply to a site or area through the application of an overlay. The ESO aims to ensure that development is compat ble with identified environmental values of an area.

Extinction
The loss of an entire species.

Extinction debt
The future loss of species that is a consequence of past actions.

Fire regime
The frequency, intensity, season and scale of fire in a given area over a period of time.

Flagship areas
Areas identified as needing focused attention due to their important environmental, social and economic values.

Forb
A herbaceous (non-woody) flowering plant other than a grass, rush or sedge.

Geophyte
A plant with perennating buds that are buried in the soil; a perennial plant with an underground bu b, rhizome, corm or tuber.

Gilgai
Undulations and depressions in the soil surface, typically 10-50cm deep that can temporarily hold water.

Graminoid
A herbaceous plant with narrow leaves growing from the base, and includes the "true grasses", of the Poaceae (or Gramineae) family, and the sedges (Cyperaceae) and rushes (Juncaceae).

Habitat
An ecological or environmental area that is inhabited by a particular species. It is the natural environment in which a species lives, or the physical environment that surrounds (influences and is utilised by) a species population.

Habitat hectares
A site-based measure of quality and quantity of native vegetation that is assessed in the context of the relevant native vegetation type.
E.g. if an unaltered area of natural habitat (if large enough and within a natural landscape context) is at 100% of its natural quality, then one hectare of such habitat will be equivalent to one habitat hectare. If an area of habitat had lost 50% of its quality (e.g. through weed invasion and loss of understorey), then one hectare would be equivalent to 0.5 habitat hectares,

Herb
A more or less erect, non-woody plant with nongrassy leaves.

Hypogeal fungi
Fungi that form their fruiting bodies below the surface of the ground, e.g. truffles.

Indigenous species
Plant or animal species that are native to and are naturally occurring within a region.

Introduced species
A species occurring in an area outside its historically known natural range as a result of intentional or accidental dispersal by human activities.

Invasive species
An animal pest, weed or disease that can adversely affect indigenous species and ecosystems.

Invertebr ate An animal lacking a backbone .

Keystone species
A species that has a disproportionate effect on its environment relative to its abundance, which affects many other organisms in its ecosystem and helps to determine the types and numbers of various other species in a community. An ecosystem may experience a dramatic shift if a keystone species is removed, even though that species was a small part of the ecosystem in terms of its biomass or productivity.

Key Threatening Process (EPBC Act)
A physical process that increases the probability that biodiversity values at either the local, regional, national or global level will decline.

Lichen
Various small plants composed of a type of fungus and type of alga growing in a symbiotic relationship. Form parts of biological soil crusts.

Mycorrhiza, Mycorrhizal
Symbiotic associations between a fungus (specialised for life in soils and plants) and a root (or other substrate-contacting organ) of a living plant, that is primarily respons ble for nutrient transfer, and can be essential for one or both organisms.

Native Vegetation Management Framework (NVMF)
The NVMF provides the strategic direction for the protection, enhancement and revegetation of native vegetation across Victoria. The Framework addresses native vegetation management from a

whole of catchment perspective but necessarily focuses primarily on private land where the critical issues of past clearing and fragmentation exist. The Net Gain concept is critical to the Framework.

Native vegetation offset Any works or other actions to make reparation for the loss of native vegetation arising from its removal or destruction (no net-loss). The offset must be permanent and ongoing, and linked to a specific clearing site.

Net Gain
The outcome for native vegetation and habitat where overall gains are greater than overall losses, and individual losses are avoided where possible.

Patch
A discrete stand of native vegetation, usually within a single property or tenure. In this Plan, the terms "remnant" or "remant patch" are **not** used as defined in the *Native Vegetation Guide for assessment of referred planning permit applications* (DSE 2007a).

Perennial
A woody or herbaceous plant that continues its growth for more than two years.

PlainsTender
A BushTender type project conducted by the Corangamite Catchment Management Authority in the Victorian Volcanic Plains bioregion of Victoria, focusing on native grasslands and grassy woodlands.

Potentially Threatening Process (FFG Act) A process which may threaten the survival, abundance or evolutionary development of a taxon or ecological community of flora or fauna.

Quaternary
Part of the geological time scale, the Quaternary is the most recent period of the Cenozoic Era, spanning from 2.5 million years ago to the present date.

Regeneration
The growing of plants and vegetation communities in the wild following an environmental disturbance (e.g. fire). Natural regeneration means the species present grow with minimal human effort (e.g. sprouting from lignotubers or from soil-stored seed) and may be contrasted to intervention such as planting from tube stock or direct seeding (i.e. revegetation).

Rehabilitation and restoration The active intervention and management of degraded communities and landscapes to restore biological character, ecological and physical processes and their cultural and visual qualities.

Remnant vegetation
Indigenous vegetation that has not been cleared, modified or replanted. The draft policy statement for the Grassy Woodland defines a remnant as "Patch of native vegetation remaining after an area has been cleared or modified… also include naturally regenerating areas as well as areas that have undergone revegetation."

Reserve system
The established system of national parks and nature reserves which are subject to an established degree of protection from disturbance.

Resilience
The capacity of a system to experience impacts while essentially retaining the same function, structure and feedbacks, and therefore its identity. The more resilient a system, the larger the disturbance it can absorb without without loss of values; that is, species do not become extinct and ecosystems continue to function as they change.

Revegetation
To replant or re-grow vegetation in an area following the loss of original cover.

Threatened species and/or ecological communities
Species or ecological communities that are in danger of becoming extinct and whose survival is unlikely if the causal factors continue. There are a number of different classifications of the level of threat depending on whether the species/community is listed internationally (e.g. IUCN Red List), nationally (e.g. EPBC Act) or at a state (eg FFG Act) or regional level. These classifications use terms which indicate increasing threat - such as vulnerable, endangered, critically endangered, regionally extinct etc.

Traditional Owners People of aboriginal heritage who have responsibility for caring for their land, or Country, based on their traditional and cultural associations. A Traditional Owner is authorised to speak for Country as a senior Traditional Owner, Elder or a member of a group recognised by the Victorian Government.

Vegetation Protection Overlay (VPO) Victorian Planning Provisions (VPP) may apply to a site or area through the application of an overlay, to protect significant vegetation.

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s47F Ph.D. student, Victoria University, May 2010

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VVP Stakeholder Telephone Surveys April - November 2010

VVP Stakeholder Forums – Box Hill (Aug), Hamilton (Aug), Colac (Sep), Hobson's Bay (Nov) 2010

IMPLEMENTATION SCHEDULE

Table 6 - Estimated Costs of Implementing the Recovery Plan

No.	Action	Cost Estimate ($,000)						Once-off/ Ongoing	Priority (cost effective ranking)	Coordinator	VVP field staff
		Year 1	Year 2	Year 3	Year 4	Year 5	Total				
1	**Maintain and improve the condition and extent of the ecological communities throughout their geographic distribution**										
1.1	At all priority locations, assess and document threats to the ecological communities and species.	100	50	30			**$180**	Once-off	18		✓
1.2	At all priority locations, undertake appropriate, targetted pest plant and animal control	300	300	300	300	300	**$1,500**	Ongoing	42		✓
1.3	At all priority locations, undertake appropriate forms of biomass management (e.g. ecological burning, targeted grazing) to improve and / or maintain vegetation quality.	200	200	200	200	200	**$1,000**	Ongoing	41		✓
1.4	Incorporate ecological outcomes in all fire treatment programs	20	20	20	20	20	**$100**	Ongoing	34	✓	✓
1.5	Manage threats by establishing and maintaining fencing and infrastructure as needed.	100	100	100	100	100	**$500**	Ongoing	37		✓
1.6	Install and maintain markers and signs, including utilising current signage programmes, to indicate the location of high quality occurrences of Grassland and Grassy Woodland along linear reserves including: roads, tracks, rail and utility easements.	10	10	10	10	10	**$50**	Ongoing	28		✓
1.7	Develop and implement integrated management plans for all conservation reserves.	20	20	20	20	20	**$100**	Once-off	43		
2	**Protect the ecological communities from threatening processes, potentially incompatible land use or catastrophic loss**										
2.1	Employ a Lowland Grassy Ecosystem Coordinator to undertake/participate in actions 1.4, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 2.9, 2.17, 3.1, 3.3, 3.5, 3.7, 3.8, 3.9, 3.10, 4.1, 5.2.	130	130	130	130	130	**$650**	Ongoing	32		
2.2	Employ two VVP field officers to undertake/input into actions 1.2, 1.3, 1.4, 1.5, 1.6, 2.9, 2.10, 2.11, 2.14, 2.18, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.9, 3.10, 4.2, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, 5.8. Provide operating costs to undertake priority management actions 1.2 and 1.3.	260	260	260	260	260	**$1,300**	Ongoing	38		

No.	Action	Cost Estimate ($,000)						Once-off/ Ongoing	Priority (cost effective ranking)	Coordinator	VVP field staff
		Year 1	Year 2	Year 3							

No.	Action	Cost Estimate ($,000)						Once-off/ Ongoing	Priority (cost effective ranking)	Coordinator	VVP field staff
		Year 1	Year 2	Year 3	Year 4	Year 5	Total				
2.3	Establish a Victorian Lowland Grassy Ecosystem Strategic Group.	20	20	20	20	20	**$100**	Once-off	6	✓	
2.4	Establish a VVP Technical Advisory Group under the auspices of the Recovery Team to advise on management decisions and to promote greater knowledge sharing.	5	5	5	5	5	**$25**	Once-off	1	✓	
2.5	Develop a "state and transition' model to identify condition classes of remnants of various Grassland and Grassy Woodland types and set targets for improvement.	50	20				**$70**	Once-off	4	✓	
2.6	Using the outcomes of 2.5, develop targets for all existing sites/areas reserved and managed for conservation purposes.	30	50				**$80**	Once-off	21	✓	
2.7	Using the results of 3.2 and 3.3, identify and prioritise "target areas" and sites for management and recovery activities.		50	50			**$100**	Once-off	8	✓	
2.8	Identify gaps in current reserve and off-reserve conservation protection in representing the geographic and ecological variation within the ecological communities.		50				**$50**	Once-off	12	✓	
2.9	Using the results of 2.7 and 2.8, identify key sites to be considered for voluntary acquisition by government and non-government acquisition programs, for inclusion in reserves.		20	30			**$50**	Once-off	9	✓	✓
2.10	Using the results of 2.7 and 2.8, identify key sites important to the maintenance/improvement of landscape connectivity of remnants to be managed under conservation agreements or similar protection mechanisms.		30	30			**$60**	Once-off	16		✓
2.11	Negotiate voluntary acquisition or exchange of land (as opportunities arise). Target areas identified from 2.7 and 2.8.						unknown	Ongoing	48		✓
2.12	Amend public land tenure to provide for greater reservation (as opportunities arise).						**$50**	Ongoing	33		
2.13	Establish management agreements with other public land managers. Target areas identified from 2.7 and 2.8.	10	10	10	10	10	**$50**	Ongoing	20		
2.14	Undertake protection for private land remnants through a range of NGO and Government in-perpetuity conservation and management agreements and protective covenants. Target areas identified from 2.7 and 2.8.	75	75	75	75	75	**$375**	Ongoing	27	✓	✓

No.	Action	Cost Estimate ($,000)						Once-off/ Ongoing	Priority (cost effective ranking)	Coordinator	VVP field staff
		Year 1	Year 2	Year 3	Year 4	Year 5	Total				
2.15	Continue to encourage provision of funding for incentive and long-term stewardship schemes e.g. PlainsTender that target protection of remnants, especially on private land.	1,500	1,500	1,500	1,500	1,500	**$7,500**	Ongoing	47		
2.16	Ensure that planning processes consider the conservation of the ecological communities, and amend planning schemes and overlays as appropriate to incorporate actions into planning, management and development controls in the bioregion.	20	20	20	20	20	**$100**	Ongoing	30		
2.17	Liaise with stakeholders and land managers to avoid accidental damage and breaches of legislation.	5	5	5	5	5	**$25**	Ongoing	3		✓
2.18	Further promote and fully enforce the legislative controls (e.g. Wildlife Act, FFG Act, EPBC Act, Native Vegetation Framework).						in-kind	Ongoing	7		
3	**Increase knowledge of the ecology and management requirements of the ecological communities.**										
3.1	Review condition thresholds for both ecological communities.	20					**$20**	Once-off	2	✓	✓
3.2	Ground-truth the indicative maps of the two ecological communities.	100	100	100			**$300**	Once-off	29		✓
3.3	Identify gaps in survey and mapping data across the predicted distribution of predicted distribution of the communities, especially Grassy Woodland, within the VVP and adjacent bioregions and conduct future surveys to fill these gaps.	20	20	20			**$60**	Once-off	5	✓	✓
3.4	Review the coverage and ranking of ABC sites using NaturePrint	10					**$10**	Once-off	17		
3.5	For all priority locations, collect baseline data on area of occupancy, quality of community remnants and presence of threatened species.	20	20	20	20	20	**$100**	Once-off	14		✓
3.6	Establish and apply protocols for non-technical monitoring of remnant areas.	30	20	10			**$60**	Once-off	13	✓	✓
3.7	Undertake on-going monitoring of important populations/locations and responses to management actions. Identify any regional differences in Grassland and Grassy Woodland in response to management.	30	30	30	30	30	**$150**	Ongoing	19		✓

No.	Action	Cost Estimate ($,000)						Once-off/ Ongoing	Priority (cost effective ranking)	Coordinator	VVP field staff
		Year 1	Year 2	Year 3	Year 4	Year 5	Total				
3.8	Assess the effectiveness of incentives programs, agreements, community education and management interventions in improving the conservation and quality of remnants of the ecological community	150	150	150	150	150	**$750**	Ongoing	45	✓	✓
3.9	Promote and continue research into appropriate biomass management techniques and the impacts of various management regimes, notably burning and grazing.	150	150	150	150	150	**$750**	Ongoing	35	✓	
3.10	Investigate established cost effective techniques for restoring degraded remnants, to improve functionality and restoration of understorey species.		25	25			**$50**	Once-off	72	✓	
3.11	Measure the effectiveness of management activities by developing Bayesian Network models on ABC, for priority locations for the ecological communities and threatened species.	40	40	40	40	40	**$200**	Ongoing	10	✓	✓
3.12	Promote and utilise the Indigenous Ecological Knowledge project to improve on-ground management of remnant sites.		5	5	5	5	**$20**	Ongoing	44		✓
4	**Improve linkages between remnants via restoration and enhancement.**										
4.1	Using tools such as NaturePrint, establish criteria for identifying key sites for restoration/enhancement, and identify sites.	10	5	5			**$20**	Once-off	15	✓	
4.2	Restore and enhance habitat and increase habitat complexity by appropriate revegetation and enrichment planting.	500	1000	1000	750	500	**$3,750**	Ongoing	46		✓
4.3	For populations of threatened species, undertake re-introduction/translocation/artificial pollination/ex-situ conservation and captive breeding as described in species' Recovery Plans.						Costed in species Plans	Ongoing			
5	**Improve community awareness and support for the conservation and improved management of the ecological communities.**										
5.1	Promote and expand the VVP CMN and provide ongoing full-time funding for the facilitator.	100	100	100	100	100	**$500**	Ongoing	39		

No.	Action	Cost Estimate ($,000)						Once-off/ Ongoing	Priority (cost effective ranking)	Coordinator	VVP field staff
		Year 1	Year 2	Year 3	Year 4	Year 5	Total				
5.2	Support the continued operation of NRM biodiversity networks. Improve links and information exchange with the Gippsland and the Northern Plains CMNs	10	10	10	10	10	**$50**	Ongoing	11	✓	✓
5.3	Continue to educate private and public stakeholders in the identification, management, monitoring and benefits of Grassland and Grassy Woodland remnants, including local government and State government infrastructure management agencies, through the distribution of information material, newsletters, exhibits at field days, workshops and training.	30	30	30	30	30	**$150**	Ongoing	36		✓
5.4	Facilitate information and skills exchange between landholders, land managers, government agencies, community groups and other stakeholders aimed at achieving best practice management.	25	25	25	25	25	**$125**	Ongoing	31		✓
5.5	Identify sites where current management practices are beneficial to biodiversity and promote these as models for best practice management and/or as research sites.	25	25	25	25	25	**$125**	Ongoing	23		✓
5.6	Continue to disseminate results of research, management and restoration programmes to stakeholders via mechanisms such as SWIFFT, VVP CMN, conferences and publications.	25	25	25	25	25	**$125**	Ongoing	24		✓
5.7	Continue to promote cooperative programs such as Landcare as well as competitive market based programs such as BushBroker, BushTender, PlainsTender and EcoTender, to provide for the differing goals of landholders.	25	25	25	25	25	**$125**	Ongoing	25		✓
5.8	Identify Aboriginal interest in Grassland and Grassy Woodland sites and facilitate indigenous involvement in conservation management of remnant Grassland and Grassy Woodland on Aboriginal and public land.	10	10	10	10	10	**$50**	Ongoing	26		✓
5.9	Ensure that extension/education material, including identification and management guides, is kept current and relevant.	5	5	5	5	5	**$25**	Ongoing	22		✓
	Total	**$19,570,000** without costs of new staff but incl contractor costs **Approx $14,000,000** with costs of new staff but no contractors									

APPENDICES

Appendix 1. Ecological Vegetation Class (EVC) Benchmarks, Mapping and Extent

Native vegetation in Victoria has been classified according to Ecological Vegetation Classes (EVCs). There are approximately 300 EVCs statewide. EVCs are defined by a combination of floristics, lifeform, position in the landscape, and an inferred fidelity to particular environments. As EVCs are arranged by bioregion, a Bioregional Conservation Status (BCS) can be applied, taking into account its pre-European abundance in the bioregion, the current level of depletion and the level of degradation of condition typical of remaining stands.

EVC Benchmarks

EVC benchmarks have been developed as standard vegetation-quality reference points that are applied in carrying out vegetation quality assessments (e.g. Habitat Hectares). Benchmarks represent the average characteristics of a mature and apparently long-undisturbed stand of the same vegetation type.

All of the EVC Benchmarks can be accessed on the Native Vegetation web page on the DSE website: www.dse.vic.gov.au > conservation and environment > native vegetation information

The EVC benchmarks that comprise the two EPBC-listed ecological communities of the VVP bioregion include the following:

The Natural Temperate Grasslands of the VVP

- EVC 132 Plains Grassland
- 132_61 Heavier-soils Plains Grassland
- 132_62 Lighter-soils Plains Grassland
- 132_63 Low-rainfall Plains Grassland EVC 654 Creekline Tussock Grassland.

The Grassy Eucalypt Woodland of the VVP

- EVC 55_61 Western Basalt Plains Grassy Woodland
- EVC 55_63 Higher Rainfall Plains Grassy Woodland
- EVC 649 Stony Knoll Shrubland EVC 651 Plains Swampy Woodland.

Source: DSE website. This URL provides a complete list of the EVCs found on the VVP bioregion. http://www.dse.vic.gov.au/conservation-and-environment/evc-benchmarks-victorian-volcanic-plain-bioregion

A benchmark for EVC 55_04 is not available on the DSE website, as it is an undefined subset of EVC 55, but a brief description is provided in Oates and Taranto (2001).

Further descriptions of EVCs occurring on the VVP are provided in the Regional Forest Assessment for West Victoria (VicRFA 2000).

EVC Mapping

A complete collection of maps of modelled Ecological Vegetation Classes (EVC) showing the remnants of the two EPBC-listed communities, cannot be included in this Appendix, as it requires the production of over 100 PDF maps. This number of EVC maps is due to the large extent of the VVP bioregion, and that the EVC layer is only viewable at a scale of 1:100,000. This scale is too coarse to pick small linear remnants such as roadsides.

Note that the maps are models, and although useful at the landscape-level, cannot be regarded as accurate at smaller scale. On-ground assessment is necessary to accurately verify occurrence and condition of remnants.

You can view maps of the EVCs in Victoria using the Biodiversity Interactive Map, available on the DSE website (www.dse.vic.gov.au > About DSE > Interactive Maps > Biodiversity Interactive Map), or directly at the URL: http://mapshare2.dse.vic.gov.au/MapShare2EXT/imf.jsp?site=bim.

The authors have also prepared instructions on how to use the Biodiversity Interactive Map (BIM) to create EVC maps for these ecological communities. For the purpose of the Recovery plan, these instructions are primarily about retrieving the current EVC extent. To obtain these, contact the authors.

Extent of EVCs on VVP

Warning: It is not currently possible to accurately report the total amount of the two EPBC-listed ecological communities remaining on the VVP. The area in hectares reported in the following tables should only be considered as approximations. These calculations are based partly on actual on-ground mapping and partly on modelled data from remote satellite sensing. These figures still require ground-truthing.

Table 7 - Approximate extent in hectares (ha) of each EVC mapped on Crown Land

Bioregion	EVC Code	EVC Name	Area (ha)
Dundas Tablelands	132	Plains Grassland	6.46
VVP	132	Plains Grassland	2,655.24
VVP	55	Western Basalt Plains Grassy Woodland	3,757.49
VVP	651	Plains Swampy Woodland	6.13
VVP	897	Plains Grassland/ Plains Grassy Woodland Mosaic	34.69
		Total	**6,460.00**

Source: DSE, (2007) Native Vegetation Ecological Vegetation Classes 2005, DSE Corporate Spatial Data Library. Accessed December 2010.

Note: There is no EVC 649 mapped on Crown land

Table 8 - The modelled extent of native vegetation likely to occur in each EVC

Indication of the likely quality of native vegetation	Grassland	Grassy Eucalypt Woodland					GRAND TOTAL (ha)
	EVC 132	EVC 55	EVC 649	EVC 651	EVC 897	GEW Total	
Exotic woody vegetation		1.00				1.00	1.00
Highly likely native vegetation - grassy	46,056.56	7,414.94		10.13	54.44	7,479.50	53,536.06
Highly likely native vegetation - structurally modified	759.25	13,643.56		22.13	3.38	13,669.06	14,428.31
Highly likely native vegetation - woody	15,427.56	36,942.69	1.50	194.63	50.00	37,188.81	52,616.38
Possibly native vegetation	11.06	14.00			2.25	16.25	27.31
Unlikely to support native vegetation	193.19	138.00			9.94	147.94	341.13
Wetland habitat	2,910.63	1,792.38		17.38	23.94	1,833.69	4,744.31
Total (ha)	**65,358.25**	**59,946.56**	**1.50**	**244.25**	**143.94**	**143.94**	**125,694.50**

Source: DSE, (2007) Native Vegetation Ecological Vegetation Classes 2005, DSE Corporate Spatial Data Library. Accessed December 2010.

Appendix 2. Flow-chart of Diagnostic Characteristics and Condition Thresholds

The key diagnostic characteristics and condition thresholds for the ecological communities are presented in Figure 5, as produced by D~~SEWPaC~~epartment of the Environment and taken from the draft EPBC policy statement (in prep.).

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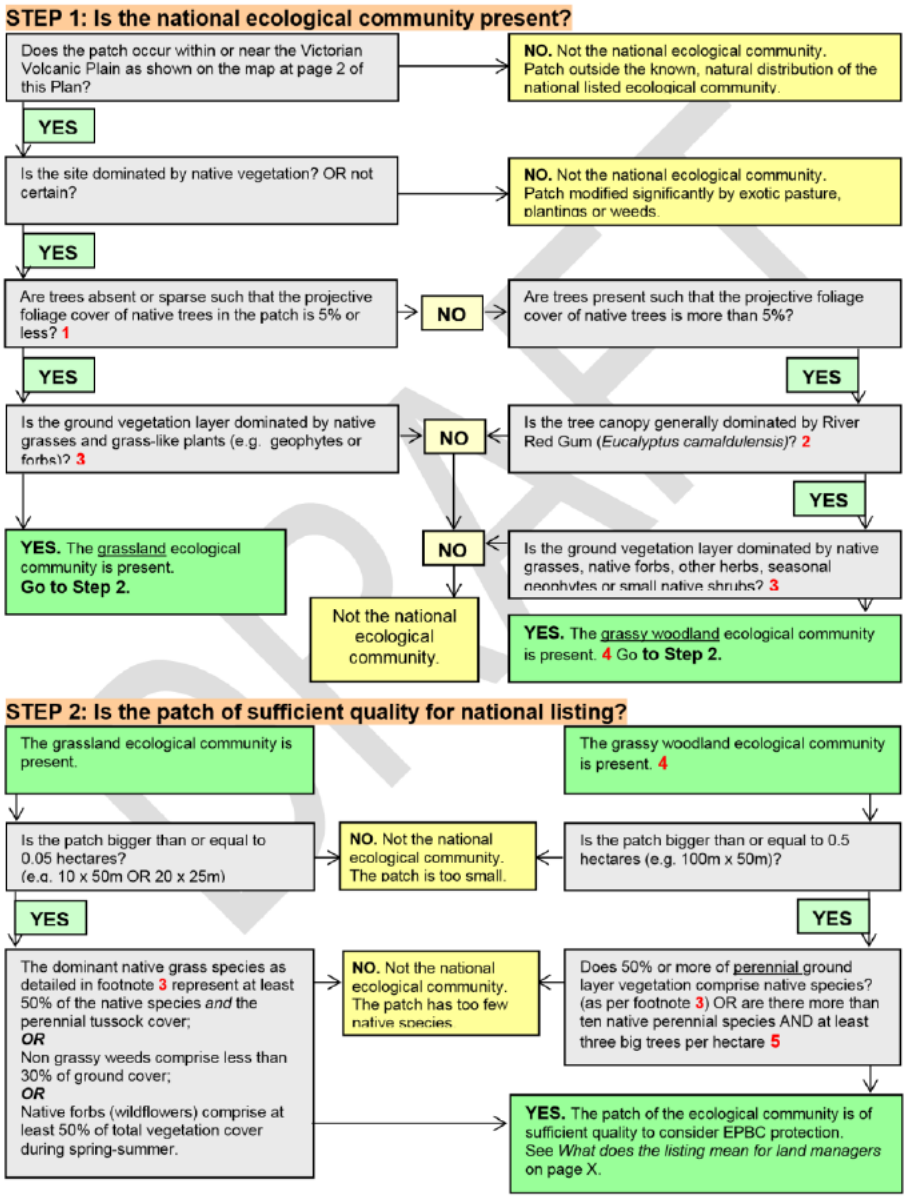
Figure 5 - DRAFT Flow chart to identify patches of the Natural Temperate Grasslands and/ or the Grassy Eucalypt Woodland ecological communities of the Victorian Volcanic Plain



Note: The following assessment considerations need to be taken into account when doing an on-site inspection.

1. Where present, the scattered trees in grassland form of the ecological community may include occasional occurrences of regenerating Eucalypts. Note that a lower limit of 0% applies for patches of derived grassland.
2. "Dominated by River Red Gum" means that this species comprises 50% or more of the tree canopy cover. The mid layer is typically dominated by Acacia species such as Hedge wattle. On sites with higher rainfall, other Eucalypt and Acacia species may replace River Red Gum as the dominant species in the tree canopy. Other vegetative variations resulting on higher rainfall sites include mid layer canopy occurrences of Prickly tea-tree, Slender Honey-myrtle or Tree Everlasting, and ground layer presence of sedges and other herbs.
3. "Dominated" means there is a minimum of 50% of ground layer coverage comprising native grasses and/or other herbs. The dominant grass species is typically Kangaroo grass, but other species may include Wallaby-grasses, Spear-grasses, Tussock-grasses) and/or Weeping Grass.
   Herbs are typically of the native daisy, lily or orchid families, and occupy spaces among native grass tussocks.
   The ground layer does not include mosses, lichens, litter or bare ground, but it may also include small shrubs in the woodland community.
   Note that a well-developed shrub layer in the understorey is not a typical feature of the ecological community, and shrubs usually account for a projective foliage cover of less than 10%. However, native shrubs may invade the ecological community due to natural processes or disturbance. Under these circumstances, the projective foliage cover of native shrubs in the ecological community may be up to 50% of the total area.
4. Low stony or rocky rises, known as stony knolls, may be present in the grassy woodland and are included in this ecological community.
5. Big trees defined as having minimum 70 centimetre diameter at breast height (dbh) for eucalypts and minimum 40 centimetre diameter at breast height (dbh) for non-eucalypts.

Appendix 3. Flora and Fauna of the Grassland and Grassy Woodland

Flora Species

Table 9 presents a list of plant species that are characteristic of the Natural Temperate Grassland and the Grassy Eucalypt Woodland of the Victorian Volcanic Plain ecological communities. This is derived from the FFG Action Statement No. 182 (DSE 2004) and the EVC benchmarks established by DSE (see Appendix 1). It is an indicative rather than comprehensive list of plant species present in the ecological community. Patches may not include all species on the list, or may include other species not listed. Wetland species, such as *Juncus* and *Carex* are on the EVC 654 benchmark, are not included as they are not typical of the common examples of the communities.

Table 9 - Typical Flora Species of the Grassland (G) and Grassy Woodland (GW)

Scientific name	Common name	Community	
Tree layer			
Acacia implexa	Lightwood	GW	
Acacia mearnsii	Black Wattle	GW	
Acacia melanoxylon	Blackwood	GW	
Allocasuarina verticillata	Drooping Sheoak	GW	
Banksia marginata	Silver Banksia	GW	
Eucalyptus camaldulensis	River Red Gum	GW	
Eucalyptus melliodora	Yellow Box	GW	
Eucalyptus microcarpa	Grey Box	GW	
Eucalyptus ovata	Swamp Gum	GW	
Eucalyptus pauciflora	Snow Gum	GW	
Eucalyptus viminalis	Manna Gum	GW	
Mid layer – Shrubs to Small Trees			
Acacia paradoxa	Hedge Wattle	GW	
Acacia pycnantha	Golden Wattle	GW	
Bursaria spinosa	Sweet Bursaria	GW	
Ground layer – Small Shrubs			
Astroloma humifusum	Cranberry Heath	GW	
Bossiaea prostrata	Creeping Bossiaea	GW	
Pimelea humilis	Common Rice-flower	GW	G
Pimelea curviflora s.s.	Curved Rice-flower		G
Ground layer – Grasses, Grass-like Plants, Lilies and Orchids			
Arthropodium strictum	Chocolate Lily	GW	G
Austrodanthonia caespitosa	Common Wallaby-grass	GW	G
Austrodanthonia duttoniana	Brown-back Wallaby-grass		G
Austrodanthonia racemosa var. *racemosa*	Striped Wallaby-grass	GW	
Austrodanthonia setacea	Bristly Wallaby-grass	GW	
Austrostipa bigeniculata	Kneed Spear-grass	GW	G
Austrostipa gibbosa	Spurred Spear-grass		G
Austrostipa mollis	Supple Spear-grass	GW	
Austrostipa rudis	Veined Spear-grass		G
Austrostipa scabra	Rough Spear-grass		G
Bulbine bulbosa	Bulbine Lily	GW	G
Carex breviculmis	Short-stem Sedge	GW	
Dianella spp.	Black-anther Flax-lily	GW	G
Dichelachne crinita	Long-hair Plume-grass		G

Scientific name	Common name	Community	
Diuris spp.	Golden Moth Orchids	GW	
Elymus scaber var. *scaber*	Common Wheat-grass	GW	
Lachnagrostis filiformis	Common Blown-grass		G
Lomandra filiformis	Wattle Mat-rush	GW	G
Microlaena stipoides var. *stipoides*	Weeping Grass	GW	G
Microtis spp.	Onion Orchids	GW	
Poa labillardierei var. *labillardierei*	Common Tussock-grass	GW	G
Poa sieberiana	Grey Tussock-grass	GW	
Schoenus apogon	Common Bog-sedge		G
Thelymitra spp.	Sun Orchids	GW	
Themeda triandra	Kangaroo Grass	GW	G
Ground layer –Wildflowers and Other Herbs			
Acaena echinata	Sheep's Burr	GW	G
Acaena ovina	Australian Sheep's Burr	GW	
Asperula conferta	Common Woodruff	GW	G
Asperula scoparia	Prickly Woodruff		G
Atriplex semibaccata	Berry Saltbush	GW	
Brachyscome basaltica var. *gracilis*	Woodland Swamp-daisy	GW	
Burchardia umbellata	Milkmaids	GW	G
Calocephalus citreus	Lemon Beauty-heads	GW	G
Calocephalus lacteus	Milky Beauty-heads	GW	G
Chrysocephalum apiculatum	Common Everlasting	GW	G
Convolvulus angustissimus	Pink Bindweed	GW	G
Craspedia glauca spp. agg.	Common Billy-buttons	GW	G
Crassula sieberiana	Sieber Crassula	GW	G
Dichondra repens	Kidney-weed	GW	G
Drosera peltata	Pale Sundew		G
Drosera whittakeri subsp. *aberrans*	Scented Sundew		G
Eryngium ovinum	Blue Devil		G
Gonocarpus tetragynus	Rough Raspwort		G
Goodenia pinnatifida	Cut-leaf Goodenia		G
Haloragis heterophylla	Varied Raspwort		G
Leptorhynchos squamatus	Scaly Buttons		G
Lobelia pratioides	Poison Lobelia		G
Maireana enchylaenoides	Wingless Bluebush		
Microtis unifolia	Common Onion-orchid		G
Oxalis perennans	Grassland Wood-sorrel		G
Plantago gaudichaudii	Narrow Plantain		G
Rumex dumosus	Wiry Dock		G
Velleia paradoxa	Spur Velleia		G

Fauna Species

A comprehensive list of the fauna which inhabits the ecological communities is presented in Table 10. This list has been generated from records from the Atlas of Victorian Wildlife submitted across the entire VVP bioregion. However, species that are predominantly reliant on other habitat types (e.g. marine, aquatic, and forest-dwelling) are not included, nor are species that are considered to be infrequent vagrants to the Grassland and Grassy Woodland.

Table 3 - Fauna Species of the Grassland and Grassy Woodland

National (EPBC) status: X – Extinct, CR -– Critically endangered, E – Endangered, V – Vulnerable
Victorian (FFG) status: L – FFG Listed
Victorian (DSE Advisory List) status: x – extinct, cr – critically endangered, e – endangered, v – vulnerable, nt – near threatened

EPBC	FFG	Vic	Common Name	Scientific Name
			Agile Antechinus	*Antechinus agilis*
	L		Altona Skipper	*Hesperilla flavescens flavescens*
			Australasian Pipit	*Anthus novaeseelandiae*
	L	cr	Australian Bustard	*Ardeotis australis*
			Australian Hobby	*Falco longipennis*
			Australian Magpie	*Gymnorhina tibicen*
			Australian Owlet-nightjar	*Aegotheles cristatus*
			Australian Raven	*Corvus coronoides*
			Australian White Ibis	*Threskiornis molucca*
		nt	Azure Kingfisher	*Alcedo azurea*
			Banded Lapwing	*Vanellus tricolor*
	L	e	Barking Owl	*Ninox connivens*
		d	Bearded Dragon	*Pogona barbata*
			Beautiful Firetail	*Stagonopleura bella*
		v	Black Falcon	*Falco subniger*
			Black Kite	*Milvus migrans*
			Black Rock Skink	*Egernia saxatilis intermedia*
			Black Wallaby	*Wallabia bicolor*
		nt	Black-chinned Honeyeater	*Melithreptus gularis*
		nt	Black-eared Cuckoo	*Chrysococcyx osculans*
			Black-faced Cuckoo-shrike	*Coracina novaehollandiae*
			Black-fronted Dotterel	*Elseyornis melanops*
			Black-shouldered Kite	*Elanus axillaris*
			Black-tailed Native-hen	*Gallinula ventralis*
			Blotched Blue-tongued Lizard	*Tiliqua nigrolutea*
			Blue-winged Parrot	*Neophema chrysostoma*
			Boulenger's Skink	*Morethia boulengeri*
	L	v	Brolga	*Grus rubicunda*
			Brown Falcon	*Falco berigora*
			Brown Goshawk	*Accipiter fasciatus*

EPBC	FFG	Vic	Common Name	Scientific Name
		nt	Brown Quail	*Coturnix ypsilophora*
			Brown Songlark	
			Brown Thornbill	
	L	e	Brown Toadlet	
		nt	Brown Treecreeper	*Climacteris picumnus victoriae*
			Brown-headed Honeyeater	*Melithreptus brevirostris*
			Brush Bronzewing	*Phaps elegans*
			Brush Cuckoo	*Cacomantis variolosus*
	L	v	Brush-tailed Phascogale	*Phascogale tapoatafa*
			Buff-banded Rail	*Gallirallus philippensis*
			Buff-rumped Thornbill	*Acanthiza reguloides*
			Bush Rat	*Rattus fuscipes*
	L	e	Bush Stone-curlew	*Burhinus grallarius*
		nt	Cape Barren Goose	*Cereopsis novaehollandiae*
			Cattle Egret	*Ardea ibis*
			Chocolate Wattled Bat	*Chalinolobus morio*
			Clamorous Reed Warbler	*Acrocephalus stentoreus*
			Collared Sparrowhawk	*Accipiter cirrhocephalus*
	L		Common Bent-wing Bat	*Miniopterus schreibersii (group)*
			Common Blue-tongued Lizard	*Tiliqua scincoides*
			Common Bronzewing	*Phaps chalcoptera*
			Common Brushtail Possum	*Trichosurus vulpecula*
		v	Common Dunnart	*Sminthopsis murina*
			Common Froglet	*Crinia signifera*
			Common Ringtail Possum	*Pseudocheirus peregrinus*
			Common Spadefoot Toad	*Neobatrachus sudelli*
			Common Wombat	*Vombatus ursinus*
E	L	cr	Corangamite Water Skink	*Eulamprus tympanum marnieae*
			Coventry's Skink	*Niveoscincus coventryi*
			Crescent Honeyeater	*Phylidonyris pyrrhoptera*
			Crested Shrike-tit	*Falcunculus frontatus*
			Crimson Rosella	*Platycercus elegans elegans*
			Cunningham's Skink	*Egernia cunninghami*
	L	nt	Diamond Dove	*Geopelia cuneata*
	L	v	Diamond Firetail	
			Dollarbird	*Eurystomus orientalis*
			Double-banded Plover	*Charadrius bicinctus*

Cincloramphus cruralis *Acanthiza pusilla*

Pseudophryne bibronii

Stagonopleura guttata

Dusky Antechinus *Antechinus swainsonii*

EPBC	FFG	Vic	Common Name	Scientific Name

EPBC	FFG	Vic	Common Name	Scientific Name

EPBC	FFG	Vic	Common Name	Scientific Name
			Horsfield's Bushlark	*Mirafra javanica*
				Scotorepens balstoni
				Microeca fascinans
	L	e	King Quail	*Coturnix chinensis*
			Koala	*Phascolarctos cinereus*
	L	e	Large Brown Azure butterfly	*Ogyris idmo halmaturia*
			Large Forest Bat	*Vespadelus darlingtoni*
			Large Striped Skink	*Ctenotus robustus*
		nt	Latham's Snipe	*Gallinago hardwickii*
			Laughing Kookaburra	*Dacelo novaeguineae*
			Leaden Flycatcher	*Myiagra rubecula*
			Lesser Long-eared Bat	*Nyctophilus geoffroyi*
	L	v	Lewin's Rail	*Lewinia pectoralis*
		nt	Little Button-quail	*Turnix velox*
			Little Corella	*Cacatua sanguinea*
			Little Eagle	*Hieraaetus morphnoides*
			Little Forest Bat	*Vespadelus vulturnus*
			Little Grassbird	*Megalurus gramineus*
			Little Lorikeet	*Glossopsitta pusilla*
			Little Raven	*Corvus mellori*
			Little Wattlebird	*Anthochaera chrysoptera*
			Little Whip Snake	*Suta flagellum*
			Long-billed Corella	*Cacatua tenuirostris*
			Long-nosed Bandicoot	*Perameles nasuta*
V	L	e	Long-nosed Potoroo	*Potorous tridactylus*
			Lowland Copperhead	*Austrelaps superbus*
	L	nt	Magpie Goose	*Anseranas semipalmata*
			Magpie-lark	*Grallina cyanoleuca*
			Marbled Gecko	*Christinus marmoratus*
			Masked Lapwing	*Vanellus miles*
	L	e	Masked Owl	*Tyto novaehollandiae*
			Masked Woodswallow	*Artamus personatus*
			McCoy's Skink	*Nannoscincus maccoyi*
			Mistletoebird	*Dicaeum hirundinaceum*
			Musk Lorikeet	*Glossopsitta concinna*
			Nankeen Kestrel	*Falco cenchroides*
			Nankeen Night Heron	*Nycticorax caledonicus*
			Neobatrachus	*Neobatrachus sp.*

nland Broad-nosed Bat

Jacky Winter

EPBC	FFG	Vic	Common Name	Scientific Name

nt

EPBC	FFG	Vic	Common Name	Scientific Name

EPBC	FFG	Vic	Common Name	Scientific Name

EPBC	FFG	Vic	Common Name	Scientific Name

EPBC	FFG	Vic	Common Name	Scientific Name
			Singing Honeyeater	*Lichenostomus virescens*
			Southern Boobook	*Ninox novaeseelandiae*
			Southern Brown Bandicoot	*Isoodon obesulus obesulus*
			~~Southern Brown Tree Frog~~	~~*Litoria ewingii*~~
			Southern Bullform	*Limnodynastes dumerilii variegatus*
			Southern Emu-wren	*Stipiturus malachurus*
			Southern Forest Bat	*Vespadelus regulus*
			Southern Freetail Bat	*Mormopterus sp. 1*
			Southern Grass Skink	*Pseudemoia entrecasteauxii*
			Southern Smooth Froglet	*Geocrinia laevis*
		v	Southern Toadlet	*Pseudophryne semimarmorata*
			Southern Water Skink	*Eulamprus tympanum tympanum*
			Southern Whiteface	*Aphelocephala leucopsis*
			Spencer's Skink	*Pseudemoia spenceri*
E	L	e	Spot-tailed Quoll	*Dasyurus maculatus*
		nt	Spotted Harrier	*Circus assimilis*
			Spotted Marsh Frog	*Limnodynastes tasmaniensis*
			Spotted Nightjar	*Eurostopodus argus*
			Spotted Pardalote	*Pardalotus punctatus*
		nt	Spotted Quail-thrush	*Cinclosoma punctatum*
	L	v	Square-tailed Kite	*Lophoictinia isura*
			Straw-necked Ibis	*Threskiornis spinicollis*
			Striated Fieldwren	*Calamanthus fuliginosus*
			Striated Pardalote	*Pardalotus striatus*
			Striated Thornbill	*Acanthiza lineata*
V	L	e	Striped Legless Lizard	*Delma impar*
			Striped Marsh Frog	*Limnodynastes peronii*
	L	nt	Striped Worm-Lizard	*Aprasia striolata*
			Stubble Quail	*Coturnix pectoralis*
			Stumpy-tailed Lizard	*Tiliqua rugosa*
			Sugar Glider	*Petaurus breviceps*
			Sulphur-crested Cockatoo	*Cacatua galerita*
			Superb Fairy-wren	*Malurus cyaneus*
	L	nt	Swamp Antechinus	*Antechinus minimus*
			Swamp Harrier	*Circus approximans*
				Rattus lutreolus
				Egernia coventryi
E	L	e	Swift Parrot	*Lathamus discolor*
				Swamp Rat

L v Swamp Skink

EPBC	FFG	Vic	Common Name	Scientific Name

EPBC	FFG	Vic	Common Name	Scientific Name
			Tawny Frogmouth	*Podargus strigoides*
			Tawny-crowned Honeyeater	*Phylidonyris melanops*
			Three-toed Skink	*Hemiergis decresiensis*
			Tiger Snake	*Notechis scutatus*
			Tree Dragon	*Amphibolurus muricatus*
			Tree Martin	*Hirundo nigricans*
			Tussock Skink	*Pseudemoia pagenstecheri*
			Varied Sittella	*Daphoenositta chrysoptera*
			Victorian Smooth Froglet	*Geocrinia victoriana*
			Water Rat	*Hydromys chrysogaster*
			Wedge-tailed Eagle	*Aquila audax*
			Weebill	*Smicrornis brevirostris*
			Welcome Swallow	*Hirundo neoxena*
			Western Gerygone	*Gerygone fusca*
			Western Grey Kangaroo	*Macropus fuliginosus*
			Whistling Kite	*Haliastur sphenurus*
			White-bellied Cuckoo-shrike	*Coracina papuensis*
			White-breasted Woodswallow	*Artamus leucorynchus*
			White-browed Scrubwren	*Sericornis frontalis*
			White-browed Woodswallow	*Artamus superciliosus*
			White-faced Heron	*Egretta novaehollandiae*
	L	nt	White-footed Dunnart	*Sminthopsis leucopus*
			White-fronted Chat	*Epthianura albifrons*
			White-fronted Honeyeater	*Phylidonyris albifrons*
			White-lipped Snake	*Drysdalia coronoides*
			White-naped Honeyeater	*Melithreptus lunatus*
			White-plumed Honeyeater	*Lichenostomus penicillatus*
			White's Skink	*Egernia whitii (group)*
			White-striped Freetail Bat	*Tadarida australis*
			White-throated Gerygone	*Gerygone olivacea*
			White-throated Needletail	*Hirundapus caudacutus*
			White-throated Treecreeper	*Cormobates leucophaeus*
			White-winged Chough	*Corcorax melanorhamphos*
			White-winged Triller	*Lalage sueurii*
			Willie Wagtail	*Rhipidura leucophrys*
			Wood Gecko	*Diplodactylus vittatus*
			Woodland Blind Snake	*Ramphotyphlops proximus*
			Yellow Thornbill	*Acanthiza nana*
				nt

EPBC	FFG	Vic	Common Name	Scientific Name
	L		Yellow-bellied Sheathtail Bat	*Saccolaimus flaviventris*
			Yellow-billed Spoonbill	*Platalea flavipes*
			Yellow-faced Honeyeater	*Lichenostomus chrysops*
			Yellow-rumped Thornbill	*Acanthiza chrysorrhoa*
			Yellow-tailed Black-Cockatoo	*Calyptorhynchus funereus*
			Yellow-tufted Honeyeater	*Lichenostomus melanops*
			Zebra Finch	*Taeniopygia guttata*

Data Source: 'Atlas of Victorian Wildlife', © The State of Victoria, Department of Sustainability and Environment (accessed via the 'Victorian Fauna Database', Jun 2010 - © Viridans Biological Databases).

Threatened Species

Table 4 - Threatened Species of the Grassland and Grassy Woodland

National (EPBC) status: CR – Critically endangered, E – Endangered, V – Vulnerable
Victorian (FFG) status: L – FFG Listed
Victorian (DSE Advisory List) status: x – extinct, cr – critically endangered, e – endangered, v – vulnerable, nt – near threatened
Community: G – Natural Temperate Grasslands of the VVP, GW – Grassy Eucalypt Woodlands of the VVP

Scientific name	Common name	EPBC	FFG	DSE	Community
Isoodon obesulus obesulus	Southern Brown Bandicoot	E		nt	GW
Perameles gunnii	Eastern Barred Bandicoot (Mainland)	E	L	cr	G
Pedionomus torquatus	Plains-wanderer	V	L	cr	G
Turnix pyrrothorax	Red-chested Button-quail		L	v	G
Eulamprus tympanum marnieae	Corangamite Water Skink	E	L	cr	G, GW
Delma impar	Striped Legless Lizard	V	L	e	G
Tympanocryptis pinguicolla	Grassland Earless Dragon	E	L	cr	G
Litoria raniformis	Growling Grass Frog	V	L	e	GW, G
Synemon plana	Golden Sun Moth	CR	L	cr	GW, G
Amphibromus pithogastrus	Swollen Swamp Wallaby-grass		L	e	G
Carex tasmanica	Curly Sedge	V	L	v	GW, G
Craspedia sp. 2	Derinallum Billy-buttons			e	G
Comesperma polygaloides	Small Milkwort		L	v	G
Cullen parvum	Small Scurf-pea		L	e	GW, G
Cullen tenax	Tough Scurf-pea		L	e	G
Dianella amoena	Matted Flax-lily	E	L	e	GW
Discaria pubescens	Australian Anchor Plant		L	r	G
Diuris basaltica	Small Golden Moths Orchid	E	L	v	G
Diuris fragrantissima	Sunshine Diuris	E	L	e	G
Diuris gregaria	Clumping Golden Moths			e	G
Diuris punctata var. *punctata*	Purple Diuris		L	v	GW, G
Dodonaea procumbens	Trailing Hop-bush	V		v	GW, G

Scientific name	Common name	EPBC	FFG	DSE	Community
Glycine latrobeana	Clover Glycine	V	L	v	GW, G
Lachnagrostis adamsonii	Adamson's Blown-grass	E	L	v	GW, G
Lepidium aschersonii	Spiny Pepper-cress	V	L	e	GW, G
Lepidium hyssopifolium	Basalt Pepper-cress	E	L	e	GW, G
Leucochrysum albicans var. *tricolor*	Hoary Sunray	E		e	GW, G
Microseris sp. 1	Plains Yam-daisy			v	G
Pimelea spinescens subsp. *spinescens*	Spiny Rice-flower	CR	L	v	GW, G
Podolepis sp. 1	Basalt Podolepis			e	G
Prasophyllum diversiflorum	Gorae Leek-orchid	E	L	e	GW, G
Prasophyllum frenchii	Maroon Leek-orchid	E	L	e	GW
Prasophyllum suaveolens	Fragrant Leek-orchid	E	L	e	GW, G
Pterostylis basaltica	Basalt Greenhood	E	L	e	G
Pterostylis sp. aff. *bicolor* (Woorndoo)	Dense Greenhood			e	G
Pterostylis sp. aff. *cycnocephala* (Woorndoo)	Cygnet Greenhood			e	G
Pterostylis sp. aff. *mutica* (Basalt Plains)	Leprechaun Greenhood			e	G
Rutidosis leptorrhynchoides	Button Wrinklewort	E	L	e	G
Senecio macrocarpus	Large-fruit Groundsel	V	L	e	GW, G
Senecio psilocarpus	Swamp Fireweed	V		v	GW, G
Thelymitra gregaria	Basalt Sun-orchid		L	e	G
Xerochrysum palustre	Swamp Everlasting	V	L	v	G

* Advisory Lists are DSE's registers of threatened flora and fauna:

DSE (2005) *Advisory List of Rare or Threatened Plants in Victoria – 2005*. Department of Sustainability and Environment, Melbourne.

DSE (2007) *Advisory List of Threatened Vertebrate Fauna in Victoria – 2007*. Department of Sustainability and Environment, Melbourne.

DSE (2009) *Advisory List of Threatened Invertebrate Fauna in Victoria – 2009*. Department of Sustainability and Environment, Melbourne.

Appendix 4. Lists of Key Sites

The information presented in this appendix summarises the known key sites, which are predominantly found on public land. The details about these sites are kept in a variety of databases, such as DSE's Action for Biodiversity Conservation (ABC), BioSites (Sites of biological significance), Corporate Spatial Data L brary, and the Portal Application (LIMS database) owned by the Public Land Division. Several stakeholders have also contributed to the formation of these lists and tables, and are acknowledged in the source information.

Key Sites on Actions for Biodiversity Conservation (ABC) and/or BioSites

ABC identifies priorities for individual locations and for each action at a location. Broad criteria for determining priorities are described below, but in the future NaturePrint will be used to guide expansion of the coverage of ABC sites, and to review location priorities.

High priority locations are generally those which provide the best chance for survival of the item in the long term, on the basis of the following broad criteria:

- Locations with the biggest and most intact population of an item.
- Most ecologically intact, natural habitat of known population locations.
- Location is ecologically important to the item. This may mean the location is the last known population, a migratory site (e.g. feeding, breeding or roosting site), an ecological or climatic refuge or a genetically distinct population.
- Presence of essential habitat features e.g. nest sites, pollinators, food supply.

Medium priority locations are those which provide a chance of survival of the item in the long term, however the l kelihood of survival is not as great as for high priority sites, and/or the management will require a greater allocation of resources to reduce threats in the future.

Low priority locations are those which provide a chance of survival of an item in the long term, but the chance of survival is much lower than that of high and medium priority locations.

Natural Temperate Grasslands on the VVP

There are 50 Grassland sites recorded on ABC (as Western (Basalt) Plains Grassland Community):

- Banchory Grove Grassland
- Bannockburn Cemetery
- Bannockburn Rail Reserve
- Blacks Creek Nature Conservation Reserve (NCR)
- Carngham-Streatham Road
- Central Creek Grassland
- Chatsworth Road, Derrinallum
- Chepstowe Grasslands
- Clarke Road Grassland Private
- Cobra Killuc Wildlife Reserve.
- Cooper St Grassland NCR
- Craigieburn Road East Private
- Cressy Flora Reserve
- Cressy-Shelford Rd
- Derrimut Grassland NCR
- Dowling Forest Cemetery
- Dundonnell Road Reserves
- Evans Street Grassland Reserve
- Forest Lane Road Reserve
- Glenelg Highway, Wickliffe 1
- Hamilton Community Parkland
- Jukes Road Grassland
- Ka kallo Public/Common
- Laverton RAAF Base reserve
- Little River South Rail Reserve
- Manor rail reserve south
- Mar byrnong Valley - Barry Road
- McCorkell Road Reserve
- Merri Creek - Barry Road Gorge
- Middle Creek Rail Reserve 2
- Mortlake Common Flora Reserve
- O'Brien Park
- Poorneit North Road
- Port Phillip DSE Region
- Craigieburn Grassland NCR
- Rail reserves in Victoria
- Rokewood Cemetery
- Rokewood Common NCR
- Rokewood Common and Golf Course
- Shelford - Mt. Mercer Road
- Skipton Common
- South West DSE Region
- Truganina Cemetery
- Vasey Siding Rail Reserve
- Willaura-Wickliffe Road
- Wingeel Railway Siding
- Woorndoo-Lake Bolac Road
- Yalla-y-poora Recreation Reserve

A further 283 sites are recorded on BioSites but some of these may be synonyms for the above sites or require review.

Grassy Eucalypt Woodland on the VVP

There are 11 Grassy Woodland sites recorded on ABC (as Western Basalt Plains River Red Gum Grassy Woodland):

- Bald Hill (Merri Creek)
- Darebin Creek - Epping to Wollert
- Dunkeld Arboretum
- Dunkeld Private Property - Wandobah
- Fenwick and Surrounds
- Mount Ridley NCR
- Plenty River - Mernda to Yan Yean
- Silver Gum Park, Woodstock
- Summerhill Road, Wollert
- Yan Yean Rail Reserve
- Yan Yean Reservoir and Plantations

A further 86 sites are recorded on BioSites.

EPBC-listed Threatened Species

ABC also contains location details for populations of each of the individual EPBC-listed species, and Table 12 presents the number of sites where management actions are carried out for these species. Note that some of the EPBC-listed species may occur in more sites than what is indicated, but no official management actions are undertaken at those locations (i.e. are recorded in ABC).

Table 5 - Number of VVP sites on ABC where management of threatened species occurs

EPBC-listed Threatened Species		No. of Sites on ABC
Eastern Barred Bandicoot	*Isoodon obesulus* subsp. *obesulus*	4
Southern Brown Bandicoot	*Perameles gunnii* subsp. unnamed	2
Plains-wanderer	*Pedionomus torquatus*	2
Corangamite Water Skink	*Eulamprus tympanum* subsp. *marnieae*	26
Striped Legless Lizard	*Delma impar*	52
Grassland Earless Dragon	*Tympanocryptis pinguicolla*	3
Growling Grass Frog*	*Litoria raniformis*	-
Golden Sun Moth	*Synemon plana*	7
Curly Sedge	*Carex tasmanica*	12
Matted Flax-lily	*Dianella amoena*	15
Small Golden Moths	*Diuris basaltica*	7
Sunshine Diuris	*Diuris fragrantissima*	3
Trailing Hop-bush	*Dodonaea procumbens*	3
Clover Glycine	*Glycine latrobeana*	5
Adamson's Blown-grass	*Lachnagrostis adamsonii*	39
Spiny Peppercress	*Lepidium aschersonii*	5
Basalt Peppercress	*Lepidium hyssopifolium*	4
White Sunray	*Leucochrysum albicans* var. *tricolor*	14
Spiny Rice-flower	*Pimelea spinescens* subsp. *spinescens*	32
Salt-lake Tussock-grass	*Poa sallacustris*	13
Gorae Leek-orchid	*Prasophyllum diversiflorum*	3
Maroon Leek-orchid	*Prasophyllum frenchii*	4
Fragrant Leek-orchid	*Prasophyllum suaveolens*	8

EPBC-listed Threatened Species		No. of Sites on ABC
Basalt Rustyhood	*Pterostylis basaltica*	2
Button Wrinklewort	*Rutidosis leptorrhynchoides*	19
Large-fruit Groundsel	*Senecio macrocarpus*	16
Swamp Fireweed	*Senecio psilocarpus*	4
Swamp Everlasting	*Xerochrysum palustre*	4

* Growling Grass Frog has no specific locations specified in ABC as management actions are allocated by DSE region.

Key Public Land Sites

The following details about the key public land sites that are managed by DSE, PV, LGA, other government agencies and non-government organisations have been sourced from two databases managed by DSE:

- Native Vegetation Ecological Vegetation Classes 2005, DSE Corporate Spatial Data L brary
- Portal Application (LIMS database) that is owned by the Public Land Division

The relevant EVCs in the 2005 EVC layer were first identified in the Corporate Spatial Data L brary and this information was then used to extract the Standard Parcel Identifier (SPI). The SPI is a unique code assigned to each land parcel in the State of Victoria with the purpose of creating a simple and consistent means of identification, and enabling links to other digital information sources. This subset of SPI for all the related EVCs were entered into the Portal Application (LIMs database) to access information about which organisations are responsible for managing these specific parcels of land.

Parks and Reserves managed by DSE

The following list of parks and reserves sourced from the Public Lands Division LIMs database indicates that the management is led by DSE. Note that some of these sites may actually be jointly managed with Parks Victoria, Local Government Authorities or other public land managers.

- Anakie Depot
- Andersons Mill Natural Interest Reserve
- Angus Street, Clunes
- Avalon Foreshore Reserve
- Bacchus Marsh Departmental Depot
- Ballark Forest
- Beeac Swamp Reserve
- Blood Paddock - Eastern Barred Bandicoot
- Brady Swamp
- Branxholme Water Reserve
- Brisbane Ranges National Park
- Bryans Swamp
- Buangor Water Reserve
- Buckley's Crossing Streamside Reserve
- Bullarook Creek Reserve - Smeaton
- Bungal State Forest (Whipstick)
- Bushland Reserve - Browns Rd Scarsdale
- Campbelltown Quarry Reserve
- Camping and Water Reserve - Corindhap

- Camping and Water Reserve - Wurrook
- Carisbrook Public Purposes Reserve
- Cemetery Lake Reserve
- Clunes Common
- Clunes Quarry And Water Reserve
- Coradgill Punpundal Tatutong Lakes and Ors
- Cressy Flora Reserve
- Cressy Lakes Reserve
- Cressy Public Purpose Reserve
- Creswick Forest - South End
- Creswick North Natural Features Reserve
- Cruckoor Reserve School Plantation
- Darlington Common - Former
- Devil's Kitchen
- Donnybrook Reserve
- Drainage Reserve - Warrenheip □ Ecological Reserve-Back Creek
- Eurack Swamp
- Flaxmill Swamp
- Former Fairlea Women's Prison Reserve
- Golden Stream Historic Reserve
- Grampians National Park
- Gravel Reserve
- Happy Valley Public Hall
- Hopkins River Streamside Res - Wickliffe
- Hopkins River, Burrumbeep
- James Scullin Memorial Park - Trawalla
- Kells Road Stone Reserve
- Key Dam - Creswick
- Kooraweera Lakes Wildlife Reserve
- Lake Barnie Bolac Wildlife Reserve
- Lake Beeac Wildlife Reserve
- Lake Bolac Reserve - Parupa
- Lake Buninjon Wildlife Reserve
- Lake Cockatoo Reserve
- Lake Colongulac Reserve
- Lake Cundare Wildlife Reserve
- Lake Dubban Wildlife Reserve
- Lake Eyang Wildlife Reserve
- Lake Gherang Wildlife Reserve
- Lake Goldsmith
- Lake Jollicum
- Lake Kariah Reserve
- Lake Kennedy Wildlife Reserve
- Lake Koonangurt Reserve
- Lake Koreetnung Reserve
- Lake Linlithgow Or Jennawarra
- Lake Milangil Wildlife Reserve
- Lake Munderong Reserve
- Lake Ondit
- Lake Oundell
- Lake Paracelmic
- Lake Purrumbete Wildlife Reserve
- Lake Struan Wildlife Reserve
- Lake Terangpom Wildlife Reserve
- Lake Terrinallum Wildlife Reserve
- Lake Tooliorook Reserve
- Lake Weeranganuk Reserve
- Lake Wongan Wildlife Reserve
- Lal Lal Blast Furnace
- Lal Lal State Forest
- Lena Wattleworth Bushland Reserve
- Linton State Forest
- Long Forest Flora Reserve
- Long Point Flora Reserve
- Long Swamp - Dean
- Lothair Reserve
- Loughlin Mine Site - Berry Leads
- Lower Homebush Water Supply Reserve
- Merin Merin Swamp Wildlife Reserve
- Middle Lough - Lough Calvert
- Middle Swamp
- Mirnee Lake Reserve
- Mirnee Salt Lake Reserve
- Moorabool River Water Frontages Reserve
- Mortlake Common Flora Reserve
- Mount Napier State Park
- Mt Bainbridge
- Mt Emu Creek Frontage - Darlington
- Mt Greenock Geological Reserve
- Mt. Doran (Champion Hill) - Hard. Prod'n
- Natural Interest Reserve - Woodnaggerak
- North Hope Mine Site - Yam Holes Site
- Ondit Salt Lakes Reserve
- Protection Of The Coastline - Yangery
- Public Purposes Reserve - Bungaree
- Public Purposes Reserve - Burrumbeep
- Pyrete Range Area- Lerderderg State Park
- Quarry Reserve
- Recreation Reserve Adj Bullrush Swamp
- Rossbridge Wildlife Reserve - Tatyoon
- Round Lake Wildlife Reserve
- Salt Lake Reserve
- Sanitary Depot Reserve
- Stone and Water Reserve - Creswick
- Stone and Water Reserve - Glendaruel
- Stoney Rises (Brown Hill) Scenic Reserve
- Streatham Salt Lake
- Tabor Swamp Wildlife Reserve
- Tower Hill Wildlife Reserve
- Turangmoroke, Yuangmania and Gunjal Lakes
- Vite Vite Streamside Reserve
- Warracbarunah Salt Lake Reserve
- Warrapingo Salt Lake Wildlife Reserve
- Water and Quarry Reserve - Haddon

- Water and Road Purposes Reserve - Bungaree
- Water and Road Purposes Reserve - Smeaton
- Water Reserve - Campbelltown
- Water Reserve - Haddon
- Water Reserve - Kiora
- Water Reserve - Langi Logan
- Water Reserve - Moallaack
- Water Reserve - Shirley
- Water Reserve - Smeaton
- Water Reserve - Tatyoon
- Water Reserve - Warrenheip
- Water Supply Reserve - Golden Lake □ Water Supply Reserve - Kiora
- Watering and Road Purpose Reserve
- Watering Purposes Reserve - Ballyrogan
- Watering Purposes Reserve - Bullarook
- Weering Salt Lake Reserve
- Willowvale Dam Bushland Reserve
- Winchelsea Stone Reserve
- Yarrowee Stone Reserve

Source: DSE Portal Application (LIMS database) that is owned by Public Land Division

Parks and Reserves managed by Parks Victoria

Parks Victoria is primarily responsible for managing the Parks and Reserves listed in Table 13. These sites have been identified as having patches of one or both of the EPBC-listed ecological communities, and some are recorded on ABC. Parks Victoria also provided information about other parks and reserves with grassy remnants, but they have been removed from this table as they either do not occur on the relevant bioregions or do not appear to have the appropriate EVCs when checked on the Biodiversity Interactive Map (BIM).

Table 6 - Parks and Reserves managed by Parks Victoria

* Bioregion: CVU – Central Victorian Uplands, DT – Dundas Tablelands, OP – Otway Plain, VVP – Victorian Volcanic Plain

Bioregion*	Grassland	Grassy Woodland	ABC	Site Name
CVU		yes		Langi Ghiran State Park
CVU		yes		Woodlands Historic Park
DT		yes	yes	Cobra Killuc Wildlife Reserve
DT		yes		Nigretta Falls Flora Reserve
OP		yes		Lake Connewarre Wildlife Reserve
VPP	yes	yes		Parwan Creek Water Reserve
VVP	yes			Altona Meadows Natural Features Reserve
VVP	yes			Angliss Grassland (Deer Park) Nature Conservation Reserve
VVP	yes		yes	Angliss Grassland (Laverton North) Nature Conservation Reserve
VVP	yes		yes	Banchory Grove Grassland Nature Conservation Reserve
VVP		yes		Bannockburn Bushland Reserve
VVP	yes			Barwon River Stream Side Reserve
VVP	yes		yes	Blacks Creek Nature Conservation Reserve (Skipton)
VVP	yes			Boonderoo Nature Conservation Reserve
VVP	yes			Breamlea Native Plants Reserve
VVP	yes			Calder Hwy Water and Stone Reserve
VVP		yes		Cargerie Bushland Reserve
VVP	yes			Clarke Road Streamside Reserve.
VVP			yes	Cooper St Grassland (Campbellfield)
VVP	yes		yes	Craigieburn Grasslands Nature Conservation Reserve
VVP				Deer Park Grasslands
VVP	yes		yes	Derrimut Grassland Nature Conservation Reserve
VVP	yes	yes		Fiery Creek Streatham Streamside Reserve
VVP	yes			Freshwater Swamp Little River Wildlife Reserve
VVP	yes			Gilbertsons Grassland Nature Conservation Reserve
VVP			yes	Hamilton Community Parkland
VVP	yes	yes		Holden Flora Reserve
VVP	yes	yes		Inverleigh Flora Reserve
VVP	yes			Jacksons Creek Streamside Reserve.
VVP	yes			Jawbone Reserve Williamstown
VVP	yes	yes		Lake Bolac Highway Park
VVP	yes			Lake Bookar Wildlife Reserve
VVP	yes	yes		Lake Corangamite Lakeside Reserve
VVP	yes	yes		Lake Gnarpurt Lakeside Reserve
VVP	yes			Lake Goldsmith Wildlife Reserve

Bioregion*	Grassland	Grassy Woodland	ABC	Site Name
VVP		yes		Lake Murdeduke Wildlife Reserve
VVP	yes	yes		Lakes Turangmoroke, Yuangmania, Gunjal, Gnarimara, and Parupa Wildlife Reserve
VVP	yes		yes	Laverton North Grasslands Flora Reserve
VVP	yes			Limeburners Lagoon (Hovells Creek) Flora and Fauna Reserve
VVP	yes			Lower Maribyrnong Parklands
VVP	yes			Maribyrnong Valley Parklands
VVP		yes		Middle Gorge Park
VVP			yes	Mount Derrimut Road Grassland
VVP	yes	yes		Mount Mercer Nature Conservation Reserve (McNaughton's Paddock)
VVP		yes		Mount Ridley Grassland Nature Conservation Reserve
VVP	yes	yes		Nerin Nerin Swamp Wildlife Reserve
VVP		yes		Ombersley Streamside Reserve (Gellibrand Streamside Reserve.)
VVP	yes	yes		Organ Pipes National Park
VVP		yes		Parupa Lakeside Reserve.
VVP	yes			Piers and Stony Creek Backwash (Greenwich Bay) Streamside Reserve
VVP		yes		Plenty Gorge Metropolitan Park
VVP		yes		Plenty Gorge Parklands
VVP	yes			Point Cook Coastal Park
VVP	yes			Point Gellibrand Coastal Heritage Park
VVP		yes		Pollocksford Reserve
VVP	yes	yes		Port Phillip Bay Coastal Reserve
VVP				Pretty Hill Flora Reserve
VVP	yes		yes	Ravenhall Nature Conservation Reserve
VVP	yes	yes		Teesdale Sanitary Depot
VVP	yes			The Spit Wildlife Reserve
VVP	yes		yes	Yalla-y-poora Recreation Reserve
VVP		yes		Yarra Bend Park
VVP	yes	yes		You Yangs Regional Park

Source: Parks Victoria; DSE Portal Application (LIMS database) Public Land Division

Parks and Reserves managed by Local Government Authorities

Parks and Reserves with associated EVCs are also managed by LGAs, as shown in Table 14. It is likely that each LGA is also responsible for managing several other parcels of land with grassy remnants, but this analysis was only based on parcels identified as Parks and Reserves on the Public Land Division database.

Table 7 - Number of Parks and Reserves managed by LGA

LGA	No. of Sites
Ararat Rural City Council	3
Ballarat City Council	26
Brimbank City Council	5
Central Goldfields Shire Council	5
Colac-Otway Shire Council	1
Corangamite Shire Council	3
Darebin City Council	5
Golden Plains Shire	19
Greater Geelong City Council	14

Hepburn Shire Council	7
Hobson's Bay City Council	10
Hume City Council	6
Macedon Ranges Shire Council	2
Melbourne City Council	1
Melton Shire Council	6
Mitchell Shire Council	1
Moorabool Shire Council	6
Moreland City Council	1
Moyne Shire Council	8
Pyrenees Shire Council	2
Southern Grampians Shire Council	14
Surf Coast Shire Council	3
Warrnambool City Council	1
Whittlesea City Council	1
Wyndham City Council	4
Yarra City Council	8
Total	162

Source: DSE Portal Application (LIMS database) Public Land Division

Parks and Reserves managed by other Public Land Authorities and Committees of Management

Several state government departments and water authorities manage another 92 Parks and Reserves that were linked to the EVCs of interest in this Recovery Plan, as summarised in Table 15. Furthermore, there are 89 miscellaneous Committees of Management that have been identified as being responsible for the management of 125 sites, such as racecourse tracks, town commons, rail trails, church grounds, community hall grounds and recreation reserves. However, it is assumed that the majority of these 217 sites are not primarily managed for conservation purposes. The extent and condition of the EVCs on these sites also needs to be quantified.

Table 8 - Number of Parks and Reserves managed by other Public Land Authorities

Other Public Land Authorities		**No. of Sites**
Other State Government Departments	Department Of Justice	3
	Department Of Primary Industries	1
	Department Of Transport - Public Transport Division	13
	Department Of Treasury And Finance	1
	Department Of Education And Training	27
	Department Of Health (Secretary)	1
	Department of Justice (Victoria Police)	4
Other State Government Departments Total		**50**
Water Authorities	Barwon Region Water Corporation	5
	Central Highlands Region Water Corporation	14
	City West Water Limited	1
	Corangamite Catchment Management Authority	1
	Goulburn Murray Water	1
	Melbourne Water	6
	Port Of Melbourne Corporation	1
	Rural Water Commission	7
	Southern Rural Water	1
	Wannon Region Water Corporation	4

Other Public Land Authorities		No. of Sites
	Western Water	1
Water Authorities Total		**42**
Miscellaneous Committees of Management – 89 various organisations		**125**
Grand Total		**217**

Source: DSE Portal Application (LIMS database) Public Land Division. Accessed December 2010.

Cemeteries

The details in Table 16 of Town and Parish Cemeteries have been compiled from several sources. Five of these cemeteries have well-recognised grassy values recorded in ABC. On Victoria's register of BioSites, there are 23 cemeteries, including the five in ABC. The other cemeteries listed in the table below have been indicated by DSE staff (E. Swan; Y. Ingeme pers. comm. Nov 2010) and other stakeholders as being very l kely to have grassland and/or grassy woodland patches. Upon further investigation of the Public Lands database for the VVP bioregion, an additional 27 cemeteries (not listed below) have been linked with the appropriate EVCs. Therefore, some 75 cemeteries could potentially retain small remnants of the ecological communities.

The majority of these cemeteries still require baseline assessment to confirm the presence of EVCs, threatened species, or other values, as well as vegetation quality and extent, and what the threats are.

The Secretary of the Victorian Department of Human Services is identified as the Management Committee for all cemeteries, but actual management is often delegated to Cemetery Trusts and/ or the relevant LGA.

Table 9 - Details of Town and Parish Cemeteries possibly containing grassy values

Bioregion	Town or Parish Cemetery	EVC	ABC	Biosite	Conservation Value
Victorian Volcanic Plain	Ballan (old)	55			Medium
	Bannockburn	132	y	y	High
	Boram Boram	55		y	High
	Branxholme			y	Medium

Byaduk	55		y	Unknown	
Byaduk North	55		y	High	
Cape Clear	55		y	Medium	
Caramut			y	Unknown	
Clunes	55			Medium	
Condah and Myamyn			y	Medium	
Creswick	55			Low	
Darlington				Unknown	
Donnybrook/ Kalkallo				Unknown	
Dowling Forest	55	y	y	High	
Dunkeld			y	Unknown	
Epping		y		High	
Fawkner Cemetery				Unknown	
Glengower/ Kooroocherang	55			Medium	
Hawkesdale				Unknown	
Hexham	55		y	Unknown	
Heywood			y	Unknown	
Inverleigh	55		y	Medium	
Keilor			y	Unknown	
Lethbridge	132		y	Medium	

EPBC-listed Threatened Species
Large-fruit Groundsel
Fragrant Leek-orchid Basalt Sun-orchid
Matted Flax-lily

Bioregion	Town or Parish Cemetery	EVC	ABC	Biosite	Conservation Value	EPBC-listed Threatened Species
	Lismore Cemetery Trust	55			Medium	
	Macarthur	175*		y	Unknown	
	Melton				Unknown	
	Meredith			y	Unknown	
	Morrisons	55			Medium	
	Ondit			y	Unknown	
	Penshurst				Unknown	
	Rokewood	175*	y	y	High	Button Wrinklewort
	Shelford	55			Unknown	
	Smeaton/Lawrence	55			Low	
	Smythesdale	55			Medium	
	Teesdale	132			High	
	Truganina	132	y	y	High	Spiny Riceflower Button Wrinklewort
	Woolsthorpe				Unknown	
	Yan Yean				Unknown	
Dundas Tableland	Cavendish				Unknown	
	Chatsworth				Unknown	
	Digby				Unknown	
	Glenthompson				Unknown	
	Lake Bolac			y	Unknown	
	Merino				Unknown	
	Wickliffe	55			High	
	Woorndoo	55		y	Unknown	
Central Victorian Uplands	Weeroona Koori Cemetery				Unknown	

* MacArthur and Rokewood Cemeteries are currently mapped as EVC 175 Grassy Woodland, but these EVCs should be rechecked.

Appendix 5. Past Recovery Actions

5.1 Baseline Information

Critical to the recovery of the ecological communities is the compilation of baseline data regarding the location, quality and management regimes of key remnant sites, which are retained in species databases (e.g. the Flora Information System), sites of biological significance databases (Biosites) and the ABC. Baseline data can be used to monitor the changes that arise in response to management activities. Without this preliminary information, the impact of the recovery actions on the rate of decline or improvement cannot be assessed.

Ecological Community Extent and Condition Mapping

EVC mapping

In the last decade DSE has made significant progress to map grasslands broadly across Victoria through the application of Ecological Vegetation Class (EVC) mapping and native vegetation modelling. *Victoria's Native Vegetation Management: A Framework for Action* (the Native Vegetation Framework, DNRE 2002) has driven much of this mapping work, to achieve the major goal of reversing the decline in the extent and quality of native vegetation across the landscape, leading to a net gain. From this state-wide native vegetation dataset, the current extent of the two EPBC-listed ecological communities can be modelled. See Figure 3 for a map of the current estimated extent of the ecological communities, while Table 7 in Appendix 1 reports the approximate area in hectares of each EVC on Crown land.

However, on-ground validation of the modelled data is a large and complex task, as the ecological communities are geographically widespread, highly fragmented and occur on a wide range of land tenures in varying condition states. The condition and extent of modelled native vegetation represented by EVCs on public land have been more readily and extensively mapped than on private land (VEAC 2010).

It should also be noted that the reported EVC extent figures can be misleading. These figures are probably an overestimation of the extent of the ecological communities remaining because the understorey condition of remnants in the EVC modelled data has generally not been considered.

Verification that these modelled and otherwise identified Grassland and Grassy Woodland remnants meet the definition of the EPBC-listed communities will be continuous as a result of ongoing survey programs. Site assessments of the Grassland and Grassy Woodland patches on Crown and Local Government parks and reserves, roadside and railway remnants, cemeteries, and on private land expand and enhance the accuracy of the collated data over time. The development of minimum condition criteria and assessment methodology by the Australian Government has assisted land managers to identify local occurrences of the EPBC-listed ecological communities, which in turn increases knowledge about their extent on private property.

Biodiversity mapping

In addition to EVC mapping, DSE has helped prepare comprehensive biodiversity maps for much of the south western part of the VVP bioregion. Two Biodiversity Mapping projects were run from 2001 to 2005 and 2007 to 2010, in order to identify and record sites that contain significant natural assets, in twelve of the fourteen rural Shires (excluding Northern Grampians Shire and City of Greater Geelong), located on the Corangamite and Glenelg Hopkins CMA regions. Significant sites were identified through interrogation of Geographical Information System (GIS) data layers, literature reviews, aerial photo interpretation, field checking, and consultation with local council staff and naturalists. Threatened EVCs, especially grasslands, component species and areas of critical habitat were a particular focus in this process. Ongoing surveying and monitoring within each shire, and further consultation with key stakeholders, will periodically help update these biodiversity maps.

The sites of biodiversity significance were grouped into five categories including aquatic systems, habitat protection, vegetation protection, roadside vegetation and scattered trees, with the four later themes being most relevant to this Recovery Plan. Each theme was proposed to be incorporated as an Environmental Significance Overlay (ESO) or Vegetation Protection Overlay (VPO) in the individual planning schemes of the relevant shires.

Information from the DSE Biodiversity Mapping projects is also helping to:

- inform NRM agencies (e.g. LGA, CMA, various DSE businesses, water authorities, industry) of the locations and values of significant biodiversity assets to improve statutory and strategic planning processes

- raise community awareness of significant biodiversity values in the local area identify priority areas for revegetation and other environmental projects
- contribute to DSE's ABC and BioSites databases as risk mitigation tools for preventing inappropriate projects or developments in significant areas.

Other inventories and surveys

Information about the ecological communities has been gathered from a variety of other sources, such as:

- In 2006, VicTrack and DSE undertook a joint inventory identifying significant grassland remnants and subsequent identification of Biosites on rail reserves within the VVP (VEAC 2011).
- Extensive research by DSE on the impacts of grazing regimes on grassland biodiversity values, as well as baseline data collection undertaken through the PlainsTender scheme.
- Numerous roadside vegetation assessments to identify quality native remnants, and/or locate infestations of high threat weeds (e.g. *Nassella* spp.) within the municipality of several rural shires (e.g. Colac Otway, Corangamite, Golden Plains, Moorabool, Surf Coast) and metropolitan councils (e.g.
  Geelong, Hume, Melton, Wyndham). A Roadside Management plan for the Western Highway east of Ararat has recently been prepared for VicRoads. This plan contains recommendations for the management of this section of highway.
- Management plans and reports have been prepared for Parks Victoria for grassland reserves across the VVP, including vegetation surveys (e.g. Gowans and Leversha, 2005a; Gowans and Leversha, 2005b;
  Ross *et al.* 2003), assessing vegetation condition (Morgan *et al.* 2000; Hadden *et al.* 2001; D'Ombrain 2002), investigating the role of disturbance (Gowans, Leversha and Milne 2005), or a review of management practices (Wong and Morgan, 2007). These provide a basis for further investigation of the condition of the vegetation and recommendations for management of these areas.
- Surveys have been conducted by various universities, CSIRO, state agencies and NGO research programs. For example, the Australian Research Centre for Urban Ecology (ARCUE) conducted historic grassland assessment of extent and loss in last 20 years.
- The first Bush Blitz to take place in Victoria and on an Indigenous Protected Area – Budj Bim National Heritage Landscape occurred in March 2011 with support of the Gundtijmara traditional owners. The presence of vertebrates, invertebrates, fungi, vascular and non-vascular plants was documented by a team of forty experts through the Bush Blitz partnership involving Museum Victoria, National Herbarium of Victoria, South Australian Museum, and the University of NSW, with funding from the Australian Government, BHP Billiton, Earthwatch Australia, Terrestrial Ecosystems Research Network (TERN), and AusPlots.

There is a considerable amount of "grey" literature produced by ecological consultancy firms for a range of commissioning organisations that is not readily accessible. Due to the costs involved and issues of intellectual property, this information is not always shared with government conservation agencies.

Component Species Surveys

Many component species of the Grassland and Grassy Woodland still require more detailed studies to examine their distribution or ecology, although considerable research has focused on several threatened species that occur in the ecological communities. See the relevant Recovery Plans and Action Statements for more details about previous threatened species research. Refer to Appendix 5 for data that has been accumulated for EPBC-listed threatened species, recorded in ABC as standard actions that involve surveying to:

- Acquire baseline population data
- Assess habitat characteristics and/or condition
- Locate suitable habitats and identify core habitat
- Map habitat, individuals and populations
- Undertake detailed population monitoring and collect demographic information

Further research will be required to more completely understand the complex species' relationships and interdependencies within the Grassland and Grassy Woodland, yet enough is now known to begin reducing critical threats within an adaptive management framework.

5.2 Management Research

Over the past thirty years there have been numerous studies and projects undertaken on the ecology, function, restoration and management requirements of grassy ecosystems, and their threatened component species. Examples of some of the important recent studies are provided below.

Grassland Management review

Work has been undertaken the effects of management regimes on lowland grassy ecosystems in Victoria (e.g. Lunt 2001, Lunt 2005, Wong and Morgan 2007) and on development of a framework to predict the effects of livestock grazing on conservation values (Lunt *et al.* 2007)

Among the findings were that Kangaroo Grass-dominated grasslands require intervention to maintain biodiversity, most importantly through maintenance of gap creation. Burning and grazing by stock have been used for this process.

Monitoring Biomass

Protocols are being developed to for rapid field assessment of grassy ecosystem condition and biomass (Schultz and Morgan 2007). The aim of the study is to determine whether the biomass of a grassland could be estimated using the surrogate of "golf ball visibility'. The technique allows 18 golf balls to be dropped in a $1m^2$ quadrat from a height of 1.3m, and the number of visible golf balls counted. The fewer the golf balls observed, the denser the vegetation and the higher its biomass. Further studies to refine this method and to determine its applicability to sparse Riverina grasslands and Kangaroo Grass-dominated VVP grasslands are underway (Morgan unpub.)

Long-term Ecological Grazing

The Long-Term Ecological Grazing (LTEG) project is a long-term, regional-scale study funded jointly by DSE, Corangamite CMA and Grain and Graze. LTEG began in 2001 with the aim of providing empirical evidence on the influence of grazing management on the vegetation attributes of native pastures of the VVP. For project reports see Turner and Zimmer (2007), Turner *et al.* (2007), and Zimmer *et al.* (2008). This work is one of the longest continuous data sets for grasslands on the VVP.

The first stage of the LTEG project involved data collection from three experimental sites, measuring the impact of six grazing/rest treatments. Key findings to date are:

- Complete rest from grazing leads to a more structurally complex grassland but with fewer native plant species overall
- Grazing-sensitive forbs do best when grazing is excluded for at least six months of the year
- Resting pastures from grazing in spring resulted in a greater abundance of native forbs
- Species richness of exotic forbs (weeds) showed no significant response to varying grazing treatment and instead was significantly related to location/site.

Five years into the research new treatments (spring graze, autumn graze and autumn rest) were implemented to replace winter rest, spring-summer rest and summer rest.

The second component of this research involved vegetation monitoring at 'paddock-level' of 36 native pasture/grassland paddocks to detect fine scale change in vegetation condition over time. Vegetation quality as well as habitat utility for invertebrates was assessed. The project report suggested that grasslands can be best managed to enhance habitat for invertebrates by increasing the duration of rest from grazing. However, to benefit from rest, sites must have low levels of soil phosphorous and reasonable native plant richness and cover, particularly native perennial grass cover.

Grassy Ground Cover Research

Greening Australia in partnership with the University of Me bourne commenced the Grassy Groundcover Research Project (GGRP) in 2003 (Gibson-Roy et al. 2007; Gibson-Roy 2008). The GGRP was initially funded through the Federal Natural Heritage Trust (NHT), the Corangamite, Glenelg-Hopkins and Wimmera CMAs. More recently, Alcoa of Australia have partnered with Greening Australia to continue this restoration research, with the goal to restore 150ha of Grassy Woodland at the Point Henry site.

The GGRP has been undertaken at 30 sites across Victoria in areas that were once temperate lowland grasslands or open grassy woodland (e.g. Red Gum, Buloke or Box). All sites were on cleared agricultural and required complete reconstruction.

Experimental treatments were implemented to determine which causal factors have the greatest influence on the recruitment and long-term establishment of a range of grassy groundcover species. Treatments that were investigated included removing (i.e. scalping) the top layer of soil to reduce weed seed loads and nutrient levels. Herbaceous species had significantly higher levels of recruitment and persisted for longer on scalped plots than non-scalped or herbicide-treated plots. However most native grasses were able to compete with many of the exotic weeds and so established well in the absence of scalping.

Results to date have shown high levels of establishment across all field sowings, with naturalistic plant densities of between 40-100 plants/m^2 recorded. Of the 200 species sown, approximately 80% of them successfully established and are still present at project sites. Among those species that established were many locally, regionally and nationally threatened species (e.g. Button Wrinklewort, Hoary Sunray, Clover Glycine), and these sites now represent new and diverse populations. Second-generation recruitment has been noted for many species. Ongoing monitoring will show whether these populations are fully selfsustaining.

Incidental observations have noted other native plant and animal species colonising or making use of these sites, including overstorey trees (e.g. Eucalypts and Acacias), birds, mammals, reptiles and invertebrates. Investigations of plant roots from individuals established at these sites indicate the presence of structures associated with functioning mycorrhiza. These findings suggest an increase in functionality on these restoration sites at trophic levels, other than just plants.

Various management techniques (burning, grazing and slashing) are also being investigated by the GGRP. Anecdotal observations indicate that the coverage of annual weeds is decreasing in the older sites as native perennial grasses and forbs become more established and start to competitively exclude the exotics. Preliminary conclusions include a preference for burning, especially in forb-rich sites. Grazing is associated with a potentially high risk of detrimental impacts, unless the grazing is closely monitored and managed.

To date, the GGRP has created approximately 40ha of presumably functional grassland. The major barrier to overcome is the level of nutrients in the soil, which is critical for weed control. With suitable levels of investment, managed seed production areas can be established to ensure a sufficient supply of seed, and equipment can be modified to help process seed, prepare a suitable seed-bed, and sow complex species mixtures which occupy a range of spatial and temporal niches. GGRP has demonstrated success at the small scale (i.e. 1 - 3ha), but further work is needed to expand these techniques to larger scale rehabilitation and restoration.

5.3 Protection and Management

Sites containing the Grassland or Grassy Woodland can be protected for conservation purposes under various mechanisms. This includes properties being voluntarily acquired for the National Reserve System, or by organisations such as TFN. The Victoria Planning Provisions afford a measure of consideration for Grassland and Grassy Woodland in planning decisions.Conservation covenants can be enacted on private land through market-based incentive schemes such as BushTender (branded as PlainsTender on the VVP) or BushBroker offsetting, as well as through TFN. Substantial investment in the conservation of Grassland and Grassy Woodland has also been made poss ble through the provision of funding sources, negotiating and developing strategic plans, and employing a range of professionals to carry out the work to protect and manage these important remnants.

Reservation

Land purchases

Australia's Strategy for the National Reserve System (NRS) identifies priority actions to provide a nationally coordinated approach to the protection of under-represented IBRA vegetation communities, with the targets:

- Examples of at least 80% of the number of extant regional ecosystems in each bioregion are represented in the NRS and effectively managed by 2030.
- The biodiversity assets of each bioregion are clearly identified and adequately protected through collaborative and integrated management with other landowners and managers.

The Collaborative Australian Protected Area Database (CAPAD) available online contains information on all protected areas in Australia (DSEWPC 2010). As indicated by the latest CAPAD figures, the total area under the NRS for the entire VVP bioregion increased from 27,107ha in 2000 to 42,989ha in 2008. This

represented an increase of 0.6% of the total area of the VVP (i.e. 2,356,126ha) in the NRS. The following summarises the area of land protected under each category of protected land:

- 23,791ha in National Parks
- 2,939ha in State Park
- 237ha as Indigenous Protected Areas
- 7,660ha in Nature Conservation Reserves (NCR), and 8,362ha in Natural Features Reserves.

Land purchases to the value of $1.2m were matched by the NRS and local government. New reserves were created at Mt Mercer, Boonderoo, Mortlake, Cressy, Blacks Creek, Craigieburn, Banchory Grove and the Angliss estates at Laverton and Deer Park, while Ridge Paddock was added to Cobra Killuc Wildlife Reserve.

The following list of protected area reserves in the VVP were added during the period 2000 to 2007:

- Altona Nature Conservation Reserve (NCR) 5.396ha
- Blacks Creek NCR 240.06ha
- Boonderoo NCR 187.19ha
- Branxholme NCR 0.56ha
- Bungador Stoney Rises NCR 2.93ha
- Caralulup NCR 0.1ha
- Cooper St Grassland NCR 44.44ha
- Dreeite NCR 96.63ha
- Ecklin South Swamp NCR 34.16ha
- Gilbertsons Grassland NCR 10.25ha
- Hopkins River, Willaura Streamside Reserve. 0.62ha
- Jawbone Flora and Fauna Reserve (FFR) 14.59ha
- Lerderderg State Park 0.17ha
- Mount Eccles National Park (NP) 184.11a
- Mount Mercer NCR 209.63ha
- Mount Ridley NCR 132.49
- Pomborneit North NCR 56.96ha
- Ravenhall NCR 104.16ha
- Wareek H55 Bushland Reserve 10.03ha

Further details about Parks and Reserves can be found in Appendix 4.

Western Grassland Reserves

As an offset for the losses of Grassland and Grassy Woodland resulting from the expansion of Melbourne's UGB, two grassland reserves are being established to the west of Me bourne, totalling 14,405 ha. Of this area, 2650 ha (18%) is considered to be of high quality, 7779 ha (54%) of moderate quality and the remainder is poor or completely lacking in native vegetation (DSE 2009b).

A public acquisition overlay to commence the establishment of these reserves was gazetted in August 2010.The grassland reserves will be created through progressive acquisition of freehold land by 2021. The reserves contain not only grasslands, but croplands, farm buildings, roads and dwellings. Interim Management Plans will be prepared for private property that has been earmarked to form part of the grassland reserves.

Land will be progressively handed over to PV, and a management plan for the reserves developed. A Technical Advisory Group has been established to provide technical advice to DSE, supporting the management and restoration of ecological values within the grassland reserves.

A number of smaller reserves within the Urban Growth Boundary e.g. Clarkes Road, Truganina cemetery, Craigieburn Grassland Reserve, will provide additional protection for key sites and connectivity between related habitat types, particularly grassy woodlands, stony knolls and floodplain grasslands.

Planning Provisions

The *Planning and Environment Act 1987* includes seven main objectives, one of which is "to provide for the protection of natural and man-made resources and the maintenance of ecological processes and genetic diversity". To further this objective, the State Planning Policy Framework in all Victorian planning schemes provides specific directions to planning authorities and responsible authorities about how

impacts on biodiversity and native vegetation should be considered in decision-making. This includes giving consideration to Action Statements prepared under the FFG Act and the three-step approach outlined in the Native Vegetation Framework (DNRE 2002).

The Planning Provisions provide a template from which specific municipal planning schemes are created, setting out policies and requirements for the use, development and protection of land. Land-uses are identified through Zone designations (e.g. residential, farming, industrial, etc) and also identify land affected by other criteria through the use of Overlays, usually based on environmental parameters (e.g., Environmental Significance, Vegetation Protection, Wildfire Management, etc).

Precinct planning

A precinct planning approach has been undertaken by Victorian authorities in an attempt to address the incremental losses of native vegetation caused by urban expansion. Under this approach, biodiversity and native vegetation values are considered as part of a Precinct Structure Plan (PSP). A PSP assists strategic decision-making about the most important areas of native vegetation to be retained in a large predetermined area, rather than on an ad hoc site-by-site basis. This process is managed by the Growth Areas Authority.

Use of strategic assessments

In 2009 Victoria entered into an agreement with the Federal Government (under s.146 of the EPBC Act) to conduct a strategic assessment of the potential impact of expanding Me bourne's growth boundary. The strategic assessment assessed impacts of changes to the UGB and associated urban development and transport infrastructure projects on matters of national environmental significance listed under the EPBC Act.

The Program Report (DPCD 2009) sets out the framework for managing biodiversity in the context of the Victorian planning processes. It commits Victoria to a range of large scale management measures including the establishment of two large grassland reserves outside the UGB, primarily funded through offsets for the expected clearing of up to 5,000 ha of native grasslands within the growth areas.

Prescriptions for EPBC-listed species and communities affected by the UGB expansion have been approved by the Federal Minister for the Environment. As stated in 4.2, clearing of native vegetation containing Golden Sun-moth, Matted Flax-lily or Spiny Rice-flower may not occur until at least 80% of the predicted habitat for the species is protected. This sets an overall target that Victoria (including the development community) is working towards, and this has stimulated an increased interest in data collection across the range of these species. Despite this, achievement of this target is l kely to take many years. Therefore, as noted in 4.2, an interim approach is provided which allows for some clearing of these species in certain situations.

A 1200 ha grassy woodland reserve is also proposed outside the UGB, south-west of Whittlesea. This will also be gradually acquired by 2021, and will be managed by PV with the assistance of DSE. A network of small and medium sized conservation reserves and permanently protected private land habitat in the HumeWhittlesea Growth Area will also be established, to meet a target of 80% of all Grassy Woodland within the UGB retained and managed in secure conservation reserves. Three ESOs were gazetted in 2010 which cover a large area of the Werribee Plains beyond the Western Grassland Reserves, and the region north of Me bourne within which the Grassy Woodland Reserve will eventually be located.

This strategic approach provides an opportunity to better coordinate actions towards a common goal (or target), and for the establishment of larger, consolidated and earlier offsets, than would otherwise be the case using the traditional case-by-case process. Some of the benefits of integrating strategic approaches to land use planning are discussed in Gordon *et al.* (2009).

Market-based Instruments, Incentives and Covenants

PlainsTender

In 2004 the Victorian Volcanic Plains Land and Ecosystem Stewardship Project (VVP PlainsTender) was developed as a multi-regional NHT bid between Corangamite, Glenelg-Hopkins, North Central and Port Phillip CMA, to protect and enhance the remnant vegetation across the bioregion (Buchan 2006). A major component of the project was an incentive scheme (PlainsTender) to support landholders in the conservation and management of native vegetation. To implement the incentive scheme, a Market Based Instrument (MBI) was adopted in the form of a tender process whereby contracts were purchased through a competitive single-bid tender process.

PlainsTender is administered by the Corangamite CMA for the entire VVP bioregion. The figures presented in Table 17 highlight that PlainsTender has been a successful initiative for the protection and enhancement of native vegetation on private land. Landholders wishing to generate a regular and reliable income stream from the native vegetation on their land place an expression of interest. Following a site assessment and production of site management plan by a PlainsTender field officer, landholders can then select which management actions they are willing and able to undertake. Management actions may include weed control, pest animal control, fencing, controlled grazing, supplementary planting and permanent protection. Landholders then submit a bid nominating the price for the provision of those services for the period of the agreement (4 or 5 years). A Biodiversity Benefits Index is then calculated and provides a comparative means to rank the bids in order of preference, taking into account the site's conservation values, the anticipated improvement in vegetation quality expected (i.e. habitat hectares gained), and which bids represent the best value in terms of management actions agreed to by the landholder.

As landholders choose what management actions they are willing to commit to, the result is a high rate of acceptance and compliance of management agreements offered. Successful landholders receive periodic

payments for their services provided under management agreements and report each year on their progress towards agreed objectives. The site assessment process also provides vegetation quality in the form of a Habitat Hectares assessment, threatened species sightings and GIS mapping data which can significantly add to current information about Grassland and Grassy Woodland on private land.

Programs such as PlainsTender form a key extension tool to assist with promoting the conservation and management of native vegetation and biodiversity. The one-on-one site visits provide ideal opportunities for landholders to discuss their specific sites, issues, and experiences. They receive feedback on their site and current activities, as well as being provided with ideas of how they can improve the site through management, even if they decide not to tender a bid. Conservation agencies have also been able to identify additional areas of native grasslands and grassy woodlands on private land through this initiative.

Over 1 million dollars of funding has been made available for Round 4 of PlainsTender, which was running in Spring 2010 to Autumn 2011.

Table 17 - PlainsTender figures for Rounds 1 to 3

	Round 1 Spring – Summer 2004	**Round 2** Spring – Summer 2005	**Round 3** Spring 09 – Autumn 2010
Expressions of Interests (EOI) received*	59 landholders approximately 6,000ha	76 landholders approximately 6,000 ha	72 landholders
Field assessments conducted	174 assessments at 85 sites, covering 3,640ha (site average 68ha)	385 assessments at 235 sites, covering 4,278ha (site average 18ha)	67 assessments covering 4717ha
Bids submitted	27 landholders 59 bids for 59 sites (total 3,039ha)	54 landholders 101 bids for 124 sites (total 2,291.2ha)	45 landholders 83 bids
Bids Recommended	21 landholders with 43 bids (78% of landholders and 73% of bids successful)	37 landholders with 65 bids (69% of landholders and 65% of bids successful)	30 landholders with 54 bids (66% of landholders and 65% of bids successful)
Contracts accepted	20 landholders with 39 sites	37 landholders with 77 sites	28 landholders with 65 sites
Hectares (ha) included	2,457ha	1,922.59ha	2,921.74ha
Habitat Hectares gained	351.2 Hha	248.9 Hha	-
Grassland EVC 132	877ha under contract	741ha under contract	2238.36ha assessed 900.86ha under contract
Creekline Tussock Grassland EVC 654			290.76ha assessed 167.69ha under contract
Grassy Woodland EVC 55	55.9ha under contract	72ha under contract	209.63ha assessed 104.84ha under contract
Grassy Woodland EVC 649	39.9ha under contract	16.43ha under contract	83.14ha assessed 56.16ha under contract
Covenants placed	3 landholders over 9 sites	11 landholders over 37 sites	7 landholders over 568.22ha
Funding allocated	$1,009,012	$1,261,330	$1,769,269

*Not all EOIs satisfied eligibility criteria of freehold land, native vegetation and site location on the VVP.

BushBroker

BushBroker provides a system in which native vegetation credits can be generated and traded. (For more information, see the DSE website.) Landholders can provide native vegetation credits from their property by protecting and better managing remnant bushland, through activities such as tackling weeds, controlling rabbits and fencing off stock.

Where mitigation for vegetation loss is required as a result of development, the preference is for offset gains to be generated on the same property. However, there are situations where this is not possible. In these situations there is a need for the offsetting gains to be generated elsewhere by third parties and to be available for purchase.

Specific details about offsets on the VVP is not clear, as the records are not currently set-up to easily extract the data for particular EVCs or bioregions. However there are at least seven Agreements covering grassland EVC totalling 99.04 ha, and two Agreements covering 102.5ha of non-grasslands (escarpment shrubland and stony rises woodland) with a Section 69 Covenant on title.

Trust for Nature Covenants

The Trust for Nature is a statutory body established under the *Victorian Conservation Trust Act* 1972. It can hold, buy and sell property and has the power to enter into a binding covenant with a landholder. A TFN covenant is a voluntary agreement between the Trust and the landholder. The covenant is registered on the title and binds future owners of the land to managing the land under the terms of the covenant. TFN reports there are 53 registered Conservation Covenants on the VVP, totalling 1593 hectares, although this will include any vegetation type, not just Grassland and Grassy Woodland. The Trust has an ongoing commitment through its stewardship program to assist landholders to manage and improve their land for conservation.

The Trust also operates a revolving fund that purchases areas of high conservation significance to ensure their protection. Those properties are then resold with a conservation covenant attached as a condition of sale.

S.173 agreements

A Section 173 Agreement is a legal contract made between a responsible authority and another party (usually a landholder), under Section 173 of the *Planning and Environment Act* 1987. These agreements can establish conditions or restrictions on the use or development of land, and have been used to control the scale of urban development and set aside grassland areas for conservation.

Strategic planning and management investment

Technical Advisory Groups

A Technical Advisory Group (TAG) was established for the Northern Plains (NP) Grasslands in 2009, with the aim of establishing a ten-year Strategic Plan to ensure the conservation and protection of the ecological community. The TAG membership includes DSE, PV, DPI, TFN, Charles Sturt University, LaTrobeUniversity and environmental consultants. Work by the TAG has led to the drafting of a Strategic Operations Plan, a
"state and transition" model for the NP grasslands, the "golf ball' monitoring technique and threatened species monitoring. Much of the work of the TAG will be applicable to grassy communities on the VVP.

A TAG has also been established (see 6.3) to provide technical advice for the management of the proposed
Western Grassland Reserves (WGR). The TAG, made up of representatives from DSE, DPI, TFN, LaTrobeUniversity, University of Melbourne, Greening Australia and expert environmental consultants, will advise on the best approach to broad-scale conservation planning and strategy, current directions for conservation and ecological research, setting research priorities and promoting research within or relevant to the reserves.

Many of the issues that the WGR TAG will consider are relevant to the Grassland across the entire VVP, and it is likely that much can be learned from the work of the TAG that can be applied to the Grassland as a whole. *VEAC Investigation*

The Victorian Environmental Assessment Committee (VEAC) investigated remnant native vegetation on public land (VEAC 2010, 2011). The main purpose of the investigation was to identify and evaluate the condition, values, resources and uses of these areas of remnant native vegetation and associated fauna for each of the 28 bioregions in Victoria. These areas were also assessed for their connectivity and contribution to sustainable landscapes in relation to climate change. Opportunities for management to improve ecological connectivity were reported, along with statistics for the native vegetation including the extent, condition and connectivity of remnants across land tenures in each of the bioregions.

Key findings of the study reveal that while the VVP is one of the largest bioregions in Victoria, it is the most cleared. Consequently, there is much urgency to take action to protect and conserve the remaining

native vegetation. There are no largely intact landscapes on the VVP, and only 15.6% of the native vegetation remains (VEAC 2010). Little of this is the Grassland or Grassy Woodland; some 0.1% of high quality grasslands remain (VEAC 2011). Only 1.3% of the vegetation in the bioregion occurs in conservation reserves. With the alienation of so much public land, little opportunity now exists to improve ecological connectivity by adding to the protected area system. Therefore, roadside remnants are of great importance in the VVP, not just as corridors but as key habitat and remnants of Grassland and Grassy Woodland in their own right. The study suggested that it would be more beneficial to expand the width of these road reserves to increase native vegetation and habitat, rather than merely lengthening them (VEAC 2011).

Several other recommendations in VEAC (2011) are relevant to the conservation of the Grassland and Grassy Woodland, including:

- Integrated delivery of biodiversity actions with statewide coordination, regional administrative support and prioritisation, to the initiation of several facilitated on-ground local programs at the landscape level.
- Continued government support of incentive programs for biodiversity actions on private land, while assessing and augmenting the range of mechanisms and incentives currently available.
- Cataloguing all remnant native vegetation and biological values occurring on road and rail reserves in a centralised database, in addition to forming an advisory committee of stakeholders to ensure that management responsibilities and appropriate work protocols are clearly established and implemented.
- Improve conservation management of small public reserves, and promote innovative stewardship partnerships between public land managers and interested community members, which are reliant on the provision of adequate resources from the government.
- Effectively communicating information to interested stakeholders about biodiversity conservation policy and actions to increase awareness and understanding of the importance of and threats to remnant native vegetation.

Assessment of the drivers of land use change

In 2007 the Corangamite CMA engaged consultants Ipsos Australia to investigate the factors that influence the decisions made by farmers about land use and change on the VVP, particularly those decisions that have an impact on environmental values in the bioregion (Ipsos 2007). Qualitative data was generated from a small sample of farmers (n=70) disturbed across the entire bioregion using telephone interviews, face-toface meetings and forums. The study found that:

- There was a strong desire for more information on protecting environmental values.
- Landholders were involved in a wide range of conservation activities, and utilising programs and networks to suit their individual needs.
- Conservation programs that offer real financial incentives, information and support had an influence on landholders' behaviours and land use.
- *PlainsTender* was well supported and considered extremely important in supporting on-going stewardship activities, but needed to be used in conjunction with a range of policy measures and delivered through support networks to ensure that all landholders were able to participate.
- The importance of developing long-term relationships with landholders in the region could not be underestimated. The value of the conservation messages was enhanced because they had been embraced and delivered by a diverse range of organisations and groups, e.g. conservation, industry, government.

Other strategies and management initiatives

- A *Draft Conservation Program for Native Grasslands and Grassy Woodlands in Victoria* was published by the then Victorian Department of Conservation and Environment in 1992 (DCE 1992).
- In 1992 the Australian National Parks and Wildlife Service (ANP&WS) published the national Recovery Plan for Western Basalt Plains Grassland (Muir 1992). The following year ANP&WS provided two years of half-time funding for five Grassland Planning and Extension positions, to cover the Northern Plains, Western Plains, Melbourne and Gippsland regions.
- Between 1995 and 1998 the then Australian Nature Conservation Agency (ANCA) provided $160,000 p.a. for three years to fund grassy ecosystem conservation, management and research. Funds were allocated on the recommendations of the multi-disciplinary Grassy Ecosystem Reference Group (Craigie and Ross 1995) and Research Advisory Group (Wellington 1996). ANCA also funded a

project investigating the Economic Benefits of Native Grasslands, for which farmers on the Basalt Plain and Riverine Plain were interviewed (Crosthwaite 1997).

- Victoria's Biodiversity Strategy was released in 1997, and identified the highly endangered status of lowland grasslands and grassy woodlands and recommended no further loss of native vegetation. This was in the process of being superseded by a renewed Strategy, *Biodiversity is Everybody's Business*, the draft of which (DSE 2010c) was released for public comment in 2010. This document also noted the highly threatened state of grassy ecosystems.
- From 1999-2001 the Federal Government established a devolved grants program to fund grassy ecosystem conservation and management projects. The Worldwide Fund for Nature/ National Heritage Trust (WWF/NHT) Grassy Ecosystems Grants Program disbursed $500,000 per annum over three years, much going to Victoria.
- Other grants provided include DSE's "Botanic Guardians" scheme that assisted community groups to protect grasslands (e.g. installation of grassland interpretative signage at Woorndoo Common); DSE *Conserving our Biodiversity* for crown land reserves and mainly for weed control; VicTrack "Grassroots" grants.
- DSE drafted a grasslands strategy for the Port Phillip region and developed a number of interim management plans, as well as negotiating with private landowners and land developers to promote suitable management.
- An Action Statement for five FFG-listed grassy ecosystem communities was written (DSE 2004a) identifying key management actions for the communities, including the Western (Basalt) Plains Grasslands.
- A team of Grassland Stewards was employed by Trust for Nature in 2010 to focus on securing permanent protection and improving the management of native grasslands, and help develop strategies for the conservation of lowland grasslands across Victoria including the identification of high priority properties to purchase or apply covenants to.
- The Merri Creek Management Committee (MCMC) was formed in 1989 to coordinate the management of the environmental values of the Merri Creek Catchment. Its Committee of Management includes representatives from the municipalities of Darebin, Hume, Mitchell, Moreland, Whittlesea, Yarra, the Friends of Merri Creek and Wallan Environment Group. A key strategic document is the Merri Creek and Environs Strategy. MCMC's team of vegetation restoration specialists continue to undertake on-ground works and develop management plans for creek environs including Grassland reserves in the Merri catchment. MCMC also provides expertise to other grassland management agencies and community.
- Ballarat Environment Network (BEN) has taken on management of a number of crown land reserves with grassland values, including some on the VVP (e.g. Skipton Common, Bannockburn Bush)
- Local governments have entered into initiatives to manage or promote management of grassland remnants e.g.
- Melton Shire introduced an Environmental Enhancement rate rebate scheme 13 years ago, and now involve some 1200 property owners. This equates to over $2 million foregone from council income, but is a very effective way to encourage landholders to undertake necessary works such as weed control.
- Hume City Council hires its own bush crew to reduce grassland management costs, and keep the knowledge and skills in-house rather than relying on external contractors.
- Public Authority Management Agreements (PAMAs) were entered into between DSE and public authorities to undertake appropriate management of remnant grasslands and grassy woodlands e.g. Truganina Cemetery, Epping Cemetery.
- Roadside Management Plans were developed by Southern Grampians Shire, Moyne Shire, Wyndham City Council and Moorabool Shire, who also produced a Roadside Tour Guide
- DSE has developed regional vegetation plans, FFG Action Statements and Federal Recovery Plans for grassland and grassy woodland communities and species, along with the Biodiversity Action Plan for the VVP (Taylor *et al.* 2003) that translates state-wide strategies to regional landscape scales and identifies biodiversity management priorities.
- Each CMA has developed Regional Catchment Strategies and Investment Plans (e.g. CCMA 2003).

5.4 Stakeholder Engagement and Extension

Stakeholder and broader community involvement is vital for the recovery of the Grassland and Grassy Woodland, considering the highly fragmented nature of the remnants, the level of threats requiring mitigation, and the typically under-funded nature of biodiversity conservation. By effectively educating and engaging people, more positive outcomes can be achieved on-ground in terms of protecting and managing grassy remnants, especially on private property, as well as increasing knowledge about and appreciation for these ecological communities. For instance, the listing of the ecological communities under the EPBC Act has prompted increasing numbers of private land holders and public land managers to seek more information about the Grassland and Grassy Woodland and adopt more appropriate management practices.

The engagement of Indigenous communities is of high priority and their roles and interests are descr bed in
Section 13 of this Plan. Appendix 8 also details the large number and varying types of stakeholders that have been, or need to be engaged. A variety of government and non government organisations have formed networks, and either jointly or individually organised innovative engagement and extension projects including numerous events and/or publications. A selection of these is descr bed below.

Also worthy of special note are the numerous (>100) community groups and not-for profit organisations (e.g.
Landcare, Friends groups, Field Naturalists, Bird Observers, Australasian Native Orchid Society, Conservation Volunteers Australia, Australian Plant Society, etc) whose members have freely volunteered their time and who contr bute to the natural and social capital of the VVP.

Conservation Management Network

Conservation Management Networks (CMN) have been successfully utilised since 1998 to meld the social and ecological aspects of biodiversity conservation, based on a specific ecological region. A CMN is a multitenure, land-based network of remnant areas and the associated network of private and public land managers. Ten CMNs exist in NSW and Victoria, and their growing membership help achieve the biodiversity and social objectives outlined in their respective CMN Strategic Plans (Context Pty Ltd 2008).

The Victorian Volcanic Plains Grassland Conservation Management Network (VVP CMN) was initiated in May 2009 by DSE, which received Caring For Our Country funds for the project *Saving the critically endangered grasslands of the Victorian Volcanic Plain*. The project involved a strategic partnership with DSE and Trust for Nature in order to create and facilitate the VVP CMN. This network empowers communities by bringing together farmers, land managers and other interested individuals to exchange information and/or form partnerships with biodiversity officers, researchers, extension officers and other NRM experts. In essence, conservation outcomes are achieved for the EPBC-listed Grassland and Grassy Woodland through enhanced communication, coordination and collaboration.

The major objectives of the VVP CMN include:

- Increase the area and quality of grassland remnants that are permanently protected and actively managed through a range of mechanisms.
- The establishment and maintenance of an active network of people who share a common interest in grasslands and associated vegetation types of the VVP.
- Increase knowledge exchange and education opportunities of grassland ecology, management and conservation.

In little over a year, with just a part-time facilitator (2.5 days a week) and some operating funds, the list of achievements include:

- Forming a steering committee that has met six times, with representatives from local government, Glenelg-Hopkins CMA, Corangamite CMA, DSE Statewide Services, TFN, PV, and Greening Australia, CFA, VVP Biosphere, Kanawinka Geopark, Lismore Land Protection Group, Geelong Landcare Network, and Arthur Rylah Institute. Over 120 individual members have joined the network itself.
- Developing a strategic planning document for the CMN, and a Succession Plan.
- Creating a website www.vvpcmn.org that is reaching landholders all over the broad VVP landscape. It includes some 200 documents such as case studies of grassland management, links to other information (e.g. MBI), and a calendar of events, with email updates.

- Active involvement in organising field trips, providing support to event organisers (Landcare Networks, Greening Australia, TFN) and coordinating stalls at events such as Sheepvention (25,000 entrants over 2 days).
- Giving presentations at field days, recovery planning workshops, DSE/DSEWPC "Inform Rather Than Enforce" workshops, or to various stakeholder and community groups.
- Development of support materials such as ten Case Studies of grassland managers, email newsletters, a logo and promotional flyer.
- Representing the VVP Grassy communities at VEAC community consultation and Glenelg Hopkins CMA Investment Framework for Environmental Resources (INFFER) community consultation.

Other community networks

Over the last thirty years across the VVP, partnerships and co-operative endeavours at both on-ground and higher levels have been established. DSEWPC (previously DEWHA and ANCA), DSE, TFN, Department of Primary Industry (DPI), CMAs, WWF, local governments, research institutions, community groups and individual stakeholders have worked together to provide/promote grants and incentives, provide management advice, share knowledge and resources, and work on landscape scale projects. Examples are: The Victorian Volcanic Plain Biosphere Inc. founding committee has been established and is proposing to establish a UNESCO Biosphere reserve on the Victorian Volcanic Plain. This international initiative can help raise the overall profile of the bioregion, promote ecologically sustainable development, and provide a community-driven vehicle to bring together people, information and resources.

- The South West Integrated Flora Fauna Team (SWIFFT) is a joint initiative of DSE, DPI, Landcare groups, TFN, the Threatened Species Network, Corangamite CMA, and the Ballarat Environment Network. SWIFFT is open to anyone with an interest in threatened species and ecological communities, including native grasslands. It electronically connects people over broad distances through the SWIFFT w ki web page and a quarterly schedule of video conferences, with several regional venues involved across the southwest. Presentations by experts and researchers on a range of biodiversity topics has improved communication, discussion and interaction, and is credited with improving people's conservation knowledge and skills. SWIFFT has become so popular that regular contributors from Victoria's north-west and Gippsland and South Australia join in the quarterly presentations.
- The Municipal Association of Victoria has assisted regional LGA environmental networks to form for council environment staff. LGA environmental teams also support many local Friends groups and schools within their boundaries, providing information about, access to and engagement in grassy parks and reserves. Brimbank City Council running monthly community working bees at three grassland wildflower gardens is just one of many examples that could be cited.
- Research organisations engage in knowledge exchange, including Victoria, Melbourne, LaTrobe Universities, Me bourne Zoo, TFN and the Melbourne Museum.
- Numerous schools have also become involved in the Australian Sustainable Schools Initiative, otherwise branded as Resource Smart Schools in Victoria, which encourages schools to get involved in local environmental issues such as grassland conservation. There are also Teacher Environment Networks where teachers can share ideas about implementing biodiversity projects such as establishing indigenous gardens or adopting environmental monitoring programs.
- International Student Volunteers (ISV) and Conservation Volunteers Australia (CVA) are established volunteer networks that have provided considerable on-ground help to undertake surveys for threatened grasslands species and restoration activities across the VVP.
- Several Landcare networks are operating on the VVP, with individual groups many working in grasslands.

Biodiversity in Agriculture

DSE, DPI and other agencies have produced a range of resources to assist land managers and stakeholders to retain biodiversity within agricultural systems, such as:

- Bioregional Action Plans (BAPs) which identify priorities and map significant areas for native biodiversity conservation at the landscape and bioregional scales. (For the VVP, see Taylor *et al.* 2003).

- *Land for Wildlife Notes* – newsletters providing information about managing bushland, natural regeneration, pest plants and animals, wildlife habitats, threats to wildlife habitats, and wildlife in farm planning.
- A *Living Systems Resource Kit* (Straker and Platt, 2002). The kit investigates all aspects of how native biodiversity does and could make a positive contribution to Victorian agriculture, to farm families and rural communities. It includes materials to help agricultural industry training providers and educators to explain native biodiversity to present and prospective farmers.
- A *Native Biodiversity Resource Kit* (DSE 2004b) which provides a consistent and practical method which farmers can use to assess and manage native biodiversity resources on their property.
- Production by CSIRO of *Biodiversity in the Paddock (*Dorrough *et al*. 2008), a practical field guide to help graziers and land managers achieve biodiversity outcomes alongside the utilisation of native pastures.
- Over 80 properties on the VVP were involved in the Environmental Best Management Practice (EBMP) Program run by the CMAs and DPI, where grassland issues were included in the EBMP workbook section on biodiversity and native vegetation.
- In late 2010, Lismore Land Protection Group ran a "Diversification of Farm Income" workshop for grassland conservation, providing information about various market-based incentive programs and insights from landholders who had been involved in the schemes.

Education and Events

- Werr bee Open Range Zoo runs a popular grasslands education program for primary and secondary schools that immerses students in global and local grassland conservation issues.
- A variety of grassland identification and ecology courses have been run over the last ten years (e.g. Native Grassland Management Course (run by the then Department of Natural Resources and Environment (DNRE) in 2002 and 2003); Grass Identification course (Biosphere Pty Ltd).
- Corangamite CMA conducted a VVP Knowledge Sharing Seminar for stakeholders.
- Presenters from the Federal (DSEWPC) and State (DSE) governments jointly conducted "Inform rather than Enforce" workshops, designed to inform local government staff about the most recent Native Vegetation policy, its implementation across the VVP, and the implications of EPBC listing of the Grassland.
- Workshops were held for regional real estate agents to encourage them to consider the natural values of rural properties for sale and to notify buyers about their obligations regarding any protected flora and fauna present on the property.
- The Victorian National Parks Association (VNPA) has undertaken a social marketing strategy to determine how to increase community participation and to look at the capacity of community-based environment groups to facilitate this involvement, with a pilot project centred on the greater Werr bee River catchment area. Part of this includes grassland engagement events with existing Friends groups and that involve people in surveying for Golden Sun Moth and Striped Legless Lizard.
- Numerous wa ks, talks and tours have been undertaken by staff and volunteers of DSE, VNPA, TFN and Friends groups.
- In 2009 Melbourne Museum opened a new biodiversity exhibition *Wild: Amazing animals in a changing world* which has a section on native grasslands.
- Education packages developed for schools: *Grasslands – Ecology, biology, conservation and management* VCE Resource Material and *Grassland Communities* P-6 Teacher Resource now require updating to meet new Victorian Essential Learning Standards (VELS).
- The *Volcano Dreaming* photographic mural created by Inherit Earth in partnership with the Friends of Iramoo and Victoria University is a visually stunning and informative initiative. Printed on fabric banners, measuring 12m long and 2m tall, are more than 3000 photos stitched together to depict in fine detail the Grassland and Grassy Woodland, the resident flora and fauna, as well as the real world issues threatening the ecological communities. It will be displayed at numerous venues and events, and supported by other interpretive materials, such as the grassland pocket field guide, as well as other products still to be developed if funding is sourced (e.g. website, education resources).
- *Act4Nature* is a joint initiative involving Zoos Victoria, DSE, Museums Victoria, Sustainability Victoria, PV and the Royal Botanic Gardens. It promotes actions that individual people can undertake to reduce their impact on the environment, and includes grasslands issues. (website http://www.act4nature.org.au)

Conferences

- In 1992 the Indigenous Flora and Fauna Association (IFFA) and the VNPA held the *Great Plains Crash – A conference on the Grasslands and Grassy Woodlands of Victoria* at Victorian University of Technology (IFFA unpub.). This was attended by some 280 delegates.
- In 1998 the then Department of Natural Resources and Environment with Victoria University held the *Down to Grass Roots* conference on the management of grassy ecosystems. (Craigie and Hocking 1999).
- In 1999 the Federal Government organised a conference in South Australia, *Balancing Conservation and Production in Grassy Landscapes,* which was attended by grassland experts, agriculturalists and other stakeholders from south-eastern Australia (Barlow and Thorburn 2000).

There have been recent calls to organise another conference to discuss developments in grasslands conservation over the last 20 years.

General publications

A few examples of the numerous resource kits, handbooks and other publications are provided below:

- *Plains Wandering*, a grassland handbook and identification guide (Lunt *et al.* 1998).
- *Grassy Guidelines* grassland management guide developed by Trust for Nature (Barlow 1999).
- The CFA and DSE in south western Victoria with WWF's Threatened Species Network (TSN) produced a series of promotional flags, banners, boards, brochures and flyers with messages about ecologically

responsible roadside fire management and the conservation values of roadside grasslands. This initiative raised the profile of brigades that participate appropriately in roadside management, while helping other CFA crews, farmers and local communities to better understand the benefits of retaining native grasslands such as improving fire safety and reducing costs.

- Due to its popularity, several reprints of the pocket field guide *Grassland Species of the Victorian Volcanic Plain* have been required, and variously funded by Southern Grampians Shire, DSE, WWF TSN, VVP PlainsTender, GHCMA and the Hamilton Field Naturalists Club. Using a similar template, several other versions of the pocket field guide have been produced for the flora and fauna found in smaller regions, still on the VVP.

  A joint initiative of DSE and PlainsTender with a Caring for Our Country grant has published an information kit with eight factsheets titled *Victorian Volcanic Plains Native Vegetation Management Guides*, and covers planning, weeds, burning, grazing, soil disturbance and restoration issues.

  Various posters, brochures, information sheets, booklets, field guides and management guidelines have been prepared by DSE, MCMC, TFN, VNPA, Australian Plant Society (formerly Society for Growing Australian Plants).

  Community brochures (private land case studies and off-reserve conservation areas).

5.5 Recovery Actions Recorded in ABC

The ABC database contains details about the management actions undertaken for threatened species and ecological communities in Victoria. A recent analysis of ABC data for the EPBC-listed species and ecological communities relevant to this Plan showed that 4746 actions have been undertaken in the period 2004 to 2010, and these standard actions by item are shown in Table 18. Note that some of these standard actions occur on an annual basis, and each occurrence contributes to the sum of 4746 actions.

Table 10 - Standard actions that have been completed or partially completed between 2004 to 2010 for EBPC-listed items as recorded on ABC

Standard Action	Item
Acquire baseline population data	Dianella amoena (Matted Flax-lily) Glycine latrobeana (Clover Glycine) Lepidium hyssopifolium (Basalt Peppercress) Pimelea spinescens subsp. spinescens (Spiny Rice-flower) Prasophyllum suaveolens (Fragrant Leek-orchid) Xerochrysum palustre (Swamp Everlasting)
Amend Crown land reservation	Corangamite Water Skink (Eulamprus tympanum marnieae) Prasophyllum suaveolens (Fragrant Leek-orchid) Rutidosis leptorhynchoides (Button Wrinklewort) Striped Legless Lizard (Delma impar) Western Basalt Plains Grassland Community
Analyse population trends	Carex tasmanica (Curly Sedge)
Apply ecological burning	Dianella amoena (Matted Flax-lily) Diuris basaltica (Small Golden Moths) Diuris fragrantissima (Sunshine Diuris) Golden Sun Moth (Synemon plana) Pimelea spinescens subsp. spinescens (Spiny Rice-flower) Prasophyllum suaveolens (Fragrant Leek-orchid) Pterostylis basaltica (Basalt Rustyhood) Rutidosis leptorhynchoides (Button Wrinklewort) Senecio macrocarpus (Large-headed Fireweed) Striped Legless Lizard (Delma impar) Western Basalt Plains Grassland Community Xerochrysum palustre (Swamp Everlasting)
Apply for funding	Eastern Barred Bandicoot (Perameles gunnii)
Assess habitat characteristics and/or condition	Dianella amoena (Matted Flax-lily) Diuris basaltica (Small Golden Moths) Eastern Barred Bandicoot (Perameles gunnii) Grassland Earless Dragon (Tympanocryptis pinguicolla) Leucochrysum albicans subsp. albicans var. tricolo (White Sunray) Pimelea spinescens subsp. spinescens (Spiny Rice-flower) Poa sallacustris (Salt-lake Tussock-grass) Prasophyllum suaveolens (Fragrant Leek-orchid)

Standard Action	Item
	Striped Legless Lizard (Delma impar) Western Basalt Plains Grassland Community Xerochrysum palustre (Swamp Everlasting)
Assess threats	Carex tasmanica (Curly Sedge) Dianella amoena (Matted Flax-lily) Diuris basaltica (Small Golden Moths) Diuris fragrantissima (Sunshine Diuris) Grassland Earless Dragon (Tympanocryptis pinguicolla) Lachnagrostis adamsonii (Adamson's Blown-grass) Lepidium aschersonii (Spiny Peppercress) Leucochrysum albicans subsp. albicans var. tricolo (White Sunray) Pimelea spinescens subsp. spinescens (Spiny Rice-flower) Prasophyllum suaveolens (Fragrant Leek-orchid) Rutidosis leptorhynchoides (Button Wrinklewort) Senecio macrocarpus (Large-headed Fireweed) Striped Legless Lizard (Delma impar) Xerochrysum palustre (Swamp Everlasting)
Clarify/review taxonomy	Diuris basaltica (Small Golden Moths)
Collate, analyse and report on data	Diuris fragrantissima (Sunshine Diuris)
Collect mycorrhizal fungi	Prasophyllum suaveolens (Fragrant Leek-orchid)
Collect reproductive material	Carex tasmanica (Curly Sedge) Diuris basaltica (Small Golden Moths) Pimelea spinescens subsp. spinescens (Spiny Rice-flower) Poa sallacustris (Salt-lake Tussock-grass) Prasophyllum diversiflorum (Gorae Leek-orchid) Prasophyllum suaveolens (Fragrant Leek-orchid) Pterostylis basaltica (Basalt Rustyhood)
Compile, maintain and assess information	Diuris fragrantissima (Sunshine Diuris) Eastern Barred Bandicoot (Perameles gunnii) Western Basalt Plains Grassland Community
Conduct artificial pollination	Diuris basaltica (Small Golden Moths) Prasophyllum suaveolens (Fragrant Leek-orchid) Pterostylis basaltica (Basalt Rustyhood)
Conduct priority research projects as specified	Corangamite Water Skink (Eulamprus tympanum marnieae) Diuris fragrantissima (Sunshine Diuris) Growling Grass Frog (Litoria raniformis) Poa sallacustris (Salt-lake Tussock-grass) Prasophyllum suaveolens (Fragrant Leek-orchid) Striped Legless Lizard (Delma impar)
Conduct stakeholder awareness activities regarding compliance	Diuris basaltica (Small Golden Moths) Senecio macrocarpus (Large-headed Fireweed) Western Basalt Plains Grassland Community
Conduct surveillance and information gathering for compliance investigation	Xerochrysum palustre (Swamp Everlasting)
Conduct survey to confirm existing records	Carex tasmanica (Curly Sedge) Dianella amoena (Matted Flax-lily) Diuris basaltica (Small Golden Moths) Grassland Earless Dragon (Tympanocryptis pinguicolla) Growling Grass Frog (Litoria raniformis) Leucochrysum albicans subsp. albicans var. tricolo (White Sunray) Pimelea spinescens subsp. spinescens (Spiny Rice-flower) Prasophyllum suaveolens (Fragrant Leek-orchid) Rutidosis leptorhynchoides (Button Wrinklewort) Senecio macrocarpus (Large-headed Fireweed) Striped Legless Lizard (Delma impar)
Conduct survey to determine abundance/extent	Carex tasmanica (Curly Sedge) Corangamite Water Skink (Eulamprus tympanum marnieae) Diuris basaltica (Small Golden Moths) Golden Sun Moth (Synemon plana) Growling Grass Frog (Litoria raniformis)

Standard Action	Item
	Lepidium aschersonii (Spiny Peppercress) Pimelea spinescens subsp. spinescens (Spiny Rice-flower) Plains-wanderer (Pedionomus torquatus) Poa sallacustris (Salt-lake Tussock-grass) Prasophyllum frenchii (Maroon Leek-orchid) Rutidosis leptorhynchoides (Button Wrinklewort) Southern Brown Bandicoot (Isoodon obesulus obesulus) Xerochrysum palustre (Swamp Everlasting)
Conduct survey to locate additional populations	Dianella amoena (Matted Flax-lily) Diuris basaltica (Small Golden Moths) Diuris fragrantissima (Sunshine Diuris) Golden Sun Moth (Synemon plana) Grassland Earless Dragon (Tympanocryptis pinguicolla) Prasophyllum diversiflorum (Gorae Leek-orchid) Rutidosis leptorhynchoides (Button Wrinklewort) Striped Legless Lizard (Delma impar)
Conduct survey to locate suitable habitat	Corangamite Water Skink (Eulamprus tympanum marnieae) Diuris fragrantissima (Sunshine Diuris)
Conduct workshops, seminars or symposia on research/management issues	Prasophyllum suaveolens (Fragrant Leek-orchid)
Construct/maintain information boards	Leucochrysum albicans subsp. albicans var. tricolo (White Sunray) Rutidosis leptorhynchoides (Button Wrinklewort) Striped Legless Lizard (Delma impar) Western Basalt Plains Grassland Community
Control introduced animals	Corangamite Water Skink (Eulamprus tympanum marnieae) Diuris fragrantissima (Sunshine Diuris) Eastern Barred Bandicoot (Perameles gunnii) Growling Grass Frog (Litoria raniformis) Lepidium aschersonii (Spiny Peppercress) Plains-wanderer (Pedionomus torquatus) Poa sallacustris (Salt-lake Tussock-grass) Prasophyllum suaveolens (Fragrant Leek-orchid) Pterostylis basaltica (Basalt Rustyhood) Rutidosis leptorhynchoides (Button Wrinklewort) Senecio macrocarpus (Large-headed Fireweed) Western Basalt Plains Grassland Community
Control native animals to reduce grazing	Eastern Barred Bandicoot (Perameles gunnii)
Design survey	Grassland Earless Dragon (Tympanocryptis pinguicolla)
Develop and/or implement policy	Striped Legless Lizard (Delma impar)
Develop bioregional or local Conservation Management Networks	Growling Grass Frog (Litoria raniformis) Western Basalt Plains Grassland Community
Develop detailed population monitoring protocols	Eastern Barred Bandicoot (Perameles gunnii) Poa sallacustris (Salt-lake Tussock-grass) Pterostylis basaltica (Basalt Rustyhood) Southern Brown Bandicoot (Isoodon obesulus obesulus) Striped Legless Lizard (Delma impar)
Develop guidelines, systems procedures or design manuals	Striped Legless Lizard (Delma impar) Western Basalt Plains Grassland Community
Develop habitat monitoring protocols	Eastern Barred Bandicoot (Perameles gunnii)
Develop or amend planning scheme overlays and schedules	Corangamite Water Skink (Eulamprus tympanum marnieae) Golden Sun Moth (Synemon plana) Lachnagrostis adamsonii (Adamson's Blown-grass) Western Basalt Plains (River Red Gum) Grassy Woodland Western Basalt Plains Grassland Community
Develop, provide input to or implement park, reserve or land management plan	Carex tasmanica (Curly Sedge) Corangamite Water Skink (Eulamprus tympanum marnieae) Dianella amoena (Matted Flax-lily) Diuris basaltica (Small Golden Moths) Lepidium aschersonii (Spiny Peppercress) Pimelea spinescens subsp. spinescens (Spiny Rice-flower)

Standard Action	Item
	Poa sallacustris (Salt-lake Tussock-grass) Prasophyllum suaveolens (Fragrant Leek-orchid) Striped Legless Lizard (Delma impar) Western Basalt Plains Grassland Community Xerochrysum palustre (Swamp Everlasting)
Develop, publish and distribute educational, technical or publicity material and/or displays.	Carex tasmanica (Curly Sedge) Corangamite Water Skink (Eulamprus tympanum marnieae) Dianella amoena (Matted Flax-lily) Diuris basaltica (Small Golden Moths) Diuris fragrantissima (Sunshine Diuris) Eastern Barred Bandicoot (Perameles gunnii) Grassland Earless Dragon (Tympanocryptis pinguicolla) Growling Grass Frog (Litoria raniformis) Prasophyllum suaveolens (Fragrant Leek-orchid) Striped Legless Lizard (Delma impar) Western Basalt Plains Grassland Community
Develop/maintain a database of threatened plants in cultivation	Poa sallacustris (Salt-lake Tussock-grass)
Develop/revise a field management strategy for all aspects of management of the item	Western Basalt Plains Grassland Community
Discourage planting of exotic and native environmental weeds	Pimelea spinescens subsp. spinescens (Spiny Rice-flower)
Ensure records of species, communities and locations are documented on the relevant databases	Lachnagrostis adamsonii (Adamson's Blown-grass)
Erect/maintain cages, fences or other structures to exclude native animals	Dianella amoena (Matted Flax-lily)
Erect/maintain fence to exclude domestic stock	Corangamite Water Skink (Eulamprus tympanum marnieae) Lachnagrostis adamsonii (Adamson's Blown-grass) Lepidium aschersonii (Spiny Peppercress) Pimelea spinescens subsp. spinescens (Spiny Rice-flower) Striped Legless Lizard (Delma impar) Western Basalt Plains Grassland Community
Erect/maintain fence to exclude introduced animals	Diuris basaltica (Small Golden Moths) Eastern Barred Bandicoot (Perameles gunnii) Pimelea spinescens subsp. spinescens (Spiny Rice-flower) Prasophyllum suaveolens (Fragrant Leek-orchid) Pterostylis basaltica (Basalt Rustyhood) Rutidosis leptorhynchoides (Button Wrinklewort) Senecio macrocarpus (Large-headed Fireweed) Western Basalt Plains Grassland Community
Erect/maintain signs to restrict or discourage access	Corangamite Water Skink (Eulamprus tympanum marnieae) Diuris fragrantissima (Sunshine Diuris) Leucochrysum albicans subsp. albicans var. tricolo (White Sunray) Pimelea spinescens subsp. spinescens (Spiny Rice-flower) Prasophyllum diversiflorum (Gorae Leek-orchid) Prasophyllum suaveolens (Fragrant Leek-orchid) Rutidosis leptorhynchoides (Button Wrinklewort) Senecio macrocarpus (Large-headed Fireweed) Western Basalt Plains Grassland Community
Erect/maintain structures to restrict or control access	Corangamite Water Skink (Eulamprus tympanum marnieae) Diuris fragrantissima (Sunshine Diuris) Glycine latrobeana (Clover Glycine) Pimelea spinescens subsp. spinescens (Spiny Rice-flower) Poa sallacustris (Salt-lake Tussock-grass) Prasophyllum suaveolens (Fragrant Leek-orchid) Rutidosis leptorhynchoides (Button Wrinklewort) Senecio macrocarpus (Large-headed Fireweed) Striped Legless Lizard (Delma impar) Western Basalt Plains Grassland Community
Establish and maintain a reintroduced / translocated population	Carex tasmanica (Curly Sedge) Dianella amoena (Matted Flax-lily)

Standard Action	Item
	Diuris fragrantissima (Sunshine Diuris) Eastern Barred Bandicoot (Perameles gunnii) Glycine latrobeana (Clover Glycine) Striped Legless Lizard (Delma impar) Western Basalt Plains Grassland Community
Establish/maintain Recovery Team	Diuris basaltica (Small Golden Moths) Diuris fragrantissima (Sunshine Diuris) Eastern Barred Bandicoot (Perameles gunnii) Poa sallacustris (Salt-lake Tussock-grass) Prasophyllum suaveolens (Fragrant Leek-orchid)
Establish/maintain working group	Golden Sun Moth (Synemon plana) Striped Legless Lizard (Delma impar)
Fence to allow natural regeneration	Corangamite Water Skink (Eulamprus tympanum marnieae)
Identify core habitat	Growling Grass Frog (Litoria raniformis) Striped Legless Lizard (Delma impar)
Identify ecologically sustainable private land management practices	Western Basalt Plains Grassland Community
Identify fire management priorities and develop detailed plan	Pimelea spinescens subsp. spinescens (Spiny Rice-flower) Prasophyllum suaveolens (Fragrant Leek-orchid) Rutidosis leptorhynchoides (Button Wrinklewort) Senecio macrocarpus (Large-headed Fireweed) Southern Brown Bandicoot (Isoodon obesulus obesulus) Striped Legless Lizard (Delma impar) Western Basalt Plains Grassland Community
Identify grazing management priorities and develop detailed plan.	Pimelea spinescens subsp. spinescens (Spiny Rice-flower)
Identify potential sites for reintroduction / translocation	Leucochrysum albicans subsp. albicans var. tricolo (White Sunray)
Identify research priorities and facilitate their implementation	Diuris basaltica (Small Golden Moths) Western Basalt Plains Grassland Community
Identify weed management priorities and develop detailed plan	Dianella amoena (Matted Flax-lily) Lepidium aschersonii (Spiny Peppercress) Lepidium hyssopifolium (Basalt Peppercress) Pimelea spinescens subsp. spinescens (Spiny Rice-flower) Prasophyllum suaveolens (Fragrant Leek-orchid) Pterostylis basaltica (Basalt Rustyhood) Rutidosis leptorhynchoides (Button Wrinklewort) Senecio macrocarpus (Large-headed Fireweed) Striped Legless Lizard (Delma impar) Western Basalt Plains Grassland Community
Incorporate actions to protect and/or manage item into Biodiversity Action Plans (BAPs) or other local plans.	Diuris basaltica (Small Golden Moths) Lachnagrostis adamsonii (Adamson's Blown-grass) Lepidium aschersonii (Spiny Peppercress)
Incorporate actions to protect and/or manage item into Regional Catchment Investment Plan/Regional Catchment Strategy	Diuris fragrantissima (Sunshine Diuris) Western Basalt Plains Grassland Community
Incorporate actions to protect item into planning processes	Growling Grass Frog (Litoria raniformis) Pimelea spinescens subsp. spinescens (Spiny Rice-flower)
Involve community groups and volunteers in recovery activities	Carex tasmanica (Curly Sedge) Corangamite Water Skink (Eulamprus tympanum marnieae) Diuris basaltica (Small Golden Moths) Diuris fragrantissima (Sunshine Diuris) Eastern Barred Bandicoot (Perameles gunnii) Glycine latrobeana (Clover Glycine) Grassland Earless Dragon (Tympanocryptis pinguicolla) Growling Grass Frog (Litoria raniformis) Pimelea spinescens subsp. spinescens (Spiny Rice-flower) Poa sallacustris (Salt-lake Tussock-grass) Prasophyllum frenchii (Maroon Leek-orchid) Prasophyllum suaveolens (Fragrant Leek-orchid) Rutidosis leptorhynchoides (Button Wrinklewort)

Standard Action	Item
	Senecio macrocarpus (Large-headed Fireweed)
	Striped Legless Lizard (Delma impar)
	Western Basalt Plains Grassland Community
Liaise with government agencies	Carex tasmanica (Curly Sedge)
	Corangamite Water Skink (Eulamprus tympanum marnieae)
	Dianella amoena (Matted Flax-lily)
	Eastern Barred Bandicoot (Perameles gunnii)
	Growling Grass Frog (Litoria raniformis)
	Leucochrysum albicans subsp. albicans var. tricolo (White Sunray)
	Pimelea spinescens subsp. spinescens (Spiny Rice-flower)
	Poa sallacustris (Salt-lake Tussock-grass)
	Pterostylis basaltica (Basalt Rustyhood)
	Rutidosis leptorhynchoides (Button Wrinklewort)
	Senecio macrocarpus (Large-headed Fireweed)
	Striped Legless Lizard (Delma impar)
	Western Basalt Plains Grassland Community
Liaise with private landholders	Corangamite Water Skink (Eulamprus tympanum marnieae)
	Diuris basaltica (Small Golden Moths)
	Grassland Earless Dragon (Tympanocryptis pinguicolla)
	Growling Grass Frog (Litoria raniformis)
	Lepidium aschersonii (Spiny Peppercress)
	Pimelea spinescens subsp. spinescens (Spiny Rice-flower)
	Poa sallacustris (Salt-lake Tussock-grass)
	Senecio macrocarpus (Large-headed Fireweed)
	Striped Legless Lizard (Delma impar)
	Western Basalt Plains Grassland Community
Liaise with stakeholder groups	Dianella amoena (Matted Flax-lily)
	Eastern Barred Bandicoot (Perameles gunnii)
	Lepidium aschersonii (Spiny Peppercress)
	Pimelea spinescens subsp. spinescens (Spiny Rice-flower)
	Prasophyllum suaveolens (Fragrant Leek-orchid)
	Rutidosis leptorhynchoides (Button Wrinklewort)
	Senecio macrocarpus (Large-headed Fireweed)
	Striped Legless Lizard (Delma impar)
	Western Basalt Plains Grassland Community
Maintain a translocated population	Carex tasmanica (Curly Sedge)
	Diuris fragrantissima (Sunshine Diuris)
Maintain ex situ plant collections	Diuris fragrantissima (Sunshine Diuris)
	Poa sallacustris (Salt-lake Tussock-grass)
Maintain vegetation structure	Dianella amoena (Matted Flax-lily)
	Golden Sun Moth (Synemon plana)
	Pterostylis basaltica (Basalt Rustyhood)
Manage and/or restore micro-habitat	Prasophyllum suaveolens (Fragrant Leek-orchid)
Manage environmental weeds	Carex tasmanica (Curly Sedge)
	Corangamite Water Skink (Eulamprus tympanum marnieae)
	Dianella amoena (Matted Flax-lily)
	Diuris basaltica (Small Golden Moths)
	Diuris fragrantissima (Sunshine Diuris)
	Dodonaea procumbens (Trailing Hop-bush)
	Eastern Barred Bandicoot (Perameles gunnii)
	Glycine latrobeana (Clover Glycine)
	Lepidium aschersonii (Spiny Peppercress)
	Lepidium hyssopifolium (Basalt Peppercress)
	Leucochrysum albicans subsp. albicans var. tricolo (White Sunray)
	Pimelea spinescens subsp. spinescens (Spiny Rice-flower)
	Poa sallacustris (Salt-lake Tussock-grass)
	Prasophyllum diversiflorum (Gorae Leek-orchid)
	Prasophyllum suaveolens (Fragrant Leek-orchid)
	Pterostylis basaltica (Basalt Rustyhood)
	Rutidosis leptorhynchoides (Button Wrinklewort)

Standard Action	Item
	Senecio macrocarpus (Large-headed Fireweed) Striped Legless Lizard (Delma impar) Western Basalt Plains Grassland Community Xerochrysum palustre (Swamp Everlasting)
Map habitat	Glycine latrobeana (Clover Glycine) Lepidium hyssopifolium (Basalt Peppercress) Poa sallacustris (Salt-lake Tussock-grass)
Map individuals	Prasophyllum suaveolens (Fragrant Leek-orchid)
Map populations	Diuris fragrantissima (Sunshine Diuris) Pimelea spinescens subsp. spinescens (Spiny Rice-flower) Rutidosis leptorhynchoides (Button Wrinklewort) Senecio macrocarpus (Large-headed Fireweed) Western Basalt Plains Grassland Community
Modify domestic grazing regimes	Lepidium aschersonii (Spiny Peppercress)
Negotiate a formal management agreement with a public authority.	Leucochrysum albicans subsp. albicans var. tricolo (White Sunray) Prasophyllum suaveolens (Fragrant Leek-orchid) Pterostylis basaltica (Basalt Rustyhood) Rutidosis leptorhynchoides (Button Wrinklewort) Senecio macrocarpus (Large-headed Fireweed) Western Basalt Plains Grassland Community
Negotiate application of conservation covenant	Carex tasmanica (Curly Sedge) Corangamite Water Skink (Eulamprus tympanum marnieae) Pterostylis basaltica (Basalt Rustyhood)
Negotiate voluntary acquisition or exchange of land	Carex tasmanica (Curly Sedge) Corangamite Water Skink (Eulamprus tympanum marnieae) Dianella amoena (Matted Flax-lily)
Negotiate voluntary management agreements with private landholders.	Carex tasmanica (Curly Sedge) Growling Grass Frog (Litoria raniformis) Striped Legless Lizard (Delma impar) Western Basalt Plains Grassland Community
Prepare a plan for reintroduction/ reinforcement / translocation	Carex tasmanica (Curly Sedge) Corangamite Water Skink (Eulamprus tympanum marnieae) Eastern Barred Bandicoot (Perameles gunnii)
Prepare, implement and review site management plans for all priority sites	Eastern Barred Bandicoot (Perameles gunnii)
Prepare/revise Action Statement	Diuris fragrantissima (Sunshine Diuris) Poa sallacustris (Salt-lake Tussock-grass) Striped Legless Lizard (Delma impar)
Prepare/revise Recovery Plan	Corangamite Water Skink (Eulamprus tympanum marnieae) Diuris fragrantissima (Sunshine Diuris) Eastern Barred Bandicoot (Perameles gunnii) Striped Legless Lizard (Delma impar)
Prevent habitat fragmentation	Growling Grass Frog (Litoria raniformis)
Prevent habitat loss	Dianella amoena (Matted Flax-lily) Dodonaea procumbens (Trailing Hop-bush) Lachnagrostis adamsonii (Adamson's Blown-grass) Prasophyllum suaveolens (Fragrant Leek-orchid) Striped Legless Lizard (Delma impar) Western Basalt Plains Grassland Community
Prevent realignment or expansion of tracks, roads or other visitor facilities	Glycine latrobeana (Clover Glycine)
Promote awareness of item through communication with local community	Striped Legless Lizard (Delma impar) Western Basalt Plains Grassland Community
Promote community involvement programs (e.g. Land for Wildlife, Botanic Guardians, Friends groups)	Diuris basaltica (Small Golden Moths) Prasophyllum suaveolens (Fragrant Leek-orchid) Senecio macrocarpus (Large-headed Fireweed) Western Basalt Plains Grassland Community
Promote market based incentives such as BushBroker, BushTender and EcoTender	Western Basalt Plains (River Red Gum) Grassy Woodland
Propagate seedlings and/or cuttings for reintroduction or reinforcement	Carex tasmanica (Curly Sedge) Dianella amoena (Matted Flax-lily)

Standard Action	Item
	Diuris fragrantissima (Sunshine Diuris)
Protect habitat from fire	Eastern Barred Bandicoot (Perameles gunnii)
Protect habitat from fire prevention activities	Western Basalt Plains Grassland Community
Provide adequate environmental flows	Corangamite Water Skink (Eulamprus tympanum marnieae)
Provide information and advice to local government authorities for inclusion in planning processes	Diuris basaltica (Small Golden Moths) Western Basalt Plains Grassland Community
Provide input into regional fire management and operations plans	Southern Brown Bandicoot (Isoodon obesulus obesulus) Striped Legless Lizard (Delma impar)
Provide training	Striped Legless Lizard (Delma impar)
Restock populations with seed or propagated plants	Leucochrysum albicans subsp. albicans var. tricolo (White Sunray)
Restore habitat	Corangamite Water Skink (Eulamprus tympanum marnieae) Eastern Barred Bandicoot (Perameles gunnii) Growling Grass Frog (Litoria raniformis) Pimelea spinescens subsp. spinescens (Spiny Rice-flower) Striped Legless Lizard (Delma impar) Western Basalt Plains Grassland Community
Store reproductive material	Diuris basaltica (Small Golden Moths)
Support Commonwealth policy, initiatives and recovery planning	Grassland Earless Dragon (Tympanocryptis pinguicolla) Western Basalt Plains Grassland Community
Undertake captive breeding for reintroduction or reinforcement	Eastern Barred Bandicoot (Perameles gunnii)
Undertake detailed population monitoring and collect demographic information	Corangamite Water Skink (Eulamprus tympanum marnieae) Diuris basaltica (Small Golden Moths) Diuris fragrantissima (Sunshine Diuris) Eastern Barred Bandicoot (Perameles gunnii) Grassland Earless Dragon (Tympanocryptis pinguicolla) Growling Grass Frog (Litoria raniformis) Lepidium hyssopifolium (Basalt Peppercress) Leucochrysum albicans subsp. albicans var. tricolo (White Sunray) Pimelea spinescens subsp. spinescens (Spiny Rice-flower) Poa sallacustris (Salt-lake Tussock-grass) Prasophyllum diversiflorum (Gorae Leek-orchid) Prasophyllum suaveolens (Fragrant Leek-orchid) Pterostylis basaltica (Basalt Rustyhood) Senecio macrocarpus (Large-headed Fireweed) Striped Legless Lizard (Delma impar)
Undertake disturbance activities to maintain habitat and/or manage biomass	Lepidium aschersonii (Spiny Peppercress) Western Basalt Plains Grassland Community
Undertake genetic research	Xerochrysum palustre (Swamp Everlasting)
Undertake habitat monitoring	Corangamite Water Skink (Eulamprus tympanum marnieae) Eastern Barred Bandicoot (Perameles gunnii) Golden Sun Moth (Synemon plana) Growling Grass Frog (Litoria raniformis) Striped Legless Lizard (Delma impar)
Undertake periodic surveillance monitoring of populations	Carex tasmanica (Curly Sedge) Corangamite Water Skink (Eulamprus tympanum marnieae) Dianella amoena (Matted Flax-lily) Diuris basaltica (Small Golden Moths) Diuris fragrantissima (Sunshine Diuris) Dodonaea procumbens (Trailing Hop-bush) Golden Sun Moth (Synemon plana) Lachnagrostis adamsonii (Adamson's Blown-grass) Lepidium aschersonii (Spiny Peppercress) Lepidium hyssopifolium (Basalt Peppercress) Pimelea spinescens subsp. spinescens (Spiny Rice-flower) Prasophyllum frenchii (Maroon Leek-orchid) Prasophyllum suaveolens (Fragrant Leek-orchid) Rutidosis leptorhynchoides (Button Wrinklewort) Senecio macrocarpus (Large-headed Fireweed) Southern Brown Bandicoot (Isoodon obesulus obesulus)

Standard Action	Item
	Western Basalt Plains Grassland Community Xerochrysum palustre (Swamp Everlasting)
Undertake population modelling and/or viability analysis	Corangamite Water Skink (Eulamprus tympanum marnieae)
Undertake research into management requirements	Corangamite Water Skink (Eulamprus tympanum marnieae) Diuris basaltica (Small Golden Moths) Diuris fragrantissima (Sunshine Diuris) Southern Brown Bandicoot (Isoodon obesulus obesulus) Striped Legless Lizard (Delma impar) Western Basalt Plains Grassland Community
Undertake research to identify key biological functions	Diuris basaltica (Small Golden Moths) Diuris fragrantissima (Sunshine Diuris) Poa sallacustris (Salt-lake Tussock-grass)
Undertake threat monitoring	Carex tasmanica (Curly Sedge) Golden Sun Moth (Synemon plana) Lachnagrostis adamsonii (Adamson's Blown-grass) Xerochrysum palustre (Swamp Everlasting)

Source: Actions for Biodiversity Conservation (ABC database). Accessed January 2011.

Appendix 6. Management Practices

On-going clearing, fragmentation and degradation have been outlined as the major threats to the Grassland and Grassy Woodland ecological communities. Much of the biodiversity within these ecosystems lies predominantly in the grassy ground layer. Management practices within, and/or adjacent to, remnant areas of the ecological communities can significantly impact on floristic cover and composition, and on the fauna habitat values.

Management is about maintaining the persistence and function of the ecological communities, threatened flora and fauna, as well as protecting other values such as geological and cultural assets. Appropriate management requires good understanding of the ecosystem, a coherent philosophy, a clear framework for distr buting resources, and the ability to learn as management progresses. The management practices that are most beneficial for the long-term conservation of these ecological communities include:

- Policies and processes to avoid further clearing or fragmentation of habitat.
- Weed control in and adjacent to habitat
- Management of biomass in habitat
- Revegetation to expand habitat and link isolated populations.

6.1 Guide for Decision Makers

In determining whether proposed development activities may have a significant impact on the Grassland and
Grassy Woodland, decision makers should refer to the Listing Advice (TSSC 2008; TSSC 2009a) and the EPBC Act Policy Statements for the two ecological communities (DEWHA 2008f; DSEWPC in prep.). These documents provide information to aid decision makers in determining the presence of the listed ecological community on a site, how to assist recovery, and examples of activities that may potentially have a significant impact on the ecological community and thus require environmental assessment. Also see the diagnostic criteria decision flowcharts in Appendix 2.

6.2 Management Practices Essential to the Maintenance and/or Improvement of the Grassland and Grassy Woodland

Decision makers should consider the site management practices in Table 19 below, when assessing the potential impact of developments on the Grassland and Grassy Woodland.

These practices provide for the on-going survival and reproduction of the flora and fauna species which comprise the ecological communities. Development activities which will potentially lead to a change in any one of these conditions within, or adjacent to, an area of the listed ecological communities could have a significant impact. Such developments require referral for assessment and approval under the EPBC Act.

Many of the impacts associated with development activities can be reduced if they are considered at the planning stage. Impacts can be limited by ensuring that developments are restricted to previously cleared land and/or degraded sites, providing adequate buffers are in place between urban/rural residential/agricultural development and remnant vegetation, and/or placing controls on the ownership of domestic pets in subdivisions that adjoin remnants.

Ecological burning may be considered as the preferred form of biomass management in many instances. General recommendations for burning are provided in Table 19, but a number of factors need to be considered:

- Implementation of ecological burns needs to take into account site-specific aspects, such as annual rainfall, soil fertility, amount of biomass, presence of fire-sensitive species, and previous management history. Timing of any proposed burn also needs to be considered.
- Frequency of ecological burns within the Grassland should occur about every two to five years, depending on local conditions. Two years is regarded by some workers as being too frequent, but many linear reserves receive two-year burning cycles, depending on biomass and have not been shown to experience deleterious effects (A. Arnold pers. comm. 2009). In some sites with high rainfall and soil productivity, even annual burns have been shown to have little negative impact (Wong and Morgan 2007; Henderson 1999), as soil surface heating is much briefer and lower in annually burnt sites than in less frequently burnt ones (Morgan 1999). Fires more than five years apart are too infrequent to maintain survival of Kangaroo Grass and general flora species diversity (McDougall 1989, Lunt and Morgan 1999, 2001).

Standard Action	Item

- Fire frequency, if proposed for Grassy Woodland, will require individual prescriptions depending on the vegetation type and fauna present. Particular attention will also need to be given to the weed burden of a site and whether that will increase the fire intensity and adversely impact the woody vegetation.

- Timing of ecological burns should be determined by the need to minimise adverse impacts on the native species present at the site. For example, spring burns may be used to eliminate seed set by early flowering weed species, without necessarily affecting native species. But spring to early summer burns will disadvantage animals such as the Striped Legless Lizard, which require vegetation cover and soil cracks to escape from predators, or ground-dwelling birds such as the Red-chested Button-quail (*Turnix pyrrhothorax*) when they are nesting and raising chicks. Striped Legless Lizards require autumn burns when they become less active above-ground and the soil cracks are still open (O'Shea 2005). Therefore, fires must be planned on a site by site basis to avoid sensitive stages in the lifecycles of both flora and fauna species, while taking into account seasonal variability such as very wet years or long drought.
- Burning should take place in favourable weather conditions, resulting in a burn of the desired intensity (i.e. "hot" versus "cool" burns), and speed (i.e. the fire moves at a speed that still enables fauna to escape). Land managers may need to consider that hot fires might kill senescing Kangaroo Grass tussocks or wildflower seedlings that are still struggling after severe summer conditions, and hold off on doing a burn until after break-of-season rain to reduce the fire intensity.
- Where logistically poss ble, burning should be undertaken in a mosaic or patchy fashion, to retain a suitable proportion of undisturbed fauna habitat. Varying age structures of vegetation are associated with higher species diversity. Narrow strip burning has been applied to the grasslands of the Hamilton Community Parklands to enable any Eastern Barred Bandicoots time to escape the fire prior to the next strip being lit up (Y. Ingeme pers.comm. 2011).
- Fuel breaks should be designed to limit any clearance of native vegetation and prevent weed invasion. Mown or slashed firebreaks are less detrimental to biodiversity values than ploughed mineral-earth firebreaks, but on the other hand, a maintained bare earth or sealed break can provide a barrier to weed invasion from adjacent weedy areas. Often fuel breaks are established within native vegetation on roadsides and rail reserves, whereas it would be far more advantageous for biodiversity outcomes to establish such breaks in non-native vegetation on the adjacent private land.
- Risks to other assets adjacent to the burn, such as fences and other infrastructure should be managed and smoke minimised as far as poss ble. It is essential to fully communicate to neighbours the intent and benefits of ecological burns and associated reduction in fuel loads.

Table 19 - General management recommendations

Maintain or improve soil conditions	Avoid physical disturbance (e.g. cultivation, ripping, excavation, rock removal).
Maintain or improve drainage conditions/ existing run-on from rem	• Avoid chemical changes (e.g. use of fertilisers or soil ameliorants). • Avoid soil compaction from vehicles/machinery or stock camps. Do not direct run-off (from roads, urban developments, contour banks) into ~~remnant areas. existing hydrological~~ ~~Do not divert~~ ant areas (e.g. diversion drains). **regime**
Control exotic plant introductions	Prevent the del berate introduction of exotic pasture species (i.e. pasture improvement). • Prevent the introduction of non-indigenous native species. • Ensure machinery hygiene protocols are implemented to prevent the spread of weeds. • Prevent the stockpiling of topsoil or overburden within remnant areas. • Implement a weed control program to control weed invasion, wildlings from adjacent tree plantings (e.g. Radiata Pine) and garden escapees.
Avoid inappropriate ~~native tree planting~~	• Quarantine stock in weed free areas prior to moving them into native pastures. Do not plant trees/shrubs in grassland sites. ~~Plant trees/ shrubs from local provenance seed (where~~ practicable and subject to the viability of available seed).

- Plant trees and shrubs at natural grassy woodland densities.

Maintain or improve connectivity	□ Ensure existing links are maintained between Grassland and Grassy Woodland remnants and/or between other native vegetation types, for example shrubland, woodland, forest, riparian and/or wetlands. □ Widen linear grassland remnants by purchasing or retiring adjacent farm land.
Maintain sunlight levels	□ Prevent changes which will result in prolonged shading (e.g. buildings, dense tree plantings).
Maintain or improve structural diversity	□ Within Grassland remnants, remove excessive regeneration of tree and shrub seedlings or colonising woodland species. □ Within Grassy Woodland remnants, achieve the preferred tree density by either thinning of excessive tree regeneration, or bypreventing the removal of regenerating trees □ Prevent firewood collection or the "tidying up" of fallen dead logs. □ Prevent the removal of standing dead hollow trees. □ Prevent the collection or "tidying up" of basalt rocks.
Ensure adequate buffers are retained	□ Protect areas of Grassland and Grassy Woodland from adjacent land use (e.g. urban and agricultural development) that may potentially impact on its integrity.
Minimise chemical use	□ Limit weed control to selective techniques (spot-spraying, basal spraying, wick-wiping, stem injection or cut and paint application methods). □ Avoid overspray and minimise impacts on non-target species. □ Monitor treated areas to ensure weeds do not establish on any resultant bare patches.
Implement strategic grazing	□ Limit grazing as far as poss ble to degraded areas. □ Ensure remnant areas are rested at appropriate times, for example when perennial native ground cover species are flowering and seeding.
Implement appropriate burning regimes	□ For grassland remnants dominated by Kangaroo Grass, burn approximately every 2-5 years in late summer/ autumn to maintain floristic diversity and seed incorporation into soil seedbank. (Burning regimes will depend on the floristic composition of a remnant or individual species requirements.) □ Burn in mosaics (i.e. burning small areas at staggered intervals) to allow survival of soil and ground fauna (including invertebrates, amphibians and reptiles) and promote diversity in the states of the ecological communities. □ Consider timing of burns in relation to the flowering and seeding ofnative and exotic species, the habitat needs of native ground fauna and the responses of fire-adapted weeds (e.g. Chilean Needle-grass).
Avoid inappropriate mowing/slashing	□ If mowing/slashing is used to reduce biomass within remnants, it should be carried out in a mosaic pattern to allow for the retention of refuges for tall tussock grasses, regenerating overstorey and groundlayer dependent fauna as well as habitat features (such as fallen logs, litter). □ Mower/slasher height should be set at a minimum of 10cm and preferably be delayed until the flowering and seed set of native plants is completed. □ Mown thatch should be removed so it will not smother desirable flora. Care must be taken not to disturb the soil profile during this exercise, or alternatively include burning in the following year. □ On roadsides, limit mowing/slashing to areas essential for visibility and safety, unless mowing is approved as biomass management tool. Mow from less weedy areas into more weedy areas. □ Ensure machinery hygiene protocols are implemented to avoid the spread and introduction of weeds. □ Minimise the number of times the area is slashed a year as regular slashing will lead to a shift in species composition to an increase in abundance of weeds such as those with flat rosettes.

Control feral animals	☐ Protect native fauna and flora populations by controlling feral predators (i.e. foxes, cats) within and/or adjacent to remnant areas. ☐ Do not push fallen or felled timber or rocks into stacks or windrows within remnant areas as these form harbours for foxes, cats and rabbits. ☐ Protect native flora by controlling feral herbivores (rabbits, goats and deer). ☐ If ripping is used to control rabbits within remnants, ensure machinery hygiene procedures are applied, and ripped areas are rehabilitated with grassland species and monitored to prevent weed infestations. Do not rip warrens in indigenous cultural heritage sites.
Restrict domestic pets	☐ Within and adjacent to remnants, prevent access by domestic cats and dogs. ☐ Avoid increasing the numbers of domestic pets in, and or adjacent to, remnant areas.

Adapted from DECCW (2010b).

Other useful management guides are Barlow (1997), DSE (2009d), Eddy (2002).

Appendix 7. Examples of State and Transition Models

The concept of Adaptive Management (AM) is frequently adopted in the area of conservation management (e.g. Wong and Morgan 2007, Rumpff *et al.* 2010; Turner *et al.* 2010). Such an approach allows achievable goals to be set (i.e. for focal species and various condition states) and desirable and/or undesirable processes to be identified, while monitoring of outcomes guides and improves future management actions. This process of acting and learning helps clarify the unknown or uncertain elements of an ecosystem by incorporating feedback on the success or failure of past actions. There is an urgent need to be able to learn from management actions, to facilitate more effective and efficient action, and even to justify the investment (McIntyre and Lavorel 2007; Wong and Morgan 2007; Rumpff *et al.* 2010).

An important tool is using adaptive management is the state and transition model. Such a model describes the various states or conditions in which a vegetation remnant can exist, the processes or transitions from one state to another, and the expected responses following management interventions. Land managers use these models to establish management targets and track trends in vegetation condition. Such models are based on knowledge gained through monitoring, research and expert opinion.

The states can be characterised by current or past management (e.g. fertiliser use, grazing, burning, etc) and are likely to have quantifiable ecological profiles (e.g. species richness and abundance, weed levels, intact soil/rock surface, intact invertebrate communities, fungal to bacterial ratios, etc).

The Grassland and Grassy Woodland are intergrading and changeable systems that may exist in a variety of discrete states. One or several models may need to be developed in order to describe these states. For the Grassland, states may be described in terms of species dominance e.g. *Themeda* dominated; *Austrodanthonia/Austrostipa* dominated; *Poa* dominated, usually wetter areas; and herbfields i.e. herb-rich, generally smaller sites with low covers of grass; and levels of condition. The Grassy Woodland states may include plains woodland with a relatively intact understorey, woodland without an understorey, stony knoll shrubland, and cleared or overgrown woodland.

Some examples of State and Transition Models are shown in Figures 6 to 8. Under an adaptive management framework, these models are used to help articulate how the condition or state of grassy remnants can be improved or degraded through a process of environmental factors and/ or management interventions. Management practices can be trialled and monitored. The outcomes are then analysed to update the model and better inform future management actions. Figures 6 and 7 apply to grasslands, and although Figure 8 has been developed to describe Grassy Box-Gum Woodlands, the states and transitions are similar to what is expected in the VVP Grassy Eucalypt Woodlands of relevance to this Plan.

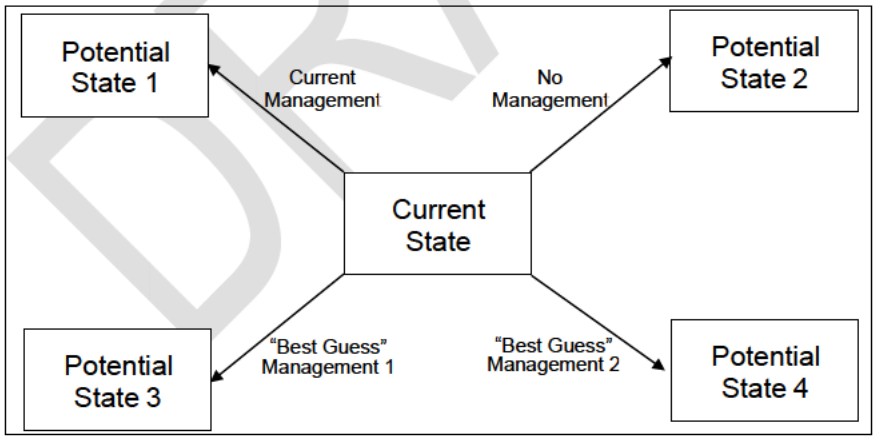


Figure 6 - State and Transition Model for hypothesizing management outcomes in grasslands

Source: Wong and Morgan (2007)

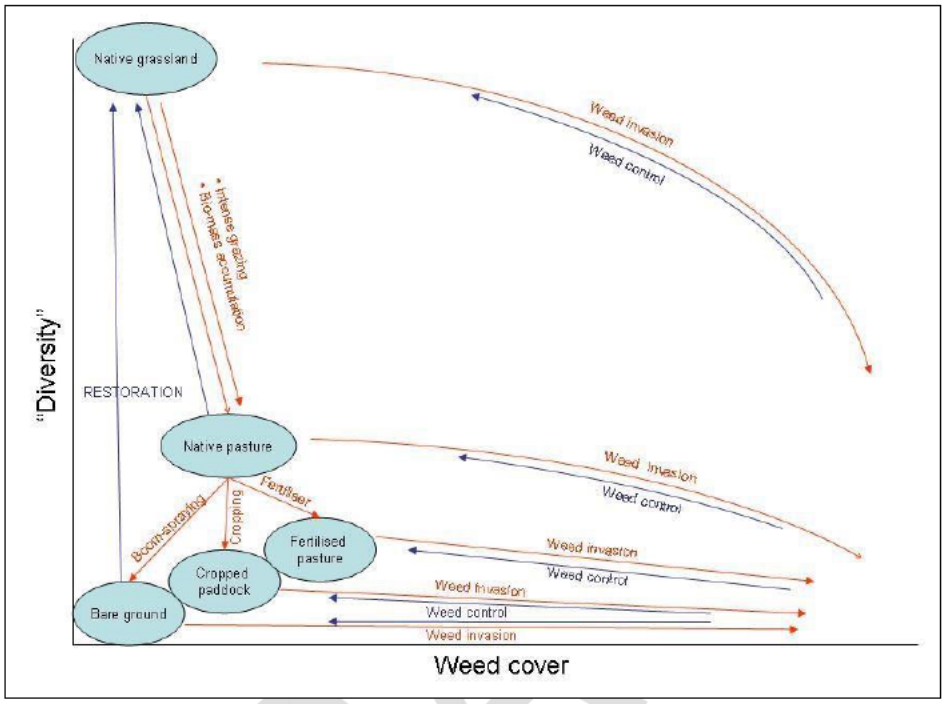


Figure 7 - Draft State and Transition Model for the grasslands in the proposed Western Grassland Reserves

Source: Grassland Reserves Technical Advisory Group (s47F pers. comm.)

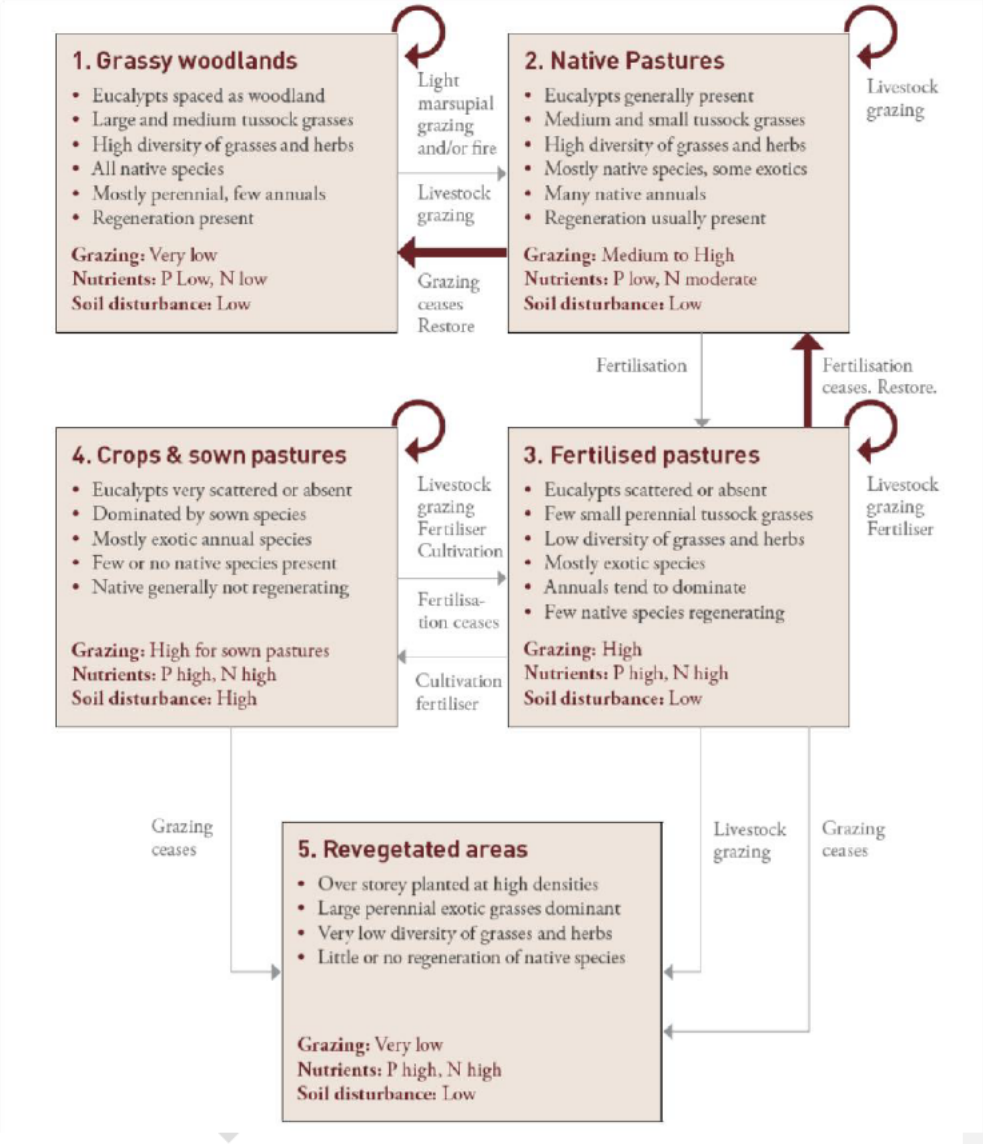


Figure 8 –State and Transition Model for Box-Gum Grassy Woodlands

Source: Department of the Environment, Water, Heritage and the Arts (2008),*Caring for our Country - Environmental Stewardship - Box-Gum Grassy Woodland Project Implementation Plan* cited in DECCW (2010b).

Appendix 8. Monitoring

The following description of a proposed grassland monitoring program has been taken from the DRAFT *North Plains Grasslands: Strategic Operational Plan for the Protected Area Network* (Blue Devil Consulting 2010). It is paraphrased with permission from Blue Devil Consulting and the Northern Plains Grassland Technical Advisory Group.

The NPG Strategic Plan introduced monitoring and evaluation under an adaptive management framework whereby the effectiveness of conservation efforts could be measured in terms of outputs and ecological outcomes. The strategy structured the role of monitoring around assessing the performance of a set of predefined goals, built on a series of ecosystem-wide focal (species and functional) values.

The monitoring program was prioritised to provide a balance between cost, value in decision-making and whether further (methodological) development was required. The on-ground program has three monitoring sub-programs: primary, secondary and tertiary monitoring. These represented a network of permanent sites dotted across the region in selected locations structured along a spectrum of increasing complexity and decreasing ubiquity/frequency.

Table 11 - Comparison of the key operational attributes of the three monitoring sub-programs

	Primary	Secondary	Tertiary
Number of sites	High	Medium	Low
Frequency	High	Medium	Low
Skill/Training	Low	Medium	High
Time	Quick	Slow	Slow

The simplest monitoring is designed for quick and frequent use by relatively unskilled practitioners, whereas the most complex monitoring, focused on various flora and fauna survey and census, will be infrequently implemented by ecologists and other skilled and experienced specialists.

Primary monitoring - Biomass management outputs reporting and monitoring

In terms of day-to-day operations, primary sites will be the most critical for reserve managers, not just because the managers will often be the ones expected to undertake this activity, but also because it will provide important management decision-support information. Primary monitoring will be focused on a selection of key vegetation structural indices (e.g. % cover of bare ground and tussock-grasses) that are believed to best guide biomass management decisions, using tools such as stock grazing and burning.

Primary monitoring serves the short-term need of reporting on activities and outputs, and contr butes to improving our understanding of how management activities influence ecological outcomes. It will help to determine whether or not key indices defining optimal habitat for the ecosystem can be determined (for example % cover of bare ground between 30% and 50%). Such a result could lead to the later development of more prescriptive conservation management systems.

The method is to visually estimate of the % cover of key structural indices per 1m^2 quadrat. It applies to grassland patch-types per sites (paddock and/or reserve), aiming for at least three replicates before and after the application of controlled disturbance, typically grazing or burning. A similar intensity of monitoring would also be useful in undisturbed control sites.

Some key features of this "Visual Structural Assessment" (VSA) method include:

- Use of a photographic guide depicting the range of vegetation states likely to be encountered Other cover estimation tools such Habitat Hectare assessments.
- All assessment sites will be permanently located using GPS coordinates
- VSAs will be undertaken at the same time as managers are deciding on the need for controlled disturbance, just prior to its application;
- Results will be averaged from the minimum of three observation points / patch-type / site;
- Photographic records of the assessment site is highly recommended;

- All structural indices will be assessed at each site, although some indices are likely to be more important than others.

Tussock height and the Parks Victoria "golf ball" measure of biomass (Morgan & Mills 2008) are recommended to be included as a routine part of the primary monitoring process. This combination of methods will aid development and refining of primary monitoring by providing additional data for analysis.

Outcomes monitoring – Secondary monitoring

Primary monitoring is intended as a quick, simple method for short term decision support and will not be adequate to develop a more thorough picture of longer term structural and landscape functional change. This will be achieved by taking more time to measure a greater number of variables with greater accuracy. The trade-off for the greater monitoring effort per site will be less sites (compared with primary monitoring) undertaken less frequently (say, every five years instead of annually or seasonally). Replicated data of this nature will hopefully identify longer term recovery trajectories as improved management leads to greater structural and functional diversity and condition across the three broad community types (plains and chenopod grasslands; plains grassy woodlands; and ephemeral wetlands associated with creeks, drainage lines and major depressions. For example, in some grassland patch-types, this long term change monitoring might pick up increases in components such as short and longer lived shrubs, biological soil crusts and perennial native forbs that have been disadvantaged by ongoing grazing. Recovery of the BSC and minimising the surface soil's vulnerability to wind and sheet erosion as well as desiccation due to over grazing will be a key focus of the measurement of key soil surface indices.

Key elements of the method:

- Based on a 50 m transect at which the following is undertaken:
  - Site establishment;
  - Photopoint assessment;
  - Ground-level point quadrats;
  - Vegetation structure or intercept assessment (woodlands and shrublands only);
  - Soil surface assessment;
  - Tree health assessment (Woodlands only); and
  - Recruitment assessment (trees and shrubs);
  - Full vascular flora quadrat – optional.
- Site selection – aiming for sufficient replication in all key treatments and patch-types;
- All sites must be permanently marked and clearly labelled, with both the coordinates recorded and a map drawn to ensure the exact location can be found years into the future;

Outcomes monitoring – Tertiary monitoring

Tertiary, like secondary monitoring, requires greater monitoring effort and a lower number of select sites. It concentrates on threatened species, and will be undertaken over longer time frames (say every fives years) and to a greater depth. Each survey must address population attr butes such as distr bution patterns, population size and structure, and seasonal and inter-annual variability. Threatened plant monitoring would involve targeted systematic mapping and density survey. In addition, optional monitoring targeted at functionally important predators (Brown Falcons and Fat-tailed Dunnarts) plus threatened invertebrates (Sun Moth) would involve similar methods to above plus time budgets and diet analysis for raptors. In all cases, a thorough plan outlining details of the methods employed as well as how the results should be analysed and interpreted must be produced by suitably skilled and experienced ecologists.

Appendix 9. VVP Stakeholders

Public Authorities with responsibilities on the VVP

There is a very large and diverse range of stakeholders who have an interest in the grassland and grassy woodland ecological communities, as presented in this appendix. In Table 19 are details for the major public authorities who have administrative roles and responsibilities on the VVP, in accordance with key legislation. The stakeholders with land management responsibilities on various land tenures are shown in Table 20. Lists of other important stakeholder groups then follow, but please note that while these are comprehensive lists, they are not complete lists of all the organisations who have, or will be, contributing to the conservation of the VVP ecological communities. For instance, there are probably many more Friends groups who have a stake in the VVP, but information about Friends groups is not up to date or easy to access. The Friends groups listed were mentioned by stakeholders who attended VVP consultation forums for this Plan. Regional Landcare Coordinators based at the CMAs (CCMA, GHCAM, PPWCMA) provided information about the Landcare groups and networks in their region, on the consideration that they work in areas that contain the ecological communities. These regional landcare coordinator can also be contacted for more details about these landcare groups if people wish to get involved. It is worth highlighting that there are over 100 community groups involved on the VVP.

Table 12 - Details of the public authorities with major responsibilities on the VVP

Authority	No.	Locations/ Regions	Roles and Responsibilities *	Key Legislation
Federal Dept of Sustainability, Environment, Water, Population and Communities	-		Develop and implement national policy, programs and legislation to protect and conserve Australia's environment and heritage and to promote Australian arts and culture.	Environment Protection and Biodiversity Conservation Act 1999
Department of Sustainability and Environment (DSE)	3	Biodiversity and Ecosystem Services Land and Fire Statewide Services - North West, Port Phillip, South West Arthur Rylah Institute	The principal natural resource management department, responsible for the administration and management of Victoria's natural resources and public lands. Provides for strategic direction of public and crown land management, forestry and fire management on public land, flora and fauna management, environmental flow, water monitoring and greenhouse issues.	Catchment and Land Protection Act 1994; Crown Land (Reserves) Act 1978; Coastal Management Act 1995; Flora and Fauna Guarantee Act 1988; Forests Act 1958; Land Act 1958; Parks Victoria Act 1998; Victorian Environment Assessment Council Act 2001; Water Act 1989; Wildlife Act 1975

Authority	No.	Locations/ Regions	Roles and Responsibilities *	Key Legislation

Parks Victoria (PV)	7			National Parks Act 1975 Parks Victoria Act 1998

Authority	No.	Locations/ Regions	Roles and Responsibilities *	Key Legislation
		Divisions broadly include Melbourne, Central and West, or the smaller Districts are A bert Park Central Highlands, Geelong, Grampians, Melbourne, Northern Melbourne, Murray Central and West Coast.	Manage a diverse estate of significant parks in Victoria, including the recreational management of Port Phillip Bay, Western Port and the Yarra and Mar bymong rivers. Conserve, protect and enhance environmental and cultural assets. Responsibly meet the needs of customers for quality information, services and experiences. Provide excellence and innovation in park management. Contribute to the social and economic wellbeing of Victorians.	
Department of Primary Industries (DPI)	3	North West, Port Phillip, South West	Enable transformation in Victoria's primary and energy industries. Sustainably increase wealth and wellbeing while protecting and enhancing safety, community, animal welfare and the environment. Maintains a focus on activities such as mining and extraction industries, agriculture, forest and fisheries programs. Provides the delivery of extension services for salinity, soil conservation, pest management, agriculture and vegetation.	Greenhouse Gas Geological Sequestration Act 2008 Domestic (Feral and Nuisance) Animals Act 1994 Fisheries Act 1995 Biological Control Act 1986
Department of Planning and Community Development (DPCD)	-		Conduct land-use planning and environmental assessment in Victoria. Manage the legal framework for the planning system in Victoria. Provide advice on planning policy, urban design and strategic planning ad information on land development and forecasting.	Planning and Environment Act 1987
Department of Transport (DoT) Road and Rail Organisations		VicRoads V/Line, Metro, Australian Rail Track Corporation (ARTC), VicTrack	The Department of Transport along with VicRoads and other transport agencies is responsible for public transport, roads and ports across Victoria.	Transport Integration Act 2010 Rail Management Act 1996 Road Management Act 2004
Local Government Authority (LGA)	35	There are 35 LGAs wholly or partly on the VVP, including Ararat Rural City, Ballarat City, Banyule City, Boroondara City, Brimbank City, Central Goldfields Shire, Colac Otway Shire, Corangamite Shire, Darebin City, Glenelg Shire, Golden Plains Shire, Greater Geelong City,	Advocate and promote proposals which will benefit the local community. Plan for and provide services and facilities for the local community. Provide and maintain community infrastructure in the municipal district.	Constitution Act 1975 Local Government Act 1969 Planning and Environment Act 1987

Authority	No.	Locations/ Regions	Roles and Responsibilities *	Key Legislation

Authority	No.	Locations/ Regions	Roles and Responsibilities *	Key Legislation
		Hepburn Shire, Hobson's Bay City, Hume City, Macedon Ranges Shire, Mar byrnong City, Melbourne City, Melton Shire, Mitchell Shire, Moonee Valley City, Moorabool Shire, Moreland City, Mount Alexander Shire, Moyne Shire, Nillumb k Shire, Northern Grampians Shire, Pyrenees Shire, Southern Grampians Shire, Stonnington City, Surf Coast Shire, Warrnambool City, Whittlesea City, Wyndham City and Yarra City Councils.	Undertake strategic and land use planning for the municipal district including planning for sustainability in nature conservation, energy use and community involvement. Administrate the Victorian Planning Provisions.	
Catchment Management Authorities (CMA)	5	Much of the VVP lies within the boundaries of three CMAs - Corangamite, Glenelg Hopkins, and Port Phillip and Westernport. Small parts of the VVP also extend into North Central (NCCMA), with only a very small proportion in the Wimmera (WCMA).	Provide strategic directions for natural resource management across the whole catchment via the development of 5-year Regional Catchment Strategies (RCS) and other regional plans. Primary goal of each CMA is to ensure the protection and restoration of land and water resources, the sustainable development of natural resourcesbased industries and the conservation of natural and cultural heritage. Works with regional communities, local government and other partners to incorporate local priorities, and coordinate and fund projects.	Catchment and Land Protection Act 1994
Country Fire Authority (CFA)	4	In the South West Area, there are four DSE Land and Fire Districts including Midlands, Otway, Far South West, and Wimmera.	Respons ble for fire prevention and suppression within rural Victoria for land outside the Metropolitan Fire District and the Fire Protected Area, which includes forests, parks and reserves managed by DSE.	Country Fire Authority Act 1958
Recognised Aboriginal Parties (RAPs)	5	Dja Dja Wurrung Clans Aboriginal Corporation Gunditj Mirring Traditional Owners Aboriginal Corporation Martang Pty Ltd (representing the Djab Wurrung Traditional Owner group) Wathaurung Aboriginal Corporation (trading as Wadawurrung) Wurundjeri Tribal Land and Compensation Cultural Heritage Council Inc.	Provide advice and knowledge to the Minister for Aboriginal Affairs, Secretary to the Department of Planning and Community Development and the Aboriginal Heritage Council on matters relating to Aboriginal places located in, or objects originating from, the area for which the RAP is registered. Advise the Minister on, and negotiate, the repatriation of Aboriginal cultural heritage relating to the area for which the RAP is registered.	Native Title Act 1993 Aboriginal Heritage Act 2006 Traditional Owner Settlement Act 2010

Authority	No.	Locations/ Regions	Roles and Responsibilities *	Key Legislation

Authority	No.	Locations/ Regions	Roles and Responsibilities *	Key Legislation
			Consider and advise on applications for cultural heritage permits. Evaluate and approve or refuse to approve cultural heritage management plans that relate to the area for which the RAP is registered. Enter into cultural heritage agreements. Apply for interim and ongoing protection declarations.	
Trust for Nature (TFN)	-		Protect natural heritage on private land through land purchase and by accepting donations of freehold property. Has statutory power to enter into legally binding voluntary covenants with landholders, helping to conserve biodiversity on private property.	Victorian Conservation Trust Act 1972
Water Authorities	6	Southern Rural Water administers much of the water planning across the rural parts of the VPP, including bulk water allocations and licensing processes. Melbourne Water oversees water resource issues for the metropolitan part of the VVP. Several large rural and urban water utilities, namely Barwon Water, Central Highlands Water, City West Water, South West Water, Wannon Water, and Yarra Valley Water, are also involved in water resource management on the VVP.	Manage water, sewage, irrigation, domestic and stock services to customers in various parts of the State. Manage rivers and creeks and major drainage systems in the Port Phillip and Westernport region. In other regions management of these is the respons bility of CMAs. Meet the requirements of a statement of obligations issued by the Minister for Water under the Water Act. Major areas include: • preparing plans • community engagement processes • managing assets and safety □ environmental management • corporate management.	Water Act 1989 Water Industry Act 1994 Corporations Act 2001

Authority	No.	Locations/ Regions	Roles and Responsibilities *	Key Legislation

* Adapted from DSE (2009) *Securing Our Natural Future: A white paper for land and biodiversity at a time of climate change*. Appendix 8.

Table 13 – Stakeholders with management responsibilities under various land tenures

Land Tenure	Management
Public land reserved for conservation	
Conservation reserves, including National Parks, State Parks, Flora and Fauna Reserves, Bushland Reserves, some public open space	Parks Victoria, Committees of Management, Trust for Nature, local government
Other public land	
Transport – roads	VicRoads, local government
Transport – railways	V/Line, private rail operators. maintenance contractors
Transport – airports	airport managers
Licensed unused roads	DSE
Utilities corridors – energy, telecommunications, pipelines	Telstra, Optus, AGL etc
RailTrails	Committees of Management
Commonwealth land (communications, munitions)	Dept of Defence, D~~SEWPaC~~ epartment of the Environment
Other Crown land reserves e.g. water reserves, public purposes reserves, State Game Reserves, water frontages, race tracks, tips, Recreation reserves and Town Commons	Local government, committees of management, DSE
State forests	DSE
Cemeteries	Local government, Cemetery Trusts, Dept of Human Services
Private land	
Production farms, hobby farms, private conservation reserves, quarries, industrial sites	Private landholders, lessees, Trust for Nature

Broad categories of other Stakeholder Organisations

Other Government Public Authorities

- Aboriginal Affairs Victoria (AAV)
- Department of Education and Training
- Department of Human Services – Cemeteries
- Department of Justice/ Victoria Police
- Department of Treasury and Finance
- Growth Area Authority (GAA)
- Harness Racing Victoria
- LGA Environmental Networks
- Municipal Association Victoria
- Victorian Environmental Assessment Committee (VEAC)
- VicUrban

Recovery Teams/ Technical Advisory Groups (TAG)/ Taskforces

- Brolga Research Group
- Corangamite Water Skink Recovery Team
- Eastern Barred Bandicoot Recovery Team
- Golden Sun Moth Reference Group
- Striped Legless Lizard/ Grassland Earless Dragon Recovery Team
- Pimelea spinescens Recovery Team
- Threatened Orchid Recovery Team (TORT)
- Northern Plains TAG
- Western Grassland Reserves TAG
- National Chilean Needle-grass Taskforce
- Serrated Tussock Taskforce
- Gorse Taskforce
- Potentially Threatening Process Coordinating Group

Universities and Research Institutes

- Arthur Rylah Institute (DSE)
- Australian Research Centre for Urban Ecology (ARCUE)
- Charles Sturt University
- Deakin University
- DPI - Frankston (Weeds) and Knoxfield (Insects)

- Ecological Society of Australia
- Gordon TAFE

Businesses

- La Trobe University
- Me bourne University
- Monash University
- Royal Melbourne Botanic Gardens
- RMIT
- Land and Water Australia
- University of Ballarat
- Meat and Livestock Association (MLA)
- Victoria University
- National Farmers Federation (NFF)
- Telecommunications (e.g. Telstra, SingTel Optus)
- Energy (e.g. Gasnet, APA Group, AGL, Origin

Rural Associations and Agricultural-based

- Australian Agricultural Group
- Australian Wool Innovation Limited
- Grain and Graze
- Grains Research and Development Corporation

Other Infrastructure Businesses

- Rural Industries Research and Development Corporation (RIRDC)
- Southern Farming Systems
- Victorian Farmers Federation (VFF) Energy, TRUenergy, PacificHydro, etc)

Non-Government Organisations

- Australian Wildlife Conservancy
- Bush Heritage
- Ecological Consultants
- Greening Australia
- Grassy Groundcover Research Project
- Stony Rises Woodlands Recovery Project
- Borrell-a-kandelop wetlands project
- Moolapio Limeburners Link
- Indigenous Plant Nurseries and Seedbanks
- Land Management Contractors
- Native Vegetation Offset/ Incentive Facilitators (i.e. for BushBroker/ BushTender)
- Property Developers
- Public Committees of Management for Crown Land
- Public land licensees
- Rural Real Estate Agents
- Eco-tourist Attractions

Private Landowners

Farm Families

- Farm Businesses
- Peri-urban hobby farmers
- TfN Covenants
- BushBroker properties
- BushTender properties
- Land for Wildlife properties

›mmunity Organisations and Not-for-Profits

ligenous Communities

Regional Indigenous Facilitators with DSE, CMAs and PV

Local Indigenous Networks (LIN)

cognised Aboriginal Parties (RAPs)

Dja Dja Wurrung Clans Aboriginal Corporation

Gunditj Mirring Traditional Owners Aboriginal Corporation

Martang Pty Ltd (representing the Djab Wurrung Traditional Owner group)

Wathaurung Aboriginal Corporation (Trading as Wadawurrung)

Wurundjeri Tribe Land and Compensation Cultural Heritage Council Inc

rrent RAP applicants

Kuuwang Maar Aboriginal Corporation

Wathaurung Aboriginal Co-operative

clined or Withdrawn RAP Applicants

Ballarat and District Aboriginal Co-operative Ltd

Boon Wurrung Foundation

Bunurong Land Council Aboriginal Corporation

Framlingham Aboriginal Trust

Wadda Wurrung Aboriginal Corporation

igenous Land Managers

Winda-mara Aboriginal Corporation (for Gunditj Mirring)

Kikkabush

South West Integrated Flora and Fauna Team (SWIFFT)

VVP Conservation Management Network (VVP CMN)

VVP Biosphere

vironmental Organisations and Not-for-

Association Native Plant Conservation (ANPC)

Australian Native Orchid Society (ANOS)

Australian Orchid Foundation (AOF)

Australian Seed Conservation and Research (AUSCAR)

Birds Australia

Bird Observers Club of Australia (BOCA)

Conservation Volunteers Australia (CVA)

- Field Naturalists chapters (e.g. Ararat, Ballarat, Geelong, Hamilton, Portland)
- Field Naturalists subgroups (e.g. Fungi, Botany, Fauna survey, Herpetological)
- Geelong Environment Council
- Grow West
- Indigenous Flora and Fauna Association (IFFA)
- International Student Volunteers (ISV)
- Invasive Species Council
- Kanniwinka Geopark
- Kororoit Creek Coordinator
- Landcare Australia
- Merri Creek Management Committee (MC
- Society for Growing Australian Plants (SG
- South East Australia Naturalists Associatio (SEANA)
- Victorian National Parks Association (VNPA)
- Victoria Naturally Alliance
- Weed Society of Victoria
- Wilderness Society

Grassland Groups and Organisations

- Caroline Springs on Grass (CSG)
- Friends of Grasslands (FOG)
- Grasslands Science Society
- Grasslands Advisory Group - Southern Grampians Shire
- Mt Elephant Community Management
- STIPA Native Grasses Association
- Southern Australia Grassland Society
- Wallan Environment Group
- Wannon Conservation Society - Grasslands

Friends Groups

- Friends of the Eastern Barred Bandicoot
- Friends of Brolga
- Friends of Edgars Creek
- Friends of Evans Street Grassland
- Friends of Holden Reserve
- Friends of Kororoit Creek
- Friends of Lake Purrumbete
- Friends of Malcolm Creek
- Friends of Merri Creek
- Friends of Mooramong
- Friends of Pallisters Reserve
- Friends of Organ Pipes

-

VVP Networks

-
-
-

Profits

-
-
-
-
-
-

- Friends of Taylors Creek
- Friends of Wurambean
- Friends of Floating Islands (to be established)
- Upper Merri Plenty Landcare Group

Landcare Groups and Networks

- Whittlesea Agricultural Society Landcare Group

PPWCMA

Western Melbourne Catchment Network (WMCN)

- Australian Plant Society – Wyndham
- Blackwood Barry's Reef Landcare Group
- Brisbane Ranges Landcare Group
- Friends of the Brisbane Ranges
- Friends of Greenwich Bay
- Friends of Iramoo Group
- Friends of Lollypop Creek
- Friends of Lower Kororoit Creek
- Friends of Melton Botanical Gardens
- Friends of Skeleton Creek
- Friends of Steele Creek
- Friends of Toolern Creek
- Friends of Werr bee Gorge and Long Forest
- Little River Improvement Program
- Melton Environment Group
- Mount Rothwell Biodiversity Interpretation Centre Volunteers
- Pinkerton Landcare and Environment Group
- Toolern Vale Landcare
- Werribee River Association (WRIVA)

Jackson Creek Eco-Network

- Clarkefield and District Farm Landcare Group
- Grenville Landcare Group
- Riddells Creek Landcare Group
- Sunbury Landcare Association

Upper Deep Creek Landcare Network

- Deep Creek Landcare Group (Romsey/Lancefield)
- Werneth Landcare Group
- Upper Maribyrnong Catchment Group

Moorabool Landcare Advisory Committee

- Alvie Tree Planting Group
- Bacchus Marsh and Coimadai Landcare Group
- Brisbane Ranges Landcare Group

CCMA

Ballarat Environment Network (BEN)

Geelong Landcare Network

- Avalon Landcare Group
- Rockbank Landcare Group
- Truganina Landcare Group
- Parwan Landcare Group
- Barrabool Hills Landcare Group
- Batesford, Fyansford, Stonehaven Landcare
- Brisbane Ranges Landcare Group
- Corio Landcare Group
- Maude Landcare Group
- Bamganie/Meredith Landcare Group
- Leigh District Landcare Group
- Upper Williamsons Creek Landcare Group Mallee
- Lismore Land Protection Group
- Cundare Duverney Landcare Group
- Leslie Manor Landcare Group
- Mount Elephant Community Management
- Weering-Eurack Landcare Group
- Weerite Landcare Group

Surf Coast and Inland Plains

- Torquay Landcare Group

Woady Yaloak Catchment Group

- Macedon and Mount Macedon Landcare Group
- Haddon Landcare Group
- Misery Moonlight Landcare Group
- Pittong Hoyles Creek Landcare Group
- Rokewood Landcare Group
- The Dales Landcare Group
- East Moorabool Landcare Group

Various groups

- Break O'Day and Forest Environmental Group

Anakie Tree Planting Group

- East Moorabool Landcare Group
- Rowsley Landcare Group
- Friends of Inverleigh Flora and Fauna

- Friends of Ballarat Skipton Rail Trail
- Friends of Bannockburn Bush Reserve

Various Groups

- Merriang District Landcare Group
- Arthurs Creek District Landcare Group

- Friends of Sparrow Ground
- Majestic Landcare Group

- Mt Emu Landcare
- Pirron Yallock Creek Catchment Landcare Group
- Smythesdale Progress Association
- Stoney Rises Landcare Group
- Sutherlands Creek Reserve

GHCMA

Various Groups

- Ararat Landcare Group
- Chatsworth Landcare Group
- Coleraine to Hamilton Railway Line
- Basalt to Bay Landcare Network
- Elingamite -Cobrico Landcare Group
- Eumeralla Landcare Group
- Fiery Creek Catchment Landcare Group
- Gazette Land Action Group
- Glenthompson Landcare Network
- Hopkins Moyne Land Management and Farm
- Hopkins River Landcare Group
- Karabeal Landcare Group
- Knebsworth Landcare Group
- Lake Bolac Land Protection Group
- Lake Bookar Land Protection Group
- Lake Goldsmith
- Lower Mt Emu Creek Tree and Land Protection Group
- Lower Mustons Landcare Group
- Lyne and Camp Creek Land Management Group
- Minogue Landcare Group
- Mockanger Catchement Landcare Group
- Mt Rouse South Land Protection Group
- Mustons Catchment Landcare Group
- Napier Landcare Group
- Nevertire Tree Group
- Pierrepoint Land Protection Group
- Spring Creek Farm Tree and Land Protection Group
- Surry River Landcare Group
- Wattle Hill Creek Landcare Group
- Wicklife Willaura Landcare Group
- Woorndoo Land Protection Group
- Upper Hopkins Land Management Group

Broader Community

- Schools
- Scouts, Cubs, Girl Guides
- Field and Game Australia

FOI 181205
Document 7

Department of Sustainability and Environment

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FF/54/3360

s47F
Director
Recovery Planning and Implementation Section
Approvals and Wildlife Division
Department of Sustainability, Environment, Water, Population and Communities
PO Box 787
CANBERRA ACT 2601

Dear s47F

DRAFT RECOVERY PLAN FOR THE NATURAL TEMPERATE GRASSLAND AND GRASSY EUCALYPT WOODLAND OF THE VICTORIAN VOLCANIC PLAIN

I write to submit the draft national recovery plan for the following two communities as per the 27 May 2009 funding agreement between the Commonwealth Department of Sustainability, Environment, Water, Population and Communities, and the Victorian Department of Sustainability and Environment:

- Natural Temperate Grassland of the Victorian Volcanic Plain
- Grassy Eucalypt Woodland of the Victorian Volcanic Plain

Please find attached the draft national recovery plan. The two ecological communities are endemic to Victoria; therefore, no interstate consultation was necessary. The Department of Sustainability and Environment's contact for this matter is s47F who can be reached by telephone on 03 s47F @dse.vic.gov.au.

I trust that this addresses the agreed terms of reference in the agreement.

Yours sincerely

s47F

Executive Director, Environment Programs

Encl.

/ 2/04/2013

State Government Victoria