Guidelines for the preparation of Vegetation Management Plans

Port Macquarie-Hastings Council (2019)

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Port Macquarie-Hastings Council
Corner Lord and Burrawan Streets
Port Macquarie NSW 2444
Tel: (02) 6581 8111
Email: council@pmhc.nsw.gov.au
Website: www.pmhc.nsw.gov.au

For further information contact
Natural Resources Manager

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Review and revision
From time to time this document will be revised to ensure it stays current and reflects stakeholder feedback.

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Table of Contents

1 What is a Vegetation Management Plan?

A Vegetation Management Plan (VMP) is intended to assist a property owner or developer in managing existing native vegetation and other environmentally sensitive areas on the site of a proposed or existing development (the 'subject site').

A VMP may also describe actions to be undertaken elsewhere than the development site in the case where suitable compensatory or ameliorative measures can not be performed on site.

The purpose of a VMP is to develop a comprehensive and integrated approach to guide the immediate and long term management of native vegetation on the subject or other nominated sites and to ensure their protection and enhancement.

Implementation of a VMP supports ongoing sustainable management of native vegetation and ensures that land clearing and land modification activities associated with a development are effectively ameliorated.

2 When is a Vegetation Management Plan required?

A VMP is generally required for proposed developments situated on sites which contain native vegetation of high conservation value or where the occurrence of environmentally sensitive areas on the subject site leads to significant environmental constraints. There are two main cases where a VMP may be required by Council:

Case 1
This case applies to proposed developments or subdivisions that are on or adjacent to sites that support or contain:
- Remnant native vegetation (including scattered remnant trees)
- Threatened native flora and fauna species, endangered ecological communities or their habitats
- Permanent or ephemeral watercourses
- Threats to native flora and fauna such as weeds described in the relevant regional Strategic Weed Management Plan or determined by Council's Biosecurity Officer as requiring control.

Case 2
This situation applies following unauthorised clearing of native vegetation without relevant approval (or where that approval is pending) and where damage to native vegetation has occurred on a subject site as a result of poor site management.

It is important to note that a VMP is linked to the subject site and applies to that specific site for the life of the proposed development. To ensure protection and appropriate management of vegetation on the subject site prior to works commencing, during construction and following the completion of works, the recommendations included within the VMP may be incorporated by Council into the conditions of consent for a Development Application. Such recommendations may also be subject to a restriction of the land use or positive covenant under Section 88B or 88E respectively of the Conveyancing Act, 1919.

3 Who can prepare a Vegetation Management Plan?

A VMP must be prepared by an environmental consultant or bush regenerator with theoretical and practical experience in native vegetation restoration and management as well as in the control of weeds. In addition, the person preparing the plan would also have substantial experience and knowledge relevant to the Port Macquarie-Hastings Local Government Area.

As a guide, an environmental consultant would need to hold relevant tertiary qualifications in ecology, environmental management or a related discipline as well as considerable experience in the preparation of VMPs.

A bush regenerator would need to hold Conservation and Land Management (Natural Area Restoration and Management) Certificate III or equivalent, a minimum of 1000 hours bush regeneration experience and preferably hold a higher qualification in ecology, environmental management or associated field.

4 Who can implement a Vegetation Management Plan?

Owing to the complexity of the regeneration/revegetation activities to be undertaken, the environmental sensitivity of the site or the necessity for works to be completed within a restricted time frame, Council may require that suitably qualified personnel with relevant specialist skills be engaged to implement the VMP. Details of the experience and qualifications of those implementing the VMP would need to be provided to - and verified by - Council.

As a guide for implementing a VMP, those employed as bush regenerators would require a minimum of the Conservation and Land Management (Natural Area Restoration and Management) Certificate II, plus a minimum of 500 hours of practical bushland regeneration experience under an experienced supervisor.

Supervisors would be required to have a minimum of the Conservation and Land Management (Natural Area Restoration and Management) Certificate III, plus a minimum of 700 hours of practical bush regeneration experience, significant supervisory experience and preferably a relevant higher environmental qualification.

All workers engaged in chemical weed control would be expected to have attained a minimum of AQF Level 3 chemical safety training.

It is not always a requirement for persons involved in the implementation of a VMP project, to hold bushland regeneration qualifications and experience. It is often appropriate for the individual landholder to undertake the works themselves, particularly when a plan establishes a strategy that runs over the course of a number of years. Determinations (to be made by Council) can be made on a case-by-case basis in consultation with the property owner or developer.

5 What is the structure and content of a Vegetation Management Plan?

The information included in a VMP should be presented in manageable sections that have a logical flow from one section to the next. The content of the plan needs to be concise, yet detailed enough to communicate all aspects of the plan to those people who will be implementing the plan and those who will be reviewing and approving the VMP's implementation. In order to improve readability, it is recommended that technical information (e.g. proposed weed control techniques or product specifications) is presented in detail in appendices.

Whilst all VMPs are assessed by Council on the basis of individual site-specific requirements, a VMP must address the following items, where applicable:

1. A full site description of the current state (eg flora and fauna, hydrology, soils, historical use)
2. Identify links to relevant legislation, other plans and documents
3. Identify proposed Environmental Management Units (EMUs) within the subject site. EMU's are spatial areas delineated along logical features, such as roads, streams, property boundaries or obvious changes in vegetation composition
4. Determine aims, quantifiable objectives and activities that meet objectives and the performance criteria of the plan
5. Prepare a project work plan, schedule and budget
6. Define monitoring and reporting periods and methods for all of the proposed Environmental Management Units
7. Type, number and location of Nesting Boxes (if applicable)
8. Fire History mapped and Ecological Burning requirements identified (for bushland areas >1ha)
9. Any APZs (existing or to be constructed) and their management requirements
10. Inclusion of management recommendations from any previous ecological assessments
11. MAPPING OF ENVIRONMENTAL LANDS - The applicant is to submit a geo-referenced file of environmental lands (GIS shapefile, KML/KMZ or AutoCAD DXF) specific to the site
12. DEDICATION AND VOLUNTARY PLANNING AGREEMENTS - Where the environmental land is to be dedicated to Council, the timing of dedication in relation to rehabilitation stages and development construction is to be stated

The minimum structure and content requirements for a VMP and explanatory notes for each section are provided below. The information is presented as a checklist to assist in the preparation of a VMP and also to provide an indication of how the VMP will be evaluated by council.

1.0	Site description	Completed
1.1	Give a brief overview of the proposed development.	
1.2	Identify the location and extent of the site of the proposed development (subject site) to be covered by the VMP and any adjacent areas that are - or may be - relevant to the plan eg occupied Hollow Bearing Trees in nearby road reserve	
1.3	Identify the Local Environment Plan zoning(s) of the subject site and adjacent areas (the LEP is available from the NSW Government Legislation website)	
1.4	Describe the type, extent and **current** condition# of existing vegetation on the subject site. Describe the broader existing vegetation of the catchment and the landscape in general.	
1.5	Detail any environmental constraints and any significant or sensitive environmental features of the subject site.	

The 'current' condition of the site should be detailed within a statement describing the current form, diversity, complexity, health and resilience of the native vegetation and environmentally sensitive areas covered by the VMP. The statement should be accompanied by a series of colour photographs taken at established reference points prior to works commencing.

2.0	Links to legislation, other plans and documents	Completed
2.1	Demonstrate how the VMP links to legislation, other plans and documents that relate to the proposed development.	

Recommendations contained within the VMP must be consistent with both State and Commonwealth legislation as well as local planning instruments, including:

- *Biodiversity Conservation Act 2016*
- *Local Land Services Amendment Act 2016*
- *Environmental Planning and Assessment Act 1979*
- *Water Management Act 2000*
- *Biosecurity Act 2015* and *Regulations*
- *Fisheries Management Act 1994*
- *Rural Fires Act 1997*
- *Environment Protection and Biodiversity Conservation Act, 1999*
- *Coastal Management Act 2016*
- *National Parks and Wildlife Act 1974*
- *Crown Land Management Act 2016*
- State Environmental Planning Policy (Coastal Management) 2018
- North Coast Regional Environmental Plan 1988
- State Environmental Planning Policy No 44 – Koala Habitat Protection
- State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017
- Port Macquarie-Hastings Council Local Environment Plan, 2000
- Port Macquarie-Hastings Council Development Control Plan

Examples of other plans and documents include, but are not limited to:

- North Coast Regional Strategic Weed Management Plan
- Port Macquarie-Hastings Council Floodplain Management Plan
- Landscape Management Plans (for the subject site)
- Threatened Species Recovery Plans
- Weed Management Plans
- Development Application Conditions of Consent relating to the identification, loss, retention or offsetting of Hollow Bearing Trees, establishment of buffers around significant trees or stands of vegetation.
- Aboriginal Heritage Information Management System (AHIMS)
- Historic Heritage Information Management System (HHIMS)

3.0	Environmental Management Units (EMUs)	Completed
3.1	Identify, describe and name all the proposed Management Units on the subject site.	
3.2	For each proposed Management Unit, identify and state the vegetation **management issues** that apply prior to works commencing, during construction and following the completion of works.	
3.3	Prepare and include an annotated map/ aerial photograph that identifies all the proposed Environmental Management Units on the subject site (see Appendix 1).	

Ensure that the Environmental Management Units reflect either features of the subject site or refer to aspects of the proposed development. Examples of Environmental Management Units that may be applicable include, but are not limited to:

- Remnant vegetation (include all vegetation communities, scattered trees and threatened species and associated buffer zones)
- Vegetation proposed to be retained and/or removed
- Proposed revegetation areas
- Watercourses (including footprint of the riparian corridor and associated buffers zones[5])
- Construction zone
- Inner and outer Asset Protection Zone (APZ)
- On-site effluent disposal infrastructure and waste water disposal areas

4.0	Aims, objectives, activities and performance criteria of the VMP	Completed
4.1	For each of the proposed Environmental Management Units, determine and state the **current** condition of vegetation prior to works commencing and the **target** condition of vegetation following the full implementation of the VMP. The target condition for each of the proposed Environmental Management Unit becomes the **aims** of the project.	
4.2	Determine and state the **objectives** for each of the proposed Environmental Management Units (for example "reinstate the local ecological community through revegetation and assisted natural regeneration".	
4.3	Specific project **activities** should be identified for each Environmental Management Unit. For each objective, determine and state the specific **activities** to be undertaken to accomplish each stated objective.	
4.4	For each objective, identify specific and measureable **performance criteria** to assess success of the proposed activity. The VMP will be assessed according to these specific performance criteria.	

Generally, the main objective of a VMP is to protect threatened species, endangered ecological communities and environmentally sensitive areas. However, objectives may also relate to the mitigation of the environmental impacts of the proposed development as well as a range of other management issues.

Objectives for a VMP may include, but are not limited to:

- Limit human impacts on threatened flora and fauna species or ecological communities
- Retain native vegetation and trees that provide habitat for native fauna
- Retain and protect isolated paddock trees
- Protect and/or regenerate riparian areas[#]
- Revegetate areas denuded of vegetation resulting from unauthorised clearing/stormwater erosion/over grazing
- Stop grazing by stock in remnant native vegetation
- Control weeds in a manner that is environmentally appropriate to their position and context

[#] An appropriate width for the riparian corridor should be identified in accordance with the guidelines for the Water Management Act, 2000, *Guidelines for controlled activities – Riparian Corridors (February 2008)* and with guidance from the PMHC DCP. The VMP should consider the full width of the riparian corridor and its functions including accommodating fully structured native vegetation. Plantings should emulate the ecotone of vegetation naturally occurring or previously occurring on riparian land.

Project activities (in bold) and associated tasks (bulleted) relating to a VMP can include, but are not limited to:

General site management

- Erect temporary or permanent fence around vegetation and/or trees to be retained – include specifications of fence type
- Remediate and/or prepare and/or stabilise soil prior to planting – specify technique e.g. scarifying, deep ripping, mulching, erosion matting, sterile cover crops, binding sprays etc.
- Stabilise soil and revegetate areas affected by temporary erosion and sedimentation controls

Stormwater, wastewater and hydrological function management

- Erect erosion and sediment controls – include specifications for type, location and maintenance, where relevant
- Revegetate WSUD stormwater treatment areas or on-site effluent disposal areas – specify proposed schedule of locally-indigenous nutrient-tolerant species and planting density
- Revegetate appropriately sized riparian zones emulating the ecotone of naturally occurring riparian vegetation[#] – specify stabilisation measures, identity and planting density of local provenance species to be planted

Regeneration, revegetation and weed control

- Regenerate vegetation through selective planting – specify proposed schedule of local provenance species and planting density
- Revegetate buffer zone around ecologically sensitive vegetation – specify proposed schedule of local provenance nutrient and/or disturbance tolerant species and planting density
- Restore and/or enhance fauna habitat and/or corridor connectivity by reinstatement of absent stratum elements – specify canopy, mid-storey and/or groundcover to be planted
- Control weeds in accordance with current guidelines and standards – specify proposed control technique, removal strategies and priorities. Include details on timing, constraints, herbicides to be used and waste disposal
- Enhance site recovery potential – specify activities designed to enhance a sites' recover potential (e.g. brush matting, direct seeding, bushland regeneration techniques to stimulate spontaneous recovery)

Asset Protection Zone management

Outline specific and detailed vegetation and soil management activities within any Asset Protection Zone. Include any ameliorative measures to limit impacts on threatened or locally significant flora or fauna species or ecological communities within the Asset Protection Zone. These activities include, but are not limited to:

- Remove/prune/slash/thin vegetation within the Asset Protection Zone – specify proposed extent of modification of existing vegetation being the minimum required to comply with Planning for Bushfire Protection 2006
- Retain elements of all stratum within the Asset Protection Zone – specify how natural bushland values will be protected by representing all age classes and maintaining plant species diversity
- Retain/provide fauna habitat features within the Asset Protection Zone – specify the habitat features to be retained/provided (e.g. forage trees, habitat hollows and ground or shrub layer shelter) and how they will be identified and protected during site works
- Retain native species/remove exotic species from Asset Protection Zone – where appropriate, specify species targeted for priority removal and retention
- Reduce fuel load in Asset Protection Zone – specify fuel reduction frequency, access management and method including machinery and equipment to be employed, and constraint to their use
- Reuse mulch resulting from removal of native trees in Asset Protection Zone - specify how mulch will be reused
- Remove and dispose of mulch resulting from removal of exotic trees and weeds in Asset Protection Zone – specify how mulch will be disposed of

Performance criteria are expressed as either qualitative or quantitative statements that define how the success of the VMP in achieving the stated objectives will be determined. Performance criteria for a VMP may include, but are not be limited to:

- Minimum of 90% survival rate for all plantings 12 months after establishment
- Maximum of 5% weed cover for regenerated and revegetated areas 12 months after primary weeding;
- Species diversity and density of a revegetation zone emulates that of native vegetation five years after establishment
- Exclusion fence to be completed within three months of the VMP approval
- Specify the number, location and condition of the threatened plant species that are to be retained following the completion of works

For a useful way to summarise the objectives, activities and performance criteria of the VMP refer to Appendix 2.

5.0	Project work plan, schedule and budget	Completed
5.1	Prepare and include a project work plan based on the activities identified in Section 3.	
5.2	Prepare and include a project schedule and Gantt chart.	
5.3	Prepare and include a budget/costing for the project based on the project work plan identified in section 4.1	

Generally, a VMP is implemented as part of a formal project structure. A VMP implementation project consists of work items represented by smaller sub-projects for each Environmental Management Unit (identified in section 3.2), activities (identified in section 4.3), tasks and milestones.

- An **activity** is a group of related tasks and milestones aggregated at a summary level.
- A **task** is the smallest identifiable and essential piece of a job that serves as a unit of work.
- A **milestone** is a measureable progress marker that indicates the completion of a major project deliverable.
- Project activities, tasks and milestones should be defined and described in sufficient detail to fully communicate the nature of the particular action.

A VMP implementation project work plan should be prepared based on the identified work items (i.e. sub-projects, activities, tasks and milestones). A project work plan is a hierarchical structure built of the work items that need to be carried out in order to meet the project's objectives and schedule.

The work plan is used to develop the project schedule. A project schedule details the duration, sequence of sub-projects/activities/tasks/milestones necessary for the implementation of the VMP as well as who will be responsible for undertaking each activity/task. A Gantt chart is a type of horizontal bar chart that illustrates a work plan and reflects the staging of works relating to the implementation of the VMP.

A budget for the implementing the whole VMP should be prepared and included. The budget should reflect all sub-projects and the schedule of works for the duration of the VMP, including the cost of materials, labour, watering, maintenance, monitoring and reporting. The budget for each sub-project should be presented on an annual basis from the proposed commencement of the VMP.

6.0	Monitoring and reporting	Completed
6.1	The VMP must clearly include a schedule of the monitoring and reporting requirements for the duration of the VMP, including: **how many** inspections and monitoring reports will be undertaken; **when** the inspections are due (either in terms relating to timing eg. the issuing of Subdivision Certificates, or fixed periods eg. “at the completion of the Establishment Period” or “annually in July from 2019 to 2029 inclusive”); **who** will be conducting the inspections and compiling the reports	
6.2	Specify the methods for evaluating the accomplishment of the objectives of the VMP according to the agreed performance criteria.	
6.3	Reports must address the progress toward meeting objectives based on the performance criteria as well as any difficulties encountered in the implementation of the VMP. Include photographs taken from predetermined photo points.	

The process for monitoring the progress toward accomplishing the objectives of the VMP should be described. The process should address the need for replacing plant losses, addressing deficiencies in the VMP, difficulties encountered during implementation, climatic conditions and successful completion of works. Where any proposed management activities have been amended out of necessity, this should be identified and justified in the report.

Monitoring and reporting on the progress and success should be provided at 6 and/or 12-month intervals for the term of the VMP. Council will monitor the satisfactory completion of milestones in the VMP at mandatory inspections (including prior to the issue of the Occupation or Subdivision Certificate) and/or at other nominated times.

Photographs taken from predetermined photo points for each Environmental Management Unit should be included. These photo points should be identified by GPS coordinates or by survey for future monitoring and reporting purposes.

Appendix 1 – Requirements for the annotated site map/aerial photograph

This appendix details the content that should be included as part of the VMP's annotated site map/aerial photograph (Table 1). Select the applicable items to be included on the annotated site map/aerial photograph. Note that items should relate to VMP objectives and project tasks and that not all items will apply to all sites. Items marked with a hash (#) must be included on all plans.

Item	Completed
Site definition	
# Location and extent of the subject site for the purpose of the VMP	☐
Map features	
# Legend, scale bar and north arrow	☐
Site features	
# Environmental Management Units as defined in section 2.0 of the VMP	☐
Relevant environmental constraints and buffer areas	☐
All areas of native vegetation on the subject site including the identity of all vegetation communities, scattered trees, threatened species and associated buffer zones	☐
Habitat features (e.g. watercourses, rock outcrops, watercourses)	☐
Adjacent areas where relevant	☐
Proposed construction and development works	
Footprint of structure and associated works (e.g. fencing, areas for storage of materials during construction)	☐
Proposed location of exclusion fencing during the construction phase of the proposed development	☐
Temporary access ways during construction	☐
Location of any sediment and erosion control devices	☐
On-site effluent disposal infrastructure and waste water disposal areas	☐
Stormwater management features including proposed water tanks and overflow devices as well as any water sensitive urban design devices required or retention, filtration, infiltration and/or disposal	☐
Extent of the Asset Protection Zone	☐
Proposed vegetation management, regeneration and revegetation works	
Trees to be retained and protected and those to be removed	☐
Areas of vegetation proposed to be managed	☐
Areas for bush regeneration	☐
Areas for revegetation	☐
Areas of Noxious and Environmental Weeds requiring treatment	☐
Areas for soil amendment and stabilisation	☐
Areas of specific APZ maintenance activities	☐
Other activities, please state	☐

Appendix 2 – Sample summary of management issues, objectives, activities and performance criteria

A useful way to present the management issues and the objectives, activities and performance criteria for each Environmental Management Unit is in a table format (see sections 3.0 and 4.0). A table allows the persons who will be reviewing the VMP to quickly and accurately assess the information presented in the plan.

Management Issues	Objective	Activities/Tasks	Performance Criteria
Zone 1 – Camphor Laurel Invasion of core riparian zone by Camphor Laurel	To stop invasion of core riparian zone by woody weeds	1. Primary weed to kill woody weeds 2. Secondary weeding to control any weed regrowth 3. Follow-up weeding to ensure area remains weed free 4. Monitor progress	1. To be completed prior to the commencement of works. To be completed without mechanical removal of woody weeds and in accordance with Landscape Guidelines (Lismore City Council, April 2007) 2. To be undertaken 3 months following primary weeding 3. Follow-up weeding to be conducted at half-yearly intervals for three years 4. Conduct half-yearly monitoring on the progress of the weed removal program
Zone 2 – Riparian zone Protect riparian zone from erosion	To revegetate the cleared core riparian zone of the ephemeral first-order creek	1. Primary weed to remove woody weeds and herbs 2. Lay weed matting as per specifications in Appendix B 3. Plant tubestock 4. Undertake maintenance, follow-up weeding and replenishment plantings 5. Monitor progress	1. Revegetation of Core Riparian Zone (20 m) and Vegetated Buffer (10 m each side of creek) Protect riparian zone from erosion 2. To be completed following the completion of works 3. Use only local provenance tubestock 4. Conduct maintenance and follow-up weeding at quarterly intervals for three years 5. Replenishment plantings to replace losses to be completed 12 months after planting of tubestock 6. Conduct half-yearly monitoring on the progress of the revegetation program
	To stop grazing by stock in remnant native vegetation	1. Permanent exclusion fence to be completed within three months of the VMP approval	1. To be completed prior to the commencement of works 2. Fence to include 10 m buffer to core riparian zone 3. Fence to be suitable for excluding cattle (specifications provided in Appendix A) 4. Fence to be maintained in working condition as long as surrounding paddock supports cattle

Appendix 3 – Monitoring and Auditing

2.1 SITE INFORMATION – SEE ALSO – *SITE MAP* (below)

- VMP Document Management:
- Management Unit:
- Date of Inspection:
- Recorder:
- Approximate date the area was first rehabilitated:
- Area of sample site inspected (in hectares and % of EMU):
- Activity since last audit:
- Previous corrective action undertaken:

2.2 GENERAL SITE OBSERVATIONS (**H**igh**, M**edium**, L**ow **or N/A**)

- Evidence of pollution rubbish, litter, excessive sediment or erosion:
- Evidence of weeds adjacent to the rehabilitation area likely to impact it:
- Evidence of plant pests and diseases or feral animal populations:
- Evidence of macro fauna colonisation / use (scats, tracks and sightings):
- Evidence of micro fauna colonisation / use (insects, lizards etc):
- Overall Habitat Value (eg vegetation cover, food etc):

2.3 WEED CONTROL PERFORMANCE

- Approximate date weed control commenced:
- Natural recruitment observed (Y/N):
- Transformer weed species identified (designate **C**anopy, **G**round, **M**ature, **S**eedling)

Weed Control Performance comments:

2.4 REVEGETATION PERFORMANCE (ie planted vegetation)

- Sample size inspected (hectares, square metres or no. of individual plants):
- Approximate date the area was first planted:
- Abundance within sample area L/M/H (**T**ree/**S**hrub/**G**rass/Forb): T: S: G:
- Species growth (cm or % since planted) L/M/H T: S: G:
- Veg cover over sample area by life form (combined strata %): T: S: G:
- Plant mortality by life form (rate or absolute number): T: S: G:
- Bare soil as a percentage of sample area: %
- Humus or leaf-litter depth (range in mm): mm

Revegetation performance comments:

2.5 FAUNA

- Number of nest boxes by EMU?
- Audit conducted? Detail

- Detail any nest box issues (nest box damage, takeover by feral animals, damage to tree caused by nest box):

2.6 OVERALL COMMENTS AND OBSERVATIONS:

2.7 CORRECTIVE ACTIONS REQUIRED BY DATE

S
SIGNED

DATE OF ASSESSMENT

SITE MAP