



Cobbledicks Ford Reserve: Flora and Fauna Management Plan

For: Wyndham City Council

April 2010



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1 EXECUTIVE SUMMARY

SMEC Australia Pty Ltd was commissioned by Wyndham City Council to prepare a flora and fauna management plan for Cobbledicks Ford. Cobbledicks Ford is located on the Werribee River to the south of Mount Cottrell and northwest of Werribee.

Cobbledicks Ford is one of the first formal crossing sites of the Werribee River. The ford was built in the 1862 out of bluestone pavers and has been an important public recreation reserve since the 1860s (VHD 2010).

A total of 12 management zones were identified by the flora and fauna assessment of the Reserve in 2009 (Gagin 2010). These management zones form the basis for recommended management actions including weed control, pest animal control and management of vegetation including viability and revegetation. Schedules are provided of four different revegetation methods required to enhance the flora and fauna values of the reserve.

Highlighted as part of the consultation process was the fact that the Reserve is isolated and tends to attract antisocial behaviour. As a result, the Reserve carpark is currently closed to public access. Antisocial behaviour such as hunting and disturbing escarpments with motorbikes and 4WDs may hinder management of flora and fauna in the Reserve. To reduce this risk, non flora and fauna Goals of the Master Plan need to be implemented.

2 INTRODUCTION

2.1 Background

SMEC Australia Pty Ltd was commissioned by Wyndham City Council to prepare a flora and fauna management plan for Cobbledicks Ford. Cobbledicks Ford is located on the Werribee River to the south of Mount Cottrell and northwest of Werribee.

Cobbledicks Ford is one of the first formal crossing sites of the Werribee River. The ford was built in the 1862 out of bluestone pavers and has been an important public recreation reserve since the 1860s (VHD 2010).

This flora and fauna management plan (FFMP) follows on from the Cobbledicks Ford Master Plan prepared in 2001 (Connell Wagner and Robin Crocker & Associates, 2001) and includes information provided by the Cobbledicks Ford Flora and Fauna Assessment (Gagin 2010), archaeological assessment (Terraculture 2005) and tree assessment (Homewood Consulting 2007).

The following team from SMEC prepared this FFMP, Dr Bram Mason and Bradley Tucker.



Plate 1: Formal entrance to Cobbledicks Ford

2.2 Objectives

The objectives of this FFMP were outlined in the project scope and include in summary:

A working document that would enable Council to actively manage the flora and fauna present in the Cobbledicks Ford Reserve.

In developing the FFMP the following tasks were undertaken:

- Consultation with stakeholders to identify management objectives, opportunities and constraints;
- Review of relevant literature;
- Assessment of each management zone for rehabilitation, revegetation, weed and pest animal control requirements;

- Five year management recommended for revegetation, weed and pest animal control, timelines, including resource requirements, cost estimates and guidelines for each management zone;
- Revegetation species list by management zone based on the Flora & Fauna survey and EVCs;
- The provenance range to be used as a guide when collecting seed for use in revegetation projects at the Reserve;
- Key Performance Indicators (KPI) by which Council can measure the success/failure of the implementation of the Management Plan;
- Identify any future surveys/research that should be conducted at Cobbledicks Ford Reserve.
- A set of tables containing summarizing the actions above, timeframes, targets etc;
- A monitoring proforma to aid evaluation and reporting of the project

3 REVIEW OF EXISTING INFORMATION

3.1 Existing reports

The following literature was consulted during compilation of this plan:

- DSE's biodiversity interactive maps
- Planning Schemes Online
- Cobbleticks Ford Flora and Fauna Assessment (Gagin 2010)
- Tree Assessment Report (Homewood Consulting 2007)
- Cobbleticks Ford Archaeological Assessment (TerraCulture 2005)
- Cobbleticks Ford Reserve Master Plan (Connell Wagner, Robin Crocker & Associates 2001)
- Indigenous Revegetation and Restoration Guide for Werribee River Valley (Blake 2004)
- Cobbleticks Ford Reserve Management Plan (DK Maih date unknown)

3.2 Stakeholder Consultation

Stakeholder consultation included three workshops consisting of council staff, the general public and environment groups. A variety of stakeholders were invited but not all attended. The results of the stakeholder workshops are summarised in Table 1.

Stakeholder consultation formed an important component in the development of this FFMP and the authors would like to formally thank the following participants:

- Justin Horne (Flora & Fauna Officer), Wyndham City Council
- Peter Gibbs (Environment Officer), Wyndham City Council
- Cr John Menegazzo (Iramoo Ward), Wyndham City Council
- Stephen Curwood (Land Management Officer), Wyndham City Council
- Craig Dodson (Conservation Officer), Wyndham City Council
- Peter Grogan (Acting Landscape & Urban Design Co-ordinator) Wyndham City Council
- Digby Richardson (Open Space Planner), Wyndham City Council
- Sarah Sytema (Captial Works Project Officer), Wyndham City Council
- Francis Overmars, Pinkerton Landcare & Environment Group
- Amanda Vella, resident
- Mathew Kinred, Melbourne Water
- Stefanie Wabnik, Melbourne Water

Table 1 Summary of consultation with stakeholders

Current Perceptions	Current and future use of the Reserve	Current and future projects within the reserve	Opportunities
An important biodiversity and cultural heritage conservation site.	Reserve currently closed to public vehicle access.	Control burn planned for area above carpark.	Passive recreation.
Remote but yet relatively close to Werribee and Melbourne.	Mixed use current and planned for the reserve including biodiversity conservation (bird watching etc) and passive recreation.	Ongoing rabbit baiting planned.	Acquisition of some of the Barro property (Cobbledicks Homestead) or increase Reserve area through alternate measure.
Attracts some unwanted antisocial behavior: hunting, 4WD and motorbike hoon behavior, dumping of rubbish.	Landcare tree planting and associated activities	Current project to control Chilean Needle Grass, Serrated Tussock and Blanket Weed.	Potential for use as an education resource.
Requires policing to reduce antisocial behavior.	Dog walking.	Autumn weed control of Paterson's Curse and Bridal Creeper.	Potential for formal walking tracks and rehabilitation of unwanted tracks.
Lack of dedication to formal management of the Reserve. Appears to be too many competing management demands.	Current thoroughfare between Melton and Werribee.	Rate rebate scheme to control weeds on neighboring properties. Potential that this scheme may not continue.	Potential for farmers market or similar activity to be held in Reserve on the weekends.
More resources required to effectively manage Reserve.	Canoeing and fishing.	Restoration of escarpment damaged by 4WD use.	Potential for dedicated mountain bike in degraded (containing no ecological values) areas.

Current Perceptions	Current and future use of the Reserve	Current and future projects within the reserve	Opportunities
Rock barriers aesthetically unappealing but necessary to keep 4WDs away from eroding escarpment.		Measures to control thoroughfare and traffic volume.	Potential for ecological research activities.
Natural regeneration appears to be minimal.		Possible link with proposed regional Grassland Reserves in the region.	Potential for Reserve to be a regional park.
Melbourne Water's interest in the area includes providing funding for tree planting, fence and gate construction, removal of rubbish and debris (7 cars), weed control and support of the Werribee River WaterWatch Coordinator undertaking water sampling at the Ford. Melbourne Water schedules a maintenance run 6 times per year. This run allows for 8-10 staff per visit (i.e. 8-10 (individuals) x 6 (visits per year)).		Proposed pipeline along Dukelows Road may go through or close to the Reserve.	Potential for passive surveillance to help minimise inappropriate uses.
Not well protected from pest animals and plants which may have detrimental impacts on the viability of current biodiversity values.			Encourage compatible uses on neighboring properties i.e. conservation based uses.
Underappreciated by residents and Council.			Promotion of site within compatible uses.
Access for the elderly and disabled is limited.			Formulation of a dedicated Friends of Cobbleticks Ford group.

In summary, the consultation process highlighted the following main themes:

- The site has recognised biodiversity values that will be enhanced and managed by this FFMP.
- Unwanted and antisocial behaviour occurs in the Reserve including misuse of vehicles, hunting and dumping of rubbish. This will be an ongoing issue and needs to be addressed through the implementation of the Master Plan.
- Pest plant and animal issues are rife through the Reserve and will be addressed in this FFMP.
- Management of the Reserve needs to be refined and should be addressed through the implementation of the Master Plan.
- The use of the Ford as a thoroughfare needs to be managed and should be addressed through the implementation of the Master Plan.

3.3 Review of Legislation and Policy

3.3.1 Commonwealth Environment Protection And Biodiversity Conservation Act 1999

One of the main aims of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is to provide for the conservation of biodiversity and the protection of the environment, particularly those aspects that are considered to be matters of national environmental significance. The Act defines seven matters of national environmental significance. The relevant matters to roadsides include:

- Nationally listed threatened species and ecological communities;
- National Heritage Listed Places;
- Wetlands of international significance (Ramsar sites);
- Places on the register of the National Estate; and
- Listed migratory species.

Under the Act, actions that are likely to have a significant impact upon matters of national environmental significance require approval from the Environment Minister to undertake those actions. An action includes any project, development, undertaking, activity or series of activities.

Of particular relevance to the Cobbledicks Ford Reserve is the presence of the listed community 'Natural Temperate Grassland of the Victorian Volcanic Plain'. No other EPBC Act listed community was found during the flora and fauna report (Gagin 2010).

3.3.2 Victorian Flora And Fauna Guarantee Act 1988

The *Victorian Flora and Fauna Guarantee Act 1988* (FFG Act) was established to provide a legal framework for enabling and promoting the conservation of all Victoria's native flora and fauna, and to enable management of potentially threatening processes. One of the main features of the FFG Act is the listing process, whereby native species and communities of flora and fauna, and the processes that threaten native flora and fauna are

listed in the schedules of the FFG Act. This assists in identifying those species and communities that require management to survive, and identifies the processes that require management to minimise the threat to native flora and fauna species and communities within Victoria. A permit from DSE is required to 'take' listed flora species that are members of listed communities or protected flora from public land. A permit is not required under the *FFG Act* for private land, unless listed species are present and the land is declared 'critical habitat' for the species.

3.3.3 Victorian Catchment and Land Protection Act 1994

The *Catchment and Land Protection Act 1994* (CaLP Act) is the principle legislation relating to the management of pest plants and animals in Victoria. Under this Act, landowners have a responsibility to avoid causing or contributing to land degradation, including taking all reasonable steps to conserve soil, protect water resources, eradicate regionally prohibited weeds, prevent the growth and spread of regionally controlled weeds and where possible, eradicate established pest animals, as declared under the Act.

A number of CaLP listed weeds are often present in native ecosystems. The weeds that have been identified on site by the flora and fauna reports undertaken for Cobblesticks Ford are listed in Section 6 along with prescriptions to control the spread of such weeds. As a basis for future management of new weeds identified within Cobblesticks Ford, a Landcare Note has been attached in Appendix 5.

3.3.3.1 Regional Catchment Management Strategies

Regional Catchment Management Strategies are an overarching strategy for the development, management and conservation of land and water resources in each of the ten catchment regions in Victoria. They are statutory instruments prepared by CMAs under the *Catchment and Land Protection Act 1994*, which identify objectives for the quality of the land and water resources of the catchments in the region, set a program of measures to promote improved use of land and water resources and to treat land degradation, and state the actions necessary to implement the strategy. The RCS must support the objectives of other related State Government legislation. Under the *CaLP Act 1994*, each CMA is required to update their RCS every five years. There is one Regional Catchment Management Strategies that applies to Cobblesticks Ford:

- Port Phillip and Westernport Regional Catchment Management Strategy; and

Each of these strategies set the framework for the natural resource management within their respective Catchments.

It has been proposed by the State government that Melbourne Water and the Port Phillip and Westernport Catchment Management Authority will amalgamate in 2010. This may have minor implications for this plan in terms of responsible parties for the recommended management actions.

3.3.4 Planning Schemes Under The Planning And Environment Act 1987

The purpose of Planning Schemes is to:

- Provide a clear and consistent framework within which decisions about the use and development of land can be made;
- Express state, regional and local community expectations for areas and land uses; and
- Provide for the implementation of state, regional and local policies affecting land use and development.

Incorporated within the relevant council Planning Schemes (Shire of Wellington) are a number of environmental overlays relevant to roadsides. These overlays are summarised below.

Environmental Significance Overlay (ESO)

An ESO1 applies to the Werribee River environ. One purpose of this overlay is to identify areas where the development of land may be affected by environmental constraints, and to ensure that if development does occur, it is compatible with the identified environmental values. The ESO requires that a permit be gained to remove, destroy or lop ANY vegetation, including dead vegetation, with the exception of regrowth and bracken, or if the vegetation is a noxious weed the subject of a declaration under section 58 or section 58A of the *Catchment and Land Protection Act 1994*. The Schedule to the ESO, ESO1, has environmental objectives outlined with the overriding theme of conserving, protecting and enhancing the identified waterways including the Werribee River.

Heritage Overlay (SLO)

The purpose of the Heritage Overlay is:

- To implement the State Planning Policy Framework and the Local Planning Policy Framework, including the Municipal Strategic Statement and local planning policies.
- To conserve and enhance heritage places of natural or cultural significance.
- To conserve and enhance those elements which contribute to the significance of heritage places.
- To ensure that development does not adversely affect the significance of heritage places.
- To conserve specifically identified heritage places by allowing a use that would otherwise be prohibited if this will demonstrably assist with the conservation of the significance of the heritage place.

The Heritage Overlay identifies the following significant features:

*HO18
Cobbledicks Ford and Reserve
Cobbledicks Ford Road, Mt Cottrell*

*HO41
Bambra Park
2 Dukelows Road, Mt Cottrell
The heritage place is the house and garden*

*HO42
Cobbledicks House (Ruin)
2 Dukelows Road, Wyndham Vale
The heritage place is the bluestone ruin and immediate surrounds*

3.3.5 Victoria's Native Vegetation Management – A Framework for Action

Victoria's Native Vegetation Management – A Framework for Action (The Framework) establishes the strategic direction for the protection, enhancement and revegetation of

native vegetation across the state. The Framework addresses native vegetation management from a whole catchment perspective but focuses primarily on private land where the critical issues of past clearing and habitat fragmentation exist. The primary goal of the Framework is to achieve a reversal, across the entire landscape, or the long-term decline in the extent and quality of native vegetation, leading to a Net Gain.

Net Gain refers to the outcome for native vegetation and habitat where overall gains are greater than overall losses and where individual losses are avoided where possible. The key principles of Net Gain included in the Framework include:

- Step 1: Avoid adverse impacts, particularly through vegetation clearance.
- Step 2: Where impacts cannot be avoided, explore appropriate options to minimise those impacts.
- Step 3: Identify appropriate offset options in response to clearing.

Should indigenous vegetation removal be required within the remnant vegetation areas within the Reserve, the proponent will need to undertake a Net Gain assessment and meet the principles of the Framework.

3.3.6 Native Vegetation Plans

The *Port Phillip and Westernport Native Vegetation Plan* implements a co-ordinated and strategic approach to managing native vegetation within the CMA region. This approach is consistent with *Victoria's Native Vegetation Management: A Framework for Action* (DNRE 2002b), referred to as the 'Framework'. The *Native Vegetation Plan* sets out 4 key strategic directions and associated targets and management actions for the region. Broadly, these are:

- To minimise clearance of native vegetation;
- Increase the total extent of native vegetation to at least 35% of the region's area by 2030;
- At least 95% of the region's EVCs represented to at least 10% of their per-1750s extent by 2030;

Under the Framework regional vegetation plans are required to be used as a reference document in providing guidelines for responsible authorities (usually local councils) in determining permit applications to remove, destroy or lop native vegetation. The Framework further allows for the regional vegetation plans to increase the minimum requirements for any vegetation offsets in response to vegetation removal.

3.3.7 Wildlife Act 1974

This Act forms the procedural, administrative and operational basis for the protection and conservation of native wildlife, specific use of, and prescriptions for access, prohibition and regulation of associated activities with native wildlife within Victoria. This Act often sits as the default reference for other associated legislation, and is the basis for the majority of Wildlife permit/licensing requirements within the state.

Should construction works be proposed within the remnant grassy ecosystems, the proponent would need to determine whether a permit is required under the Wildlife Act and what measures may be required to mitigate impacts on Wildlife. This should be done prior to any construction in consultation with DSE.

3.3.8 Country Fire Authority Act 1958

The management of roadsides for fire prevention purposes is specifically referred to in the *Country Fire Authority (CFA) Act 1958* in Section 43(1), which states that it shall be the duty of every municipal council and every public authority to take all practicable steps to prevent the occurrence of fires on and to minimise the danger of the spread of fires on or from:

- Any land vested in it or under its control or management; and
- Any highway, road, street, lane or thoroughfare the maintenance of which is charged upon it.

Section 55A of the CFA Act states that each municipal council must prepare and maintain a Municipal Fire Prevention Plan (MFPP) in accordance with the advice and recommendation of the Municipal Fire Prevention Committee (MFPC). The MFPP must identify areas which are at particular risk of fire, specify how these areas are to be treated, and specify who is responsible for treating those risks.

3.3.9 Cobbledicks Ford Master Plan 2001

The Cobbledicks Ford Master Plan was finalised in October 2001. The Plan was commissioned to develop a shared vision and action program for the sound future management of the 25ha Cobbledicks Ford Reserve (Connell Wagner and Robin Crocker & Associates, 2001). The key goals identified for Cobbledicks Ford included:

- Redevelop the reserve as an attractive setting for passive recreation
- Eliminate inappropriate uses and provide for visitor safety
- Actively manage flora and fauna to improve habitat values
- Protect cultural heritage and landscape values
- Enhance community appreciation and involvement in the area

During the Council workshop process a review of the priority action plan within the Master Plan was undertaken. Each of the Actions was reviewed to determine the status of the action. The results of the review will be used to refine further flora and fauna management actions and targets within this FFMP. Table 2 provides the results of the review.

Of specific relevance to this FFMP are the actions associated with Goal 3. The formulation of this FFMP and subsequent implementation of the recommendations will address most of the actions required to achieve Goal 3. Actions associated with the other Goals will need to be addressed through other Council planning and operational processes.

Table 2: Review of 2001 Master Plan priority actions

2001 Action item number	Priority	Status	Comment
Goal 1: Redevelop the reserve as an attractive setting for passive recreation			
1. Upgrade Dukelows & Dohertys roads	Medium	Not completed	<ul style="list-style-type: none"> • Visually damaging which limits visitation • Look to restrict truck access across Ford • Widen road <ul style="list-style-type: none"> ○ Permits associated ○ Offsets • Concentrate inside the reserve, then worry about access roads • Improve access from Ballan Road (encourage visitation from Manor Lakes residents). Currently view entrance to park from the east. With the expansion of Wyndham in the west (Wyndham Vale, Manor Lakes) should the 'formal' entrance be off Ballan Rd, not Dukelows/Dohertys?
2. Designate vehicle access and install robust fencing	Very high	Completed/on-going	<ul style="list-style-type: none"> • Maintenance • Boulders to remain for as long as deem necessary
3. Designated Parking	Very high	Completed	<ul style="list-style-type: none"> • Access for 40+ vehicles • Car parking not being utilised as the Reserve is closed to the public until further notice (at the earliest Spring 2010)
4. Gravel walking tracks	Very high	Not completed	<ul style="list-style-type: none"> • Potential to formalise walking tracks and rehabilitate unwanted walking tracks.

2001 Action item number	Priority	Status	Comment
5. Investigate options for shared pathway to Reserve	Low	On going	<ul style="list-style-type: none"> Assessing potential for Reserve to be included in several initiatives including: <ul style="list-style-type: none"> Shared pathway from Werribee to Melton Regional Park to the South Discussion of the Reserve to be linked to the Werribee/Melton shared pathway by gravel paths rather than the main link. This would require cyclists/walkers to choose to enter the Reserve rather than forced to.
6. Demolish & remove old structures and progressively upgrade facilities	Very high	<ul style="list-style-type: none"> Demolition: completed Construction: Not completed 	<ul style="list-style-type: none"> Old toilet block removed, slab remains. Need to confirm whether pit/septic has been drained. If not where are the contents going (is pollution entering Werribee River?)
7. No bins policy	High	Completed	<ul style="list-style-type: none"> Rubbish dumping still continues (from bottles to animals) Management of illegal dumping (covered in the litter strategy?) Signage
8. Develop events policy to phase out inappropriate events	High	Completed (to a degree)	<ul style="list-style-type: none"> Covered in the open space/events policy, although the Reserve is not specifically mentioned in the policy
Goal 2: Eliminate inappropriate uses and provide for visitor safety			
9. Education program to provide advice for off-road activities	Very high	Not completed	<ul style="list-style-type: none"> Beyond signage no targeted program has been implemented
10. Regular patrols of the Reserve	Very high	Not completed	<ul style="list-style-type: none"> Patrols are conducted but it was felt that they were not regular enough and possibly not at times appropriate to curb 4WD, motorbike and illegal dumping at the reserve Evidence of past use on Youtube internet site

2001 Action item number	Priority	Status	Comment
11. Review & revise existing 1976 reserve regulations using model DNRE (DSE) regulations as a basis	Medium	Unsure	<ul style="list-style-type: none"> The review of relevant legislation and policies and inclusion recommendations from these acts and policies forms a component of this FFMP
12. DNRE risk management requirements	High	Not complete	<ul style="list-style-type: none"> On-going
13. Up to date fire plan	High	Not complete	<ul style="list-style-type: none"> To be completed within the next 9-12 months Upgrade to a very high priority
Goal 3: Actively manage flora and fauna to improve habitat values			
14. Vegetation assessment to guide future management	High	Complete/being completed	<ul style="list-style-type: none"> F&F Report completed Jan 2010 F&FMP to be completed April 2010
15. Priority based habitat enhancement	High	Complete/being completed	<ul style="list-style-type: none"> F&F Report completed Jan 2010 F&FMP to be completed April 2010
16. Maintain areas where weed control and revegetation have been undertaken	High	On-going	<ul style="list-style-type: none"> Works on-going with assistance of Council Conservation Team and contractors Will be addressed in the F&FMP
17. Progressively undertake weed control and planting in cleared areas	Medium	On-going	<ul style="list-style-type: none"> Works on-going with assistance of Council Conservation Team and contractors Works also undertaken by PLEG and other environment groups Will be addressed in the F&FMP
18. Undertake fauna survey (in conjunction with vegetation survey)	High	Complete/being completed	<ul style="list-style-type: none"> Flora & Fauna report completed Jan 2010. The report will only cover fauna that were sighted during the flora survey (e.g. incidental sightings)

2001 Action item number	Priority	Status	Comment
19. Maintain liaison with DNRE (DSE) and undertake cooperative pest animal control	High	Complete/on-going	<ul style="list-style-type: none"> Receive minimal assistance from DNRE/DPI/DSE (e.g. financial support, extension and/or enforcement) Considerable financial contribution from Melbourne Water Council has had a recurrent budget for rabbit control since 2001, and has undertaken baiting programs consistently within the Reserve since 2002 Potential for increased community assistance (e.g. Exford Rabbit Busters and control program on surrounding private properties)
20. Soil conservation works in association with revegetation and site development	Medium	On-going	<ul style="list-style-type: none"> To be re-addressed in F&FMP
21. Fill in trenches and encourage revegetation	Medium	On-going	<ul style="list-style-type: none"> To be re-addressed in F&FMP
22. Further investigate the health risks of the river water and install warnings (if appropriate)	High	Not completed	<ul style="list-style-type: none"> Council has not undertaken water quality assessments Melbourne Water and the Werribee Waterwatch group have been undertaking water quality assessments at Cobbledicks Ford since 2007.
Goal 4: Protect cultural heritage and landscape values			
23. Investigate opportunities to acquire Cobbledicks Homestead and adjacent land	High	Not completed	<ul style="list-style-type: none"> Preliminary discussions with the landowner have been held to assess receptiveness to acquisition but have not progressed beyond this point
24. Investigate significance of Cobbledicks Homestead and opportunities for stabilisation works	High	Not completed	<ul style="list-style-type: none"> Heritage study for Homestead has been undertaken (unsure who has the results/findings) No assessment of the stabilisation works requirements have been undertaken

2001 Action item number	Priority	Status	Comment
25. Liaise with AAV regarding protection of significant sites	Medium	Completed (JH to confirm)	<ul style="list-style-type: none"> Important that these discussions/surveys take place as soon as possible (if they have not been done so already) as matters relating to cultural significance (Aboriginal and European) can severely impact upon capital works programs (e.g. Werribee/Melton shared bike path)
26. Discourage heavy vehicle use of Ford by load limits and repair present damage	Medium	Not completed	<ul style="list-style-type: none"> Discussed at 2001 Item number 1 Proposed pipeline may lead to repair/upgrade of Ford
27. Encourage research into the history of the area	Medium	On-going	<ul style="list-style-type: none"> Local community groups (PLEG and Werribee Historical Society)
28. Undertake planting to improve visual amenity in visitor areas	Medium	On-going	<ul style="list-style-type: none"> Retain original site plantings of exotic trees and cacti (old school paddock and bottom entrance gate), otherwise plantings should be predominantly indigenous.
29. Remove dumped cars and other rubbish and deal with vandal damage	High	On-going	<ul style="list-style-type: none"> Regular works by Council and Melbourne Water Also see 2001 Item number 7
Goal 5: Enhance community appreciation and involvement in the reserve			
30. Support formation of Friends group	High	Completed	<ul style="list-style-type: none"> Should be encouraged Unsure if Pinkerton Landcare and Environment Group fill the void as most of their members are residents of Melton (not to be taken as a negative comment – more whether there is still a need for a group specifically focused on Cobbleticks – in the way that PLEG is focussed on Bush's Paddock and Pinkerton Forest). Due to the changing landscape/resident make-up of Wyndham, is there scope for residents of Manor Lakes to be more involved at Cobbleticks?

2001 Action item number	Priority	Status	Comment
31. Keep community informed about the area through signs and basic publications	High	On-going	<ul style="list-style-type: none"> Information not current Need to be updated and expanded (papers, website and signage)
32. Community groups to assist with the provision of interpretive services including guided walks and signs	Low	On-going	<ul style="list-style-type: none"> Walks through the Reserve have been organised by local community groups highlighting the history of the site and environmental significance.
33. Encourage local schools to undertake monitoring and revegetation activities	Low	Not completed	<ul style="list-style-type: none"> Due to the location of the site and lack of nearby schools this is not necessarily practical. There could be potential in the future with the expansion of Manor Lakes (see 2001 Item number 1)
34. Promote compatible recreation and small scale events to encourage greater use and appreciation of the area	Medium	Completed/on-going	<ul style="list-style-type: none"> Most compatible recreational activities are not actively encouraged/promoted (see 2001 item number 31) Some environmental events are held each year through PLEG (especially Clean-up Australia Day and occasionally tree planting days)
Management Responsibility and implementation			
35. Formalise responsibility for implementing the plan and for on-going management of the Reserve	Very High	Completed/on-going	<ul style="list-style-type: none"> Implementation of many of the action points have been done by several departments independently of each other but rarely in a coordinated manner
36. Integrate implementation and monitoring of the 2001 Master Plan into Council's budget	Very High	Completed/on-going	<ul style="list-style-type: none"> Currently in the Council budget as an on-going Capital Works/implementation of Master Plan

4 EXISTING SITE CONDITIONS

The information in this section of the Plan relies upon work from another consultant and as such is limited by their findings.

A rain shadow exists (caused by the Brisbane Ranges) in the area between Lara, Geelong, Werribee, Bacchus Marsh and Melton that restricts annual rainfall to between 505mm at Bacchus Marsh to 552mm at Geelong (DPI 2010). This rain shadow and the basaltic origin of the soils in the region greatly influence the vegetation present and hence habitat types and therefore types of fauna species that may be present. In particular the type of Plains Grassland present in the region is regulated by the rainfall and soil conditions.

4.1 Native vegetation

Cobbledicks Ford exists within the Victorian Volcanic Plains Bioregion along the Werribee River. Mapping undertaken by DSE of Pre-1750s vegetation communities indicates that several Ecological Vegetation Classes (EVCs) were likely to have been present. EVCs would have included: EVC 56 Floodplain Riparian Woodland, EVC 125 Plains Grassy Wetland and EVC 132 Plains Grassland.

The on-ground assessment undertaken by Gagin (2010) indicated that the following EVCs were still present: EVC 56 Floodplain Riparian Woodland, EVC 851 Stream Bank Shrubland (Plate 2), EVC 895 Escarpment Shrubland (Plate 3) and EVC132_61 Heavier-soils Plains Grassland (Plate 4).

Cobbledicks Ford is within the Brisbane Ranges rain shadow (approximately 547mm annual rainfall – 30 year average) (BoM 2010) and has a red loamy basalt derived soil. Some anecdotal evidence suggested that in the last approximately 10 years that the average annual rainfall may be less but this needs to be qualified with the persistent drought conditions Victoria has had from 1997 to current date. Under these conditions Lighter-soils Plains Grassland is expected to exist. If the soil type was dark cracking basaltic clay the variant Darker-soils Plains Grassland would be found. If average annual rainfall was less than 500mm and the soils were prone to water logging the variant of Low-rainfall Plains Grassland would be expected to be present. Hence the Plains Grassland found at Cobbledicks Ford is most likely Lighter-soils Plains Grassland. Recommendations for management and rehabilitation vary little between these two variants.

Dominant indigenous species within Cobbledicks Ford included Spear grass (*Austrostipa* spp.), Wallaby grass (*Austrodanthonia* spp.), Kangaroo grass (*Themeda triandra*), Blue Box (*Eucalyptus baueriana*), River Red Gum (*E. camaldulensis*), Manna Gum (*E. viminalis*), Tree Violet (*Melicytus dentatus*), Sweet Bursaria (*Bursaria spinosa*) and Black Cotton Bush (*Maireana decalvans*). Buloke (*Allocasuarina leuhmannii*) was recorded at the Reserve and is listed on the FFG Act. No other Commonwealth or State threatened species were recorded during the field assessment and report by Gagin (2010).



Plate 2: Stream Bank Shrubland at the Ford (MZ 3)



Plate 3: Degraded Escarpment Shrubland (MZ 7)



Plate 4: Plains Grassland (MZ10)

4.2 Dominant weeds

The dominant weeds identified within the Reserve can be found in the flora and fauna report Gagin (2010). Section 6 outlines these dominant weeds along with weed control techniques and season for action.

4.3 Native fauna and habitat

The fauna survey undertaken in December 2009 (Gagin 2010) identified 31 species and a further 30 species were identified and being present in the region from the review of the relevant fauna databases. No Commonwealth or State threatened species were detected during the field assessment (Gagin 2010).

Cobbledicks Ford contains a variety of fauna habitat types. Often fauna habitat is associated with major plant functional groups (grassland, woodland, forests, streams and escarpments). In the case of Cobbledicks Ford the fauna habitat types also extend or cross over the different EVCs. Fauna habitat types at Cobbledicks Ford include:

- Plains grassland containing submerged and exposed basalt rocks
- Riparian Woodland
- Streambank shrubland
- Escarpment shrubland
- Instream environments
- Dry stone walls and rock piles
- Windrows of Sugar Gums
- Escarpment dominated by exotic grasses
- Car park with scattered native and planted vegetation

The management zones and associated actions will take into consideration the fauna habitat types present to ensure the values associated with the fauna habitat types are preserved and enhanced.

4.4 In stream environment

The in stream environment of the Cobbledicks Ford section of the Werribee River is dominated by a shallow stream with coarse gravel and silty bed. Much of the River has treed vegetation along the banks, which provides bank and habitat from tree roots, bark and shade. The site is thought to support platypus and water rats (not-confirmed) and has the potential to support native fish and amphibians. It was noted by the authors that Mosquito fish (*Gambusia* sp.) were abundant around the Ford itself.

4.5 Management Zones

A total of 12 management zones were identified within Cobbledicks Ford by Pinkerton Landcare & Environment Group, Wyndham City Council and Melbourne Water and have been reported in Gagin (2010) and presented in Figure 1. Gagin (2010) also provides a description of each of the management zones. Two additional zones reflecting the upstream and downstream environments of the Werribee River are also included in the management zone descriptions. Actions have not been provided for Zones 13 and 14 as they are on private property and Council would have limited access to the management of these zones. However, Management Zones 13 and 14 have the same Ecological Vegetation Classes and conditions as Management Zones 4 – 8 so the recommended actions in Zones 4 – 8 are applicable to Zones 13 and 14. This information is summarised in Table 3. The information in the management zone summaries will be included in the management action recommendations Section 9.

Table 3: Management zone summaries

Management Zone	EVC	Size (ha)	Description
1	56 FRW	1.1	West of Cobbledick Road and north of Werribee River. Manna Gum overstorey and Blanket weed and Chilean Needle Grass understorey. Tubestock has been planted in this Zone.
2	56 FRW	6.0	East of Cobbledick Road, on the northern side of Werribee River. Includes carpark and access roads. Blue Box, River Red Gum, Manna Gum and planted natives. Understorey dominantly Blanket Weed. Planted Hedge Wattle may become a native weed and should be managed if population increases.
3	851 SBS	0.5	Adjacent to the Werribee River to the West of Cobbledick Road. Intact remnant overstorey and shrub layer consisting Blue Box, River Red Gum, Manna Gum, Tea Tree, Wattle & Tree Violet. Weedy riparian understorey and mostly native aquatic understorey.
4	851 SBS	1.9	Adjacent to the Werribee River to the East of Cobbledick Road. As per Zone 3.
5	851 SBS	0.7	Adjacent to the Werribee River and bordered by floodplains (MZ2) and Escarpment Shrubland (MZ 6 & 7). This area is a low lying and floods after times of high rainfall. Mostly intact native vegetation with minimal disturbance.

Management Zone	EVC	Size (ha)	Description
6	895 ES	2.9	Parallel with the Werribee River and separates the Floodplains (MZ 2) from the Grasslands (MZ 10). Contains a variety of planted indigenous and non-indigenous plants.
7	895 ES	0.8	Very steep gully and a small section of south facing escarpment. This zone is bordered by the Werribee River, Stream Bank Shrubland (MZ 5), Escarpment Shrubland (MZ 6) and Plains Grassland (MZ 9 & 10). Mostly indigenous with moderate weed invasion. Chilean Needle Grass and rabbits have both been noted in this Zone.
8	895 ES	0.9	West of Cobbledick Road and north of Werribee River. Bordered by Floodplain (MZ 1) and Plains Grassland (MZ 11). Large ruts and erosion are present along the escarpment from 4WD and motorbike activity. Dominated by Chilean Needle Grass.
9	132 PG	0.9	Small flat paddock located at the top of gully. Mostly weedy species.
10	132 PG	3.2	Separates Cobbledicks Ford Road from the escarpment shrubland located within MZ 6. Predominately native vegetation with a medium level of weedy species. The vegetation is dominated by Spear and Wallaby grasses and contains a variety of medium to small common herbs. This MZ also contains the windrow of Sugar Gums. Rocky outcrops provide habitat for fauna.
11	132 PG	5.0	West of Cobbledicks Ford Road. Dominated by weeds (Chilean Needle Grass and Blanket Weed) with a sparse cover of Kangaroo, Spear and Wallaby grass. Some tubstock planting has occurred.
12	132 PG	1.0	Northern end of Cobbledicks Ford reserve. Very degraded with a sparse cover of spear and wallaby grasses and planted natives (including Buloke). Weeds are dominant in this MZ. A memorial to John Todd, Bailiff for Cobbledicks Ford Reserve is present.
13	851 & 895	11.2	One kilometre downstream from Reserve. Contained two EVCs with Stream Bank Shrubland on both sides of the River and Escarpment Shrubland on the south west facing escarpment. Dominated by weeds with sparse native species. <i>Management actions have not been specifically included for this Management Zone due to it being on Private Property. However, see management actions for Zones 4-8.</i>

Management Zone	EVC	Size (ha)	Description
14	851 & 56	16.75	<p>One kilometre upstream from Reserve. Contained two EVCs with Stream Bank Shrubland on both sides of the River whilst on the floodplains north and west of the River the vegetation best represented Floodplain Riparian Woodland. Dominated by weeds with sparse native species.</p> <p><i>Management actions have not been included for this Management Zone due to it being on Private Property. However, see management actions for Zones 4-8.</i></p>



LEGEND

Survey Area

Management Zones

Ecological Vegetation Classes

- EVC 132_61
- EVC 56
- EVC 851
- EVC 895
- Various

	FINAL
	1:6,000
CONSULTANT: SMEC AUSTRALIA PTY LTD Level 5/71 Queens Road, Melbourne VIC 3004 T + 61 3 9514 1500 F + 61 3 9514 1502 Website: www.smec.com.au	
PROJECT: Flora & Fauna Assessment Cobbleticks Ford, Quandong	
TITLE: Figure 1 - Management Zones contained within Cobbleticks Ford, Quandong.	
DRAWN BY: Christine Spits	DATE: 16/03/2010
CHECKED BY: Bram Mason	DATE: 16/03/2010
APPROVED BY: Bram Mason	DATE: 16/03/2010
GEOGRAPHIC COORDINATE SYSTEM: GCS_GDA_1994	
DATUM: D_GDA_1994	
Drawing No. 1	
Revision. 1	Sheet Size. A3

5 REVEGETATION GUIDELINES

Revegetation guidelines within this management plan consist of four different methods described in Table 4. Each of the four Revegetation Methods is outlined within a schedule provided in the Appendix. Management action tables refer to these schedules.

Table 4: Revegetation methods

Revegetation Method	Description	Location of Schedule
Natural regeneration	Minimal input of native plants with pest plant and animal control	Appendix 1
Tubestock planting	Infill planting of woody and herbaceous species	Appendix 2
Rehabilitation	Large scale revegetation of weed infested or barren areas utilising direct seeding and tubestock planting. Often requiring soil modification.	Appendix 3
Repair	Competitive replacement of weed invaded areas within an intact EVC with native species through direct seeding	Appendix 4

Each of the Revegetation Schedules outlines objectives, site preparation, timing and maintenance requirements.

Management zone specific mapping should be carried out by works crews or contractors undertaking revegetation works so that native species present are not damaged or killed as part of works. The revegetation schedules should be then used as a guide once this mapping has been completed.

6 PEST PLANT AND ANIMAL CONTROL

This section of the FFMP outlines the dominant pest plants and animals found within the Reserve along with control methods.

6.1 Pest plants

Pest plants can be Weeds of National Significance (WONS), State prohibited weeds, regionally controlled or prohibited weeds and restricted weeds. A list of such weeds is provided by the Department of Primary Industries (See Appendix 5). State prohibited weeds either don't occur in Victoria or pose a threat if they invade. The Victorian Government is responsible for their removal. Regionally prohibited weeds are not widely distributed but have the potential to spread. Regionally controlled weeds are widespread and weed control measures are important to control further spread. Restricted weeds have an unacceptable risk of spreading in Victoria or other states.

Weed control measures include:

- Hand removal through pulling or chipping;
- Herbicide application
- Slashing
- Controlled Burns
- Grazing
- Biological agents
- Smothering (with plastic or mulch)
- Competitive replacement
- An integration of all of the above

Table 5 outlines the dominant weeds found at Cobbleticks Ford along with recommended control measures. In most instances an integrated approach is recommended. Weed control for 1 – 2 years prior to revegetation may also be required in some areas where competitive replacement is not the method used.

Herbicide application must be undertaken by a licensed contractor. Herbicides must be registered with the Australian Pesticides & Veterinary Medicine Authority (APVMA) and the Victorian Chemical Standards Branch. Information can also be obtained by visiting the [CSB website](#).

Wyndham City Council is committed to controlling weeds within Cobbleticks Ford Reserve and has an ongoing contract for the specific control of Chilean Needle Grass, Serrated Tussock and Blanket Weed.

Table 5: Pest plants present and control measures

Common name	Species name	Control measure	Timing	Priority based on legislation and/or invasive potential	Management Zone	Target
African Box Thorn	<i>Lycium ferocissimum</i>	Cut and paint with herbicide after rain and burn dead material. Hand remove seedlings in small infestations.	Autumn/Spring	High	All	Eliminate
Aarons Rod & Twiggy Mullen	<i>Verbascum spp.</i>	Chip small infestations and spot spray large infestations	Spring/summer	Medium	1, 6, 7, 8, 9, 10, 11, 13 & 14	Control
Ash	<i>Fraxinus excelsior</i>	Trees that are targeted for removal (those located in remnant areas), use the drill and fill technique and then fell dead tree. Leave root ball in ground for bank stabilisation. Rehabilitate area.	Spring/Summer	Medium/High	1	Control
Blanket Weed	<i>Galenia pubescens</i>	Chip and replace small areas; herbicide and replace large areas.	Summer	High in remnant areas, low in exotic landscape areas.	All	Control
Briar Rose	<i>Rosa rubiginosa</i>	Cut and paint with herbicide and burn dead material	Autumn/Spring	High	6,7,8,10,13	Eliminate
Bridal Creeper	<i>Asparagus asparagoides</i>	Hand remove small infestations, selective herbicide for large infestations. Investigate biological control release (rust and leaf hopper). Remove suitable situations such as Peppercorns and Box Thorn	Autumn-spring	High	7, 13 & 14	Eliminate
Caterpillar Grass	<i>Paspalum dilatatum</i>	Spot spray with selective herbicide.	Summer	Low	2,3,4,7,8,9,12,13,14	Control
Chilean Needle Grass	<i>Nassella neesiana</i>	Spot spray isolated tussocks. Herbicide application to large infestations followed by replacement with native species (Kangaroo grass in particular). In areas where infestations are serving the purpose of soil stabilisation, reducing seed set is the priority over elimination. This can be achieved through control burns or slashing. Warning, this plant has cleistogamous seed in nodes and roots.	Autumn and Spring	High	2,3, 4, 7, 8, 9, 12, 13 & 14	Control
Clover	<i>Trifolium spp & some Oxalis spp.</i>	Slash and spray large infestations. Area will need to be re-established with natives. In exotic landscape areas slash before end of flowering season.	Autumn	Low	2, 6, 7, 13 & 14	Control
Common Thorn Apple	<i>Datura stramonium</i>	Chip out and collect apples for appropriate disposal in small infestations. Ongoing herbicide application for larger infestations.	Spring/summer/autumn	High	1,3,4,13,14	Eliminate
Couch	<i>Cynodon dactylon</i>	Spot spray with selective or appropriate herbicide. In areas of remnant grassland, encourage native species competition through appropriate burning, slashing or grazing regime.	Late Spring/Summer	Medium	1, 2, 3, 4, 6, 9, 10, 11, 12, 13 & 14	Control

Common name	Species name	Control measure	Timing	Priority based on legislation and/or invasive potential	Management Zone	Target
Fennel	<i>Foeniculum vulgare</i>	Spot spray with selective or appropriate herbicide. In areas of remnant grassland, encourage native species competition through appropriate burning, slashing or grazing regime.	Late Spring/Summer	Medium	1,7,8,13,14	Control
Horehound	<i>Marrubium vulgare</i>	Spot spray with selective or appropriate herbicide. In areas of remnant grassland, encourage native species competition through appropriate burning, slashing or grazing regime.	Late Spring/Summer	High	1,2,3,4,6,8,10,11	Eliminate
Kikuyu	<i>Pennisetum clandestinum</i>	Spot spray with selective or appropriate herbicide. In areas of remnant grassland, encourage native species competition through appropriate burning, slashing or grazing regime.	Late Spring/Summer	Medium	1, 2, 3, 4 & 6	Control
Mallow	<i>Malva spp.</i>	Spot spray with selective herbicide	Summer	Medium	2	Control
Nightshade	<i>Solanum nigrum</i>	Spot spray or chip with selective or appropriate herbicide. In areas of remnant grassland, encourage native species competition through appropriate burning, slashing or grazing regime.	Late Spring/Summer	High	1,3,4,7	Eliminate
Other flat weeds	Variety including <i>Hypochoeris spp.</i> , <i>Plantago spp.</i> ,	Encourage native competition in remnant areas through appropriate burning, slashing or crash grazing.	Spring before seed set	Medium	All	Control
Other grasses	Variety including, <i>Aira spp.</i> , <i>Vulpia spp.</i> , <i>Lolium spp.</i> , <i>Ehrharta spp.</i> , <i>Hordeum spp.</i> , <i>Dactylis sp.</i> , <i>Bromus spp.</i> , <i>Avena spp.</i> , <i>Phalaris spp.</i>	Encourage native competition in remnant areas through appropriate burning, slashing or crash grazing.	Spring before seed set	Low	All	Control
Paterson's Curse	<i>Echium plantagineum</i>	Hand chip or spot spray.	Summer/autumn	High	2, 3, 4, 6, 7, 9, 11 & 14	Eliminate
Peppercorn	<i>Schinus molle</i>	Trees that are targeted for removal (those located in remnant areas), use the drill and fill technique and then fell dead tree. Leave root ball in ground for bank stabilisation. Rehabilitate area. If limited stags are present in area leave dead tree in situ until native trees are mature.	Spring/Summer	Medium/High	7,13,14	Control
Prickly Pear	<i>Opuntia spp.</i>	Apply herbicide and then burn dead plants. Ensure all plant material is dead and disposed of.	Late Spring/Summer	High	2,5,8,12,13,14	Eliminate

Common name	Species name	Control measure	Timing	Priority based on legislation and/or invasive potential	Management Zone	Target
Rocket	<i>Diploaxis spp.</i>	Hand chip or spot spray. Slash large infestations before seed set.	Spring/summer	Medium	1, 3 & 4	Control
Serrated Tussock	<i>N. trichotoma</i>	Spot spray isolated tussocks. Herbicide application to large infestations followed by replacement with native species. In areas where infestations are serving the purpose of soil stabilisation, reducing seed set is the priority over elimination. This can be achieved through control burns or slashing.	Autumn and Spring	High	2, 3, 4, 6, 7, 8, 9, 10, 11, 13 & 14	Eliminate
Tall Nettle	<i>Urtica dioica</i>	Spot spray or chip with selective or appropriate herbicide. In areas of remnant grassland, encourage native species competition through appropriate burning, slashing or grazing regime.	Spring/summer	High	5	Control
Thistles	<i>Including Lactuca serriola, Silybum maianum, Cirsium vulgare, Sonchus oleraceus, Helminthotheca echoides, Onopordum acanthium, Cynara cardunculus</i>	Hand chip or spot spray infestations in escarpment areas or small infestations. Encourage native competition in remnant areas through appropriate burning, slashing or crash grazing.	Spring/summer	Medium/High	All	Control
Turnip	<i>Brassica spp.</i>	Hand chip or spot spray. Slash large infestations before seed set.	Spring/summer	Medium	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13 & 14	Control
Water Buttons	<i>Cotula coronopifolia</i>	Difficult to remove/control. Hand remove.	Spring	Low	3, 4, 13 & 14	Control
White Goosefoot	<i>Chenopodium album</i>	Hand chip or spot spray infestations in escarpment areas or small infestations. Encourage native competition in remnant areas through appropriate burning, slashing or crash grazing.	Spring/summer	Medium/High	1,3,4	Control
Wild Teasel	<i>Dipsacus fullonum</i>	Hand chip or spot spray infestations in escarpment areas or small infestations. Encourage native competition in remnant areas through appropriate burning, slashing or crash grazing.	Spring	High	1,13,14	Eliminate
Wire Weed	<i>Polygonum aviculare</i>	Hand remove small infestations, selective herbicide for large infestations.	Spring/summer	Low	3, 4 & 8	Control

6.2 Pest animals

Pest animals within the Cobbledicks Ford Reserve are limited to Cats, Rabbits, Hares and Foxes with rabbits and hares being the major problem. Through the Wyndham City Council Rural Rebate Scheme, adjoining landholders are encouraged to control rabbits on their properties. Wyndham City Council also undertakes rabbit baiting programs within Cobbledicks Ford Reserve. These efforts are warranted but will need to be enhanced to allow for natural regeneration and success of rehabilitation programs.

Proposed and current methods for control of rabbits include:

- Baiting
- Fumigating burrows
- Burrow destruction
- Ferreting
- Biological agents
- Targeted shooting
- Fencing of significant areas

The management actions within Section 9 outline the rabbit control method recommended per management zone. In some instances an integrated approach is required. Targets for achieving effective rabbit control are also suggested.

Control of rabbits through baiting should be at DPI recommended rate. Hand baiting is recommended. Disturbance of soil through mechanical laying of baits (trail baiting) is not recommended where native vegetation will be disturbed.

7 MONITORING AND EVALUATION

Monitoring and evaluation is an essential component of an adaptive management plan. Monitoring performance against key performance indicators followed by evaluation of the results can help direct future management efforts. Key performance indicators (KPI) must include an action, target, benchmark condition and timeframe. For KPIs to be effective, a clear understanding of the information needs is required. The information needs related to management of flora and fauna at Cobbledicks Ford include:

1. Are remnant areas of native vegetation appropriately managed to maintain or increase their viability?
2. Is the fauna habitat within the Reserve suitable and viable for existing species and encouraging future threatened species recolonisation?
3. Are revegetation efforts adequate to increase the viability of existing native vegetation remnants?
 - Are revegetation efforts adequate to increase stream bank and escarpment soil stability?
4. Do we need to better control weeds through effort and resources?
5. Are rabbits having a detrimental effect on native vegetation, fauna habitat and stream bank stabilisation?
6. Are threats to native flora and fauna adequately addressed within the Reserve?
7. Can flora and fauna management objectives be implemented without detriment to the cultural and controlled recreational values of the Reserve?

The KPIs to address these information needs are included in the management action tables in Section 9 for each management zone. A monitoring proforma is also included in Appendix 6 as an example but if one is already in place it can still be used.

Information that should be recorded includes:

- Photopoint of works areas;
- Plant species cover and diversity;
- Areas of treatment (for weeds and rehabilitation);
- Number of tubestock alive/dead;
- Tracks, scats and traces of animals;
- Presence of hollows;
- Incidental sightings of animals;
- Management actions and dates;
- Provenance of planted species.

8 FURTHER SURVEYS AND RESEARCH

From reviewing the available information and preparing the management action tables in Section 9 a series of information gaps were highlighted. These gaps would need to be addressed by implementing the following assessments and projects:

- Habitat hectare assessments of each management zone;
- Before site revegetation works are undertaken in a management zone, detailed mapping should be undertaken of areas of disturbance so that revegetation activities can then be refined. It is at this stage that the revegetation schedules can be used;
- Assessment of the percentage cover of dominant weeds and native species;
- Assessment of the number of woody vegetation recruitment cohorts within each management zone including grasslands so that woody weed removal can be informed;
- Assessment of the rabbit population within the reserve (burrows, defecation areas etc);
- Assessment of the number and live/dead status of planted tubestock;
- Walking track plan for the Reserve;
- Arboreal mammal surveys;
- Amphibian surveys;
- Targeted threatened flora surveys including:
 - Golden Sun Moth surveys
 - Striped Legless lizard Surveys
 - Earless Dragon Surveys
 - Pigmy Blue tongue Surveys (thought to be extinct from Victoria and known from SA. More survey in Victoria is needed and the Ford still has suitable habitat for the species)
- Fish surveys (Melbourne Water may be able to help with this).

9 MANAGEMENT ACTIONS

The management actions contained within this Section of the FFMP are designed to be taken into the field by a contractor or Bush Crew member along with the appropriate Revegetation Schedule and Weed Control table. After works have been completed the monitoring proforma can be used by a Council Environment Officer to audit the results of the works with respect to the targets (KPIs) in the management action tables.

Table 6 Management actions for Zone 1 & 2 – Floodplain Riparian Woodland

Item number	Objective	Action	Target	Benchmark (current) condition	Frequency and timing	Responsible party	Monitoring requirements	Cost Estimate (based on size of MZ)
1	Management of native vegetation remnant viability							
1.1		Encourage natural regeneration through episodic flooding of zone.	One overbank flood event every 5 years in line with environmental watering requirements of the Werribee River.	Grey Box, Manna Gum and Red Gum overstorey and Blanket weed and Chilean Needle Grass understorey. Tubestock has been planted in this Zone. Last overbank flood assumed to be in March 2010.	One flood event every five years.	DSE, Melbourne Water & Port Phillip and Westernport Catchment Management Authority. Responsibility may change at the amalgamation of Melbourne Water and the CMA.	Report on flood frequency in comparison to last flood date.	Minimal cost for reporting. Could be substantial or even non-viable cost of releasing environmental flows down the Werribee River given the market garden industry downstream.
2	Management of fauna habitat							
2.1		Increase amount fauna habitat through reintroduction of logs.	Increase number of large old logs in zone to 30m/0.1ha. Logs can be as small as 10cm diameter.	Current length of logs in zone is unknown. Further work required to establish current condition.	Increase logs in zone by 6m/0.1ha per year for 5 years.	Wyndham City Council.	Measure length of logs incorporated into zone per year.	Estimated at \$2000 per year for five years.
2.2		Encourage natural regeneration.	See item number 4 and 5.	See item number 4 and 5.	See item number 4 and 5.	See item number 4 and 5.	See item number 4 and 5.	See item number 4 and 5.
2.3		Reintroduce native habitat forming flora species.	See item number 3.	See item number 3.	See item number 3.	See item number 3.	See item number 3.	See item number 3.
2.4		Control of weeds and other threats.	See items numbered 4, 5 & 6.	See items numbered 4, 5 & 6.	See items numbered 4, 5 & 6.	See items numbered 4, 5 & 6.	See items numbered 4, 5 & 6.	See items numbered 4, 5 & 6.

Item number	Objective	Action	Target	Benchmark (current) condition	Frequency and timing	Responsible party	Monitoring requirements	Cost Estimate (based on size of MZ)
3	Revegetation requirements							
3.1		Encourage natural regeneration.	1 new cohort of woody vegetation established naturally every five years. Determined by existence of a group of saplings of the same height and approximate age.	No cohorts present.	Dependent upon flood event (see 1.1).	See 1.1.	Record and report the number of Eucalypt saplings of the same age every five years.	Estimated at \$1000 every 5 years to undertake assessment and prepare summary of findings.
3.2		Manage existing tubestock planting area by controlling competition from weeds.	Greater than 50% survivorship of existing tubestock plants already introduced to the site.	Unknown. Further assessment of the current status of tubestock planting required.	See Item 4.	Wyndham City Council	Record and report the number of planted tubestock surviving each spring.	Estimated at \$500/year to undertake assessment and prepare summary of findings.
3.3		Introduce more indigenous tubestock. Follow species guide in Appendix 1. Undertake mapping of suitable areas for revegetation prior to planting.	Increase woody shrub diversity to at least three species with a total cover of 20%. Increase canopy tree diversity to three species with a density of 15/ha and 20% canopy cover. Increase understorey planting to 13 species and approximately 60%.	Unknown. Further assessment of the current status of canopy and shrub diversity, density and percentage cover required.	Undertake one intense planting effort by 2015. Introduce plants in winter after frosts. Achieve understorey targets over 10 years.	Wyndham City Council with support from Melbourne Water and local community groups.	Assessments of species diversity, density and percentage cover every five years.	Estimated at \$5000 - \$15000 over five years. Cost dependent upon calculating the number of plants required to achieve the target based on the unknown current condition. Cost will also alter depending if friends group, Council Bush crew or contractor undertakes works.

Item number	Objective	Action	Target	Benchmark (current) condition	Frequency and timing	Responsible party	Monitoring requirements	Cost Estimate (based on size of MZ)
4	Management of pest plants							
4.1		Undertake weed biomass reduction around tubestock planted areas. Map infestations.	Control Chilean Needle Grass and Blanket Weed in accordance with Table 5.	Unknown but both Chilean Needle Grass and Blanket Weed anticipated to be the dominant understorey.	See Table 5.	Wyndham City Council.	Actions from Table 5 completed each year.	Estimated at \$5000 per year but dependent upon if Council Bush Crew or contractor undertakes works.
5	Management of rabbits							
5.1		Continue Rural Rebate Scheme (RRS) with a focus to control rabbits on neighbouring properties.	Continuation of RRS.	RRS in operation but may be ceased by Council.	Annual	Wyndham City Council.	As per requirements of RRS	As per cost of implementing RRS.
5.2		Annual bating program for whole of reserve and destroy any new burrows. If burrows are destroyed they must be rehabilitated in accordance with Appendix 3.	No new establishment of rabbit burrows. Baiting program implemented.	Rabbit burrows not present in HZ. Baiting occurs annually.	Annual	Wyndham City Council.	Program implemented. No new sighting of rabbit burrows. See 3.1, 3.2, 3.3 for influence of rabbits on vegetation.	As per current rabbit baiting program.
6	Management of threats							
6.1		Control pest plants and animals	See items 4 and 5.	See items 4 and 5.	See items 4 and 5.	See items 4 and 5.	See items 4 and 5.	See items 4 and 5.
6.2		Control 4WD access through maintenance of rock barriers and ensuring gates are locked and locks maintained.	No 4WD incursions into MZ.	4WD access has been controlled through reducing public access.	Regular drive by checks to determine status of barriers and gates (approximately every 2 weeks).	Wyndham City Council.	Checks completed and maintenance undertaken.	Include checks into normal Council staff operations. Allow at least \$2000 per year for maintenance.

Item number	Objective	Action	Target	Benchmark (current) condition	Frequency and timing	Responsible party	Monitoring requirements	Cost Estimate (based on size of MZ)
7	Consideration of cultural and amenity values							
7.1		Do not undertake any soil disturbance activities.	No disturbance of artefacts.	Artefacts present throughout reserve.	Monitor annually.	Wyndham City Council, and any party undertaking revegetation or vegetation management works in HZ.	Vigilance by Council Environment Staff.	Include in normal Council Officer activities.
7.2		Leave all cultural heritage items in place and report any new findings back to Council Environment Department.	See item 7.1.	See item 7.1.	See item 7.1.	See item 7.1.	See item 7.1.	See item 7.1.
7.3		Car park management.	Control invasive weeds and litter.	Carpark	Regular checks to determine status of weed growth and presence of litter.	Wyndham City Council Parks Department.	NA	Incorporate into Council staff operations and Park management/maintenance costs.
7.4		Succession planning for planted native trees and non-native trees.	Develop a landscape plan for the amenity values area of the Reserve and include locations for shade tree planting. Shade trees should preferably be indigenous species. Once indigenous shade trees are mature, remove planted native trees. This does not include the Sugar Gum roadside windrow.	Mature planted native and non-native trees serving as shade and bird habitat.	Long term plan, >25years.	Wyndham City Council.	NA	Unknown.

Item number	Objective	Action	Target	Benchmark (current) condition	Frequency and timing	Responsible party	Monitoring requirements	Cost Estimate (based on size of MZ)
7.5		Formalise walking tracks into dedicated tracks and those designated for rehabilitation. This will require development of a walking track plan for the Reserve.	Walking track plan prepared.	Walking track layout is not structured and increasing risk of further degradation of remnant vegetation areas through establishment of new tracks by public and increased sites for weed invasion into remnant areas from edge effects.	Plan should be developed by 2012.	Wyndham City Council Landscape Department.	NA	Unknown. Quotes required.

Table 7 Management actions for Zone 3, 4 & 5 – Stream Bank Shrubland

Item number	Objective	Action	Target	Benchmark (current) condition	Frequency and timing	Responsible party	Monitoring requirements	Cost Estimate (based on size of MZ)
1	Management of native vegetation remnant viability							
1.1		Support regular flooding of Zone. Do not allow any blocking of River flows.	Regular flooding of Zone during high River flows.	Manna Gum, Blue Box and River Red Gum overstorey with some weed invasion.	As per seasonal flood cycles.	DSE, Melbourne Water & Port Phillip and Westernport Catchment Management Authority. Responsibility may change at the amalgamation of Melbourne Water and the CMA.	See Natural recruitment, item 2.2.	See item 2.2.
2	Management of fauna habitat							
2.1		Increase amount fauna habitat through reintroduction of logs.	Increase number of large old logs in zone to 10m/0.1ha. Logs can be as small as 10cm diameter.	Current length of logs in zone is unknown. Further work required to establish current condition.	Increase logs in zone by 2m/0.1ha per year for 5 years.	Wyndham City Council.	Measure length of logs incorporated into zone per year.	Estimated at \$500 per year for five years.
2.2		Encourage natural regeneration.	See item number 4 and 5.	See item number 4 and 5.	See item number 4 and 5.	See item number 4 and 5.	See item number 4 and 5.	See item number 4 and 5.
2.3		Reintroduce native habitat forming flora species.	See item number 3.	See item number 3.	See item number 3.	See item number 3.	See item number 3.	See item number 3.
2.4		Control of weeds and other threats.	See items numbered 4, 5 & 6.	See items numbered 4, 5 & 6.	See items numbered 4, 5 & 6.	See items numbered 4, 5 & 6.	See items numbered 4, 5 & 6.	See items numbered 4, 5 & 6.

Item number	Objective	Action	Target	Benchmark (current) condition	Frequency and timing	Responsible party	Monitoring requirements	Cost Estimate (based on size of MZ)
3	Revegetation requirements							
3.1		Encourage natural regeneration.	One new cohort of woody vegetation established naturally every two years. Determined by existence of a group of saplings of the same height and approximate age.	Unknown, further assessment required to establish current condition.	Dependent upon flood event (see 1.1).	See 1.1.	Record and report the number of Eucalypt, Acacia, Leptospermum saplings of the same age every two years.	Estimated at \$1000 every 2 years to undertake assessment and prepare summary of findings.
3.2		Introduce more indigenous tubestock. Follow species guide in Appendix 1.	Increase woody shrub diversity to at least 6 species with a total cover of 30%. Increase canopy tree diversity to three species with a density of 10/ha and 10% canopy cover. No further planting is required if this has been achieved naturally.	Unknown. Further assessment of the current status of canopy and shrub diversity, density and percentage cover required.	Undertake one intense planting effort by 2015. Introduce plants in winter after frosts.	Wyndham City Council with support from Melbourne Water and local community groups.	Assessments of species diversity, density and percentage cover every five years.	Estimated at \$15000 - \$25000 over five years. Cost dependent upon calculating the number of plants required to achieve the target based on the unknown current condition. Cost will also alter depending if friends group, Council Bush crew or contractor undertakes works.
4	Management of pest plants							
4.1		Undertake weed biomass reduction around tubestock planted areas.	Control or eliminate weeds in accordance with Table 5. Focus on Chilean Needle Grass and Couch.	Weeds are the dominant terrestrial understorey. Percentage covers not known.	See Table 5.	Wyndham City Council.	Actions from Table 5 completed each year.	Estimated at \$10000 - \$25000 per year but dependent upon if Council Bush Crew or contractor undertakes works.

Item number	Objective	Action	Target	Benchmark (current) condition	Frequency and timing	Responsible party	Monitoring requirements	Cost Estimate (based on size of MZ)
5	Management of rabbits							
5.1		Continue Rural Rebate Scheme (RRS) with a focus to control rabbits on neighbouring properties.	Continuation of RRS.	RRS in operation but may be ceased by Council.	Annual	Wyndham City Council.	As per requirements of RRS	As per cost of implementing RRS.
5.2		Annual bating program for whole of reserve and destroy any new burrows. If burrows are destroyed they must be rehabilitated in accordance with Appendix 3. Investigate opportunity for rabbit proof fencing.	No new establishment of rabbit burrows. Baiting program implemented.	Rabbit burrows not present in HZ. Baiting occurs annually.	Annual	Wyndham City Council.	Program implemented. No new sighting of rabbit burrows. See 3.1, 3.2, 3.3 for influence of rabbits on vegetation.	As per current rabbit baiting program.
6	Management of threats							
6.1		Control pest plants and animals	See items 4 and 5.	See items 4 and 5.	See items 4 and 5.	See items 4 and 5.	See items 4 and 5.	See items 4 and 5.
6.2		Control 4WD access through maintenance of rock barriers and ensuring gates are locked and locks maintained.	No 4WD incursions into MZ.	4WD access has been controlled through reducing public access.	Regular drive by checks to determine status of barriers and gates (approximately every 2 weeks).	Wyndham City Council.	Checks completed and maintenance undertaken.	Include checks into normal Council staff operations. Allow at least \$2000 per year for maintenance.
6.3		Control of pest fish (Mosquito fish)	Control of Mosquito fish while river holding water and elimination of Mosquito fish if River becomes ephemeral.	Mosquito fish abundant in Werribee River.	Long term catchment based target and timing.	Melbourne Water and the Port Phillip and Westernport Catchment Management Authority.	NA, long term strategy required.	Unknown.

Item number	Objective	Action	Target	Benchmark (current) condition	Frequency and timing	Responsible party	Monitoring requirements	Cost Estimate (based on size of MZ)
7	Consideration of amenity, cultural and recreational values							
7.1		Do not undertake any soil disturbance activities.	No disturbance of artefacts.	Artefacts present throughout reserve.	Monitor annually.	Wyndham City Council, and any party undertaking revegetation or vegetation management works in HZ.	Vigilance by Council Environment Staff.	Include in normal Council Officer activities.
7.2		Leave all cultural heritage items in place and report any new findings back to Council Environment Department.	See item 7.1.	See item 7.1.	See item 7.1.	See item 7.1.	See item 7.1.	See item 7.1.
7.3		Succession planning for planted native trees and non-native trees.	Develop a landscape plan for the amenity values area of the Reserve and include locations for shade tree planting. Shade trees should preferably be indigenous species. Once indigenous shade trees are mature, remove planted native trees. This does not include the Sugar Gum roadside windrow.	Mature planted native and non-native trees serving as shade and bird habitat.	Long term plan, >25years.	Wyndham City Council.	NA	Unknown.
7.4		Regulation of recreational fishing to maintain current stocks. Strategy required.	If native fish are present, reduce the potential for them to be caught.	Unknown. Fish survey required.	Development of strategy with Melbourne Water over next 5 years.	Melbourne Water and Wyndham City Council.	NA	Unknown.

Table 8 Management actions for Zone 6 & 7 – Escarpment Shrubland

Item number	Objective	Action	Target	Benchmark (current) condition	Frequency and timing	Responsible party	Monitoring requirements	Cost Estimate (based on size of MZ)
1	Management of native vegetation remnant viability							
1.1		Encourage natural regeneration and undertake enhancement planting to achieve EVC benchmark. Maintain stand of Weeping grass.	Continuous establishment of woody cohorts. Understorey species to be >50% native.	Site of many revegetation projects. Many non-indigenous native trees established. Native grass and herb understorey present.	Ongoing.	Wyndham City Council.	Report one natural regeneration and revegetation every 5 years.	Minimal cost for reporting. Could be incorporated into Council staff duties.
2	Management of fauna habitat							
2.1		Increase amount fauna habitat through reintroduction of logs to EVC benchmark levels (only small logs)	Increase number of large old logs in zone to 15m/0.1ha. Logs can be as small as 10cm diameter.	Current length of logs in zone is unknown. Further work required to establish current condition.	Increase logs in zone by 3m/0.1ha per year for 5 years.	Wyndham City Council	Measure length of logs incorporated into zone after 5 years.	Estimated at \$1000 per year for five years.
2.2		Encourage natural regeneration	See item number 4 and 5.	See item number 4 and 5.	See item number 4 and 5.	See item number 4 and 5.	See item number 4 and 5.	See item number 4 and 5.
2.3		Reintroduce native flora species to form habitat.	See item number 3.	See item number 3.	See item number 3.	See item number 3.	See item number 3.	See item number 3.
2.4		Control of weeds and other threats	See items numbered 4, 5 & 6.	See items numbered 4, 5 & 6.	See items numbered 4, 5 & 6.	See items numbered 4, 5 & 6.	See items numbered 4, 5 & 6.	See items numbered 4, 5 & 6.

Item number	Objective	Action	Target	Benchmark (current) condition	Frequency and timing	Responsible party	Monitoring requirements	Cost Estimate (based on size of MZ)
3	Revegetation requirements							
3.1		Encourage natural regeneration by installing a rabbit proof fence around habitat zone 6, 10, 7, 9 & 12. A double gate and loch set up for all access points is recommended.	1 new cohort of woody vegetation established naturally every year. Determined by existence of a group of saplings of the same height and approximate age.	Unknown. Further assessment required to determine current natural regeneration.	Install fence by 2012.	See 1.1. Potential to apply for funding with community groups and Melbourne Water.	Record and report the number of woody saplings of the same age every five years.	Estimated at \$15/m for approximately 1.5km is equal to \$22500 so allow \$25000.
3.2		Introduce more indigenous tubestock. Follow species guide in Appendix 1.	Increase woody shrub diversity to at least 8 species with a total cover of 25%. Maintain canopy tree diversity and increase to a density of 15/ha and 15% canopy cover. This is a long term maintenance target for woody vegetation in this community.	Unknown. Further assessment of the current status of canopy and shrub diversity, density and percentage cover required.	Undertake one intense planting effort by 2015. Introduce plants in winter after frosts.	Wyndham City Council with support from Melbourne Water and local community groups.	Assessments of species diversity, density and percentage cover every five years.	Estimated at \$5000 - \$15000 over five years. Cost dependent upon calculating the number of plants required to achieve the target based on the unknown current condition. Cost will also alter depending if friends group, Council Bush crew or contractor undertakes works.
4	Management of pest plants							
4.1		Implement weed control measures in Table 5 for species present.	Eliminate Paterson's Curse, African Boxthorn, Mullein, Sweet Briar and controlling Chilean Needle Grass and Serrated Tussock.	Actual percentage covers are unknown.	See Table 5.	Wyndham City Council	Actions from Table 5 completed each year.	Estimated at \$5000 per year but dependent upon if Council Bush Crew or contractor undertakes works.

Item number	Objective	Action	Target	Benchmark (current) condition	Frequency and timing	Responsible party	Monitoring requirements	Cost Estimate (based on size of MZ)
5	Management of rabbits							
5.1		Continue Rural Rebate Scheme (RRS) with a focus to control rabbits on neighbouring properties.	Continuation of RRS.	RRS in operation but may be ceased by Council.	Annual	Wyndham City Council	As per requirements of RRS	As per cost of implementing RRS.
5.2		Annual bating program for whole of reserve and destroy any new burrows. If burrows are destroyed they must be rehabilitated in accordance with Appendix 3. Consider shooting as an alternative for Cat and Rabbit control.	No new establishment of rabbit burrows. Baiting program implemented.	Rabbit burrows not present in HZ. Baiting occurs annually.	Annual	Wyndham City Council	Program implemented. No new sighting of rabbit burrows. See 3.1, 3.2, 3.3 for influence of rabbits on vegetation.	As per current rabbit baiting program.
5.3		Installation of rabbit proof fence. Consideration of access points and interfaces with the waterway prior to installation.	See item 3.1	See item 3.1	See item 3.1	See item 3.1	See item 3.1	See item 3.1
6	Management of threats							
6.1		Control pest plants and animals.	See items 4 and 5.	See items 4 and 5.	See items 4 and 5.	See items 4 and 5.	See items 4 and 5.	See items 4 and 5.

Item number	Objective	Action	Target	Benchmark (current) condition	Frequency and timing	Responsible party	Monitoring requirements	Cost Estimate (based on size of MZ)
6.2		Direct public access along formed tracks.	Walking track plan prepared.	Walking track layout is not structured and increasing risk of further degradation of remnant vegetation areas through establishment of new tracks by public and increased sites for weed invasion into remnant areas from edge effects.	Plan should be developed by 2012.	Wyndham City Council Landscape Department.	NA	Unknown. Quotes required.
6.3		Discourage hunting activities. Install more signs around the Reserve.	Reduced sightings of hunters within the Reserve. No native animal death from hunting incident within the Reserve.	Hunters have been sighted within the reserve with firearms and crossbows.	Ongoing.	Wyndham City Council	Incidental observations.	Unknown. Quotes required for additional signage.
7	Consideration of amenity, cultural and recreational values							
7.1		Do not undertake any soil disturbance activities	No disturbance of artefacts.	Artefacts present throughout reserve.	Monitor annually	Wyndham City Council, and any party undertaking revegetation or vegetation management works in HZ.	Vigilance by Council Environment Staff.	Include in normal Council Officer activities.
7.2		Leave all cultural heritage items in place and report any new findings back to Council Environment Department. Monitoring by the community is a valued method of reporting ongoing damage.	See item 7.1.	See item 7.1.	See item 7.1.	See item 7.1.	See item 7.1.	See item 7.1.

Table 9 Management actions for zone 8 – Degraded Escarpment Shrubland

Item number	Objective	Action	Target	Benchmark (current) condition	Frequency and timing	Responsible party	Monitoring requirements	Cost Estimate (based on size of MZ)
1	Management of native vegetation remnant viability							
1.1		Major rehabilitation program required to restore the escarpment.	Re-establish native vegetation in areas of degraded escarpment.	Area dominated by Chilean Needle Grass and soil profile damaged by 4WD activities.	Five year period. See Appendix 3 for detailed timeline.	Wyndham City Council and Contractor.	Annual assessment of native species emergence and ratio of native to weed species in terms of percentage cover.	Estimated at \$55000 over 5 years.
2	Management of fauna habitat							
2.1		Increase amount fauna habitat through reintroduction of logs.	Increase number of large old logs in zone to 15m/0.1ha. Logs can be as small as 10cm diameter.	Current length of logs in zone is unknown. Further work required to establish current condition.	Increase logs in zone in fifth year.	Wyndham City Council	Measure length of logs incorporated into zone after 5 years.	Estimated at \$3000.
2.3		Reintroduce native flora species that form habitat.	See item number 3.	See item number 3.	See item number 3.	See item number 3.	See item number 3.	See item number 3.
2.4		Control of weeds and other threats	See items numbered 4, 5 & 6.	See items numbered 4, 5 & 6.	See items numbered 4, 5 & 6.	See items numbered 4, 5 & 6.	See items numbered 4, 5 & 6.	See items numbered 4, 5 & 6.
3	Revegetation requirements							
3.1		Direct seeding of escarpment area with native grasses in establishment bands starting from the top of the escarpment. See Appendix 3 for detailed schedule.	0.25ha of escarpment seeded each year with a germination rate of 40 native grasses per m ² per year.	Dominated by Chilean Needle Grass.	Five year period. See Appendix 3 for detailed timeline.	Wyndham City Council and Contractor.	Annual assessment of native species emergence and ratio of native to weed species in terms of percentage cover.	See item 1.1.

Item number	Objective	Action	Target	Benchmark (current) condition	Frequency and timing	Responsible party	Monitoring requirements	Cost Estimate (based on size of MZ)
4	Management of pest plants							
4.1		Implement weed control measures in Table 5 for Chilean Needle Grass.	Competitive replacement of Chilean Needle Grass to reduce cover to <10% after five years.	See item 3.1	See Table 5. and Appendix 3.	Wyndham City Council and Contractor.	See item 3.1	See item 1.1.
5	Management of rabbits							
5.1		Continue Rural Rebate Scheme (RRS) with a focus to control rabbits on neighbouring properties.	Continuation of RRS.	RRS in operation but may be ceased by Council.	Annual	Wyndham City Council	As per requirements of RRS	As per cost of implementing RRS.
5.2		Annual baiting program for whole of reserve and destroy any new burrows. If burrows are destroyed they must be rehabilitated in accordance with Appendix 3.	No new establishment of rabbit burrows. Baiting program implemented.	Rabbit burrows not present in HZ. Baiting occurs annually.	Annual	Wyndham City Council	Program implemented. No new sighting of rabbit burrows.	As per current rabbit baiting program.
6	Management of threats							
6.1		Control pest plants and animals	See items 4 and 5.	See items 4 and 5.	See items 4 and 5.	See items 4 and 5.	See items 4 and 5.	See items 4 and 5.
6.2		Control 4WD access through maintenance of rock barriers and ensuring gates are locked and locks maintained.	No 4WD incursions into MZ.	4WD access has been controlled through reducing public access.	Regular drive by checks to determine status of barriers and gates (approximately every 2 weeks).	Wyndham City Council.	Checks completed and maintenance undertaken.	Include checks into normal Council staff operations. Allow at least \$2000 per year for maintenance.

Item number	Objective	Action	Target	Benchmark (current) condition	Frequency and timing	Responsible party	Monitoring requirements	Cost Estimate (based on size of MZ)
6.3		Undertake erosion repair works. Map erosion sites first and then repair through standard techniques such as cross channels and vegetation planting.	Rehabilitate eroded areas.	Erosion present.	Over 5 year period.	Wyndham City Council.	Checks completed and maintenance undertaken.	Include checks into normal Council staff operations. Allow at least \$2000 per year for maintenance.
7	Consideration of amenity, cultural and recreational values							
7.1		Leave all cultural heritage items in place and report any new findings back to Council Environment Department.	No disturbance of artefacts.	Artefacts present throughout reserve.	Monitor annually	Wyndham City Council, and any party undertaking revegetation or vegetation management works in HZ.	Vigilance by Council Environment Staff.	Include in normal Council Officer activities.

Table 10 Management actions for zone 9, 10, 11 & 12 – Plains Grassland

Item number	Objective	Action	Target	Benchmark condition (current condition)	Frequency and timing	Responsible party	Monitoring requirements	Cost Estimate (based on size of MZ)
1	Management of native vegetation remnant viability							
1.1		Enhance diversity and ecological resilience of Plains Grassland Community via management burns and repair of weed invaded areas. The four MZ should be separated into six units with two of the units burnt each year. MZs 10 and 11 should be separated into two units each for this purpose.	Increase in percentage cover of native grass species relative to weed species. Target of 80% projected foliage cover of native species. Burn two units per year. Burns will be required when grass tussocks become senescent. Check stability of grass tillers to direct burning interval. If tillers are easy to pull out, burning may be required.	Area degraded with a higher diversity of weed species compared with native species.	A 3 year cycle mosaic control burn program undertaken in autumn each year during normal rainfall years. Extend burning intervals to 6-8 years or longer during drought.	Wyndham City Council and Contractor.	Annual assessment of the ratio between native and weed species in terms of percentage foliage cover.	Estimated at \$5000 - \$10000 per year.
2	Management of fauna habitat							
2.1		Maintain fauna habitat in the form of exposed and emergent rocks.	No rocks to be removed from grassland areas.	Surface rock is present within all grasslands areas.	Ongoing.	Wyndham City Council	NA	NA
2.3		Reintroduce native flora species that form habitat in areas invaded by weeds.	See item number 3.	See item number 3.	See item number 3.	See item number 3.	See item number 3.	See item number 3.
2.4		Control of weeds and other threats.	See items numbered 4, 5 & 6.	See items numbered 4, 5 & 6.	See items numbered 4, 5 & 6.	See items numbered 4, 5 & 6.	See items numbered 4, 5 & 6.	See items numbered 4, 5 & 6.

Item number	Objective	Action	Target	Benchmark condition (current condition)	Frequency and timing	Responsible party	Monitoring requirements	Cost Estimate (based on size of MZ)
3	Revegetation requirements							
3.1		Direct seeding of native grasses into small areas (<0.01ha) that have been invaded by weeds. See Appendix 4 for detailed schedule. Once weeds are under control, incorporation of native herbs can be undertaken.	0.01ha of weed invaded area reverted back to Plains Grassland per year.	Dominated by a variety of weed species.	Five year period. See Appendix 4 for detailed schedule and timeline.	Wyndham City Council and Contractor.	Annual assessment of native species emergence and ratio of native to weed species in terms of percentage cover.	Estimated at \$2500 - \$5000 per year based on 0.01ha undertaken per year.
4	Management of pest plants							
4.1		Implement weed control measures in Table 5 for weeds with a High priority rating.	Decrease diversity of weeds from: 14 species in MZ 9, 17 species in MZ 10, 15 species in MZ 11 and 9 species in MZ 12.	All grassland MZs are dominated by weeds.	See Table 5.	Wyndham City Council and Contractor.	See item 3.1	Allow for \$3000 - \$10000 depending upon required effort, use of contractors and any unforeseeable weed invasions.
5	Management of rabbits							
5.1		Continue Rural Rebate Scheme (RRS) with a focus to control rabbits on neighbouring properties.	Continuation of RRS.	RRS in operation but may be ceased by Council.	Annual	Wyndham City Council	As per requirements of RRS	As per cost of implementing RRS.
5.2		Annual baiting program for whole of reserve and destroy any new burrows. If burrows are destroyed they must be rehabilitated in accordance with Appendix 3.	No new establishment of rabbit burrows. Baiting program implemented.	Rabbit burrows not present in HZ. Baiting occurs annually.	Annual	Wyndham City Council	Program implemented. No new sighting of rabbit burrows.	As per current rabbit baiting program.

Item number	Objective	Action	Target	Benchmark condition (current condition)	Frequency and timing	Responsible party	Monitoring requirements	Cost Estimate (based on size of MZ)
6	Management of threats							
6.1		Control pest plants and animals	See items 4 and 5.	See items 4 and 5.	See items 4 and 5.	See items 4 and 5.	See items 4 and 5.	See items 4 and 5.
6.2		Control 4WD access through maintenance of rock barriers and ensuring gates are locked and locks maintained.	No 4WD incursions into MZ.	4WD access has been controlled through reducing public access.	Regular drive by checks to determine status of barriers and gates (approximately every 2 weeks).	Wyndham City Council.	Checks completed and maintenance undertaken.	Include checks into normal Council staff operations. Allow at least \$2000 per year for maintenance.
7	Consideration of amenity, cultural and recreational values							
7.1		Do not undertake any soil disturbance activities	No disturbance of artefacts.	Artefacts present throughout reserve.	Monitor annually	Wyndham City Council, and any party undertaking revegetation or vegetation management works in HZ.	Vigilance by Council Environment Staff.	Include in normal Council Officer activities.
7.2		Leave all cultural heritage items in place and report any new findings back to Council Environment Department.	See item 7.1.	See item 7.1.	See item 7.1.	See item 7.1.	See item 7.1.	See item 7.1.
7.3		Formalise walking tracks into dedicated tracks and those designated for rehabilitation. This will require development of a walking track plan for the Reserve.	Walking track plan prepared.	Walking track layout is not structured and increasing risk of further degradation of remnant vegetation areas through establishment of new tracks by public and increased sites for weed invasion into remnant areas from edge effects.	Plan should be developed by 2012.	Wyndham City Council Landscape Department.	NA	Unknown. Quotes required.

10 REFERENCES AND OTHER GUIDES

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APPENDIX 1 REVEGETATION SCHEDULE – NATURAL REGENERATION

Objective:

Natural regeneration relies on available soil stored seed or addition of seed from existing plants through natural seed drop. As with any vegetated system, competition between plants plays a major factor in natural regeneration. For natural regeneration to be successful the competition balance must favour the desired species. Changing this balance takes time and also requires creation of sites of reduced competition. Reduced competition requires control of weeds (sometimes for many years) and exposure of sites for natural plant germination, emergence and survival. Once weed control has been implemented for at least two years, an idea of the soil stored seed will be evident through plant germination and emergence. These plants can then be used as a guide for selecting the tubestock to be planted.

A benefit with natural regeneration is that inputs can be intensive or low level depending on available resources such as funding and person effort.

Seed source and provenance:

Only seed from soil seed bank or plants existing on site are used.

Site Preparation:

Site preparation relies mostly on weed control. Weed control should be targeted to areas around species (target sites) where the desired effect is to allow those species to drop viable seed on to the soil surface or allow soil stored seed to germinate. For example if there are small patches of native grasses existing within one of the Management Zones, the weedy edge surrounding the small patch should be sprayed with herbicide or chipped out by hand. This removes the competition and also allows for a site for native seed deposition and emergence. Exposing the soil surface can also allow other weedy species to colonise. In particular, Blanket Weed and Prairie Ground Cherry can quickly invade these areas and then cause ongoing problems of ongoing control. For natural regeneration to be a success, ongoing weed management of target sites is required until a competitive stand of natives has emerged.

To aid natural regeneration control of pest animals is also desirable. In the case of Management Zones 6, 7, 9, 10 and 12, a rabbit proof fence has been recommended. Controlling rabbits from within this exposure will be a priority to allow emerging native species a chance to mature.

Timing:

Until the rabbit proof fence has been installed and baiting within the enclosure started natural regeneration should concentrate on areas around the sapling Blue Box's in Management Zone 1.

Installation of the rabbit proof fence (Table 8) should be completed by the end of 2012. Targeted weed control within the enclosure can then start in 2013.

Maintenance:

Maintenance of the rabbit proof fence will be required to ensure there are no access points for rabbits. This will be especially important around any gate areas associated with walking or maintenance tracks. A double gate and lock set up for all access points is recommended.

APPENDIX 2 REVEGETATION SCHEDULE – TUBESTOCK PLANTING

Objective:

Planting of tubestock in this FFMP serves the purpose of infill planting of desired species to enhance remnant EVCs or as a method of incorporating woody species into areas undergoing rehabilitation through direct seeding.

Seed source and provenance:

While sourcing seed for desired plant species a focus should be placed on the naturally occurring populations within Cobbledicks Ford and the Werribee River. Seed collection should not exceed a maximum of 10% of seed from each population or individual plant. Proper planning at least a year ahead is required in order to collect seed from the desired species. Seed collectors should be able to recognise the suitable plants and vegetation communities of the desired species for seed collection. Seed collection permit will be required.

Woody and herbaceous species seed collection should be from a provenance no greater south along the Werribee River than 37°51'20"S, 144°37'29"; and no further north than 37°44'44"S, 144°34'17"E along the Werribee River and 37°42'75"S, 144°34'13"E north along the Toolern Creek. These coordinates are selected based on bioregion, escarpment similarity to Cobbledicks Ford and current extent, form and condition of native vegetation present. While sourcing seed, the aspect of the plant or population where seed is being sourced should be noted and tubestock planted back into the same aspect. This follows the precautionary principal that plants sourced from a particular location and aspect will survive and form a viable population in a similar location and aspect.

Grassy species selection should be preferably from escarpment zones within the coordinates provided for woody species. However, given that large quantities of grass seed are often required and that pollen dispersal of grass species is via wind mechanisms, grass seed can be collected from the Werribee plains region of the Victorian Volcanic Plain bioregion.

Site Preparation:

Site preparation in all cases will require removal of competition from weed species. This can be in the form of slashing for annual weed species, cut/remove/paint with herbicide for woody species, and application of a non-residual herbicide for perennial grassy or herbaceous weed species. If herbicide is used, an appropriate time (at least three-four weeks) delay is required between the time of herbicide application and planting of tubestock.

The hole where tubestock is to be planted should be at least twice the size of the tube and have the sides disturbed so they are not smooth and hard for roots to penetrate. The soil from the hole should be mixed with the potting mix from the tube so that there is a gradual transition from the nutrient rich and loose potting mix soil to the naturally formed soil profile. The front of the plant (dominant direction of leaf surfaces if present) should be planted facing north. Tree guards should be used to protect each plant from herbivory and frost, and to keep a relatively humid environment. A few litres of water should be sprayed on each plant once in the ground.

Timing:

Planting tubestock during drought conditions is not recommended. Planting during summer periods is also not recommended due to water stress and increased potential for rabbit grazing during times of limited fodder. Tubestock should be planted in late autumn to winter after seasonal frosts and while the soil profile is moist.

Maintenance:

Ongoing weed control (Table 5) and repair of tree guards will be required. Tree guards should be removed once the plant has doubled in height of the tree guard.

Tubestock species selection and planting density:

Note that the planting density targets provided are based on the EVC diversity and percentage cover for the EVC present in each management zone along with DSEs planting guidelines (DSE 2006). An assessment of the existing density of species is required prior to plant species and density selection so that appropriate mixes can be determined. Planting aspect and altitude for each species will also be specific for each zone. Existing records have been and should be used as a guide.

Key:

Where different densities are required for EVCs the following differentiators are used.

■ Floodplain Riparian Woodland

★ Stream Bank Shrubland

▲ Escarpment Shrubland

● Plains Grassland

Planting density targets are provided for each MZ

Table 11: Revegetation species list

Common name	Scientific name	Management Zone	Planting density targets
Trees			
Blue Box	<i>Eucalyptus baueriana</i>	1, 2, 3, 4, 5, 6, 7 & 8	★ 10/ha ■▲ 15/ha
Buloke	<i>Allocasuarina leuhmannii</i>	6, 7 & 8	10/ha
Drooping Sheoke	<i>Allocasuarina verticillata</i>	6, 7 & 8	2/ha
Grey Box	<i>E. microcarpa</i>	1, 2, 3, 4, 5, 6, 7 & 8	★ 10/ha ■▲ 15/ha
Manna Gum	<i>E. viminalis</i>	1, 2, 3, 4, 5, 6, 7 & 8	★ 10/ha ■▲ 15/ha
Muttonwood	<i>Rapanea howittiana</i>	3, 4 & 5	5/ha
River Red Gum	<i>E. camaldulensis</i>	1, 2, 3, 4 & 5	★ 10/ha ■ 15/ha
Black Wattle	<i>Acacia mearnsii</i>	3, 4, & 5	10/ha
Blackwood	<i>A. melanoxylon</i>	1 & 2	10/ha
Shrubs			
Blunt-leaf Tea-tree	<i>Leptospermum obovatum</i>	3, 4 & 5	85/ha

Common name	Scientific name	Management Zone	Planting density targets
Large Kangaroo Apple	<i>Solanum laciniatum</i>	3, 4 & 5	85/ha
River Bottlebrush	<i>Callistemon sieberi</i>	1 & 2	85/ha
Sweet Bursaria	<i>Bursaria spinosa</i> var. <i>spinosa</i>	1, 2, 3, 4, 5, 6, 7 & 8	★ 10/ha ■▲ 15/ha
Tree Violet	<i>Meliccytus dentatus</i>	All	▲■★ 85/ha ●5/ha
Wedge-leaf Hop-bush	<i>Dodonaea cuneata</i>	3, 4, 5, 6, 7 & 8	60/ha
Woolly Tea-tree	<i>L. lanigerum</i>	1, 2, 3, 4 & 5	85/ha
Herbs and groundcovers			
Austral tobacco	<i>Nicotiana suaveolens</i>	6, 7 & 8	3/2m ²
Black Cotton-bush	<i>Maireana decalvans</i>	1, 2, 9, 12, 11 & 12	1/5m ²
Bluebell	<i>Wahlenbergia luteola</i>	6, 7, 8, 9, 10, 11 & 12	2/m ²
Blushing Bindweed	<i>Convolvulus erubescens</i>	6, 7, 8, 9, 10, 11 & 12	2/m ²
Creeping Salt Bush	<i>Atriplex semibaccata</i>	All	1/5m ²
Firewheel Groundsel	<i>Senecio linearifolius</i>	3, 4 & 5	1/5m ²
Kidney Weed	<i>Dichondra repens</i>	3, 4, 5, 6, 7 & 8	5/m ²
Lagoon Saltbush	<i>Atriplex suberecta</i>	1 & 2	2/m ²
Native Elderberry	<i>Sambucus gaudichaudiana</i>	3, 4, 5, 6, 7 & 8	1/5m ²
Nodding Saltbush	<i>Einadia nutans</i> subsp. <i>Nutans</i>	All	1/5m ²
Rock fern	<i>Cheilanthes austrotenuifolia</i>	6, 7, 8, 9, 10, 11 & 12	1/2m ²
Ruby Saltbush	<i>Enchylaena tomentosa</i>	6, 7, 8, 9, 10, 11 & 12	1/5m ²
Slender Tick-trefoil	<i>Desmodium varians</i>	Rocky crevasses 6, 7, 8, 9, 10, 11 & 12	1/2m ²
Grass and grass like species			
Blank Anther Flax Lily	<i>Dianella admixta</i>	6, 7 & 8	1/m ²
Common Sedge	<i>Carex tereticaulis</i>	1, 2, 3, 4 & 5	5000/ha or in a mixture of species up to 8/m ²

Common name	Scientific name	Management Zone	Planting density targets
Common Wallaby grass	<i>Austrodanthonia caespitosa</i>	All	5000/ha or in a mixture of species up to 8/m ²
Common Wheat grass	<i>Elymus scabrus</i>	3, 4, 5, 6, 7, 8, 9, 10, 11 & 12	1/m ²
Clustered Wallaby grass	<i>A. racemosa</i>	3, 4, 5, 6, 7, 8, 9, 10, 11 & 12	5000/ha or in a mixture of species up to 8/m ²
Crested Spear-grass	<i>Austrostipa blackii</i>	All	5000/ha or in a mixture of species up to 8/m ²
Kangaroo grass	<i>Themeda triandra</i>	3, 4, 5, 6, 7, 8, 9, 10, 11 & 12	5000/ha or in a mixture of species up to 8/m ²
Nobby Club-rush	<i>Ficinia nodosa</i>	1, 2, 3, 4 & 5	2/m ²
Red-leg grass	<i>Bothriochloa macra</i>	6, 7, 8, 9, 10, 11 & 12	2/m ²
Sedge	<i>Carex bichenoviana</i>	1 & 2	2/m ²
Smooth Flax-lily	<i>D. longifolia</i>	9, 10 & 11	1/5m ²
Spear grass	<i>A. scabra</i>	All	5000/ha or in a mixture of species up to 8/m ²
Tall Spear-grass	<i>A. bigeniculata</i>	All	5000/ha or in a mixture of species up to 8/m ²
Weeping grass	<i>Microlaena stipoides</i>	3, 4, 5, 6, 7, 8, 9, 10, 11 & 12	5000/ha or in a mixture of species up to 8/m ²

APPENDIX 3 REVEGETATION SCHEDULE - REHABILITATION

Objective:

Rehabilitation involves large scale establishment of native species over a degraded area entirely dominated by weed species. This Rehabilitation Schedule for Cobbledicks ford has been designed for Management Zone 8, an area of degraded Escarpment Shrubland dominated by Chilean Needle Grass. The modified “Spray and Hay” method is recommended for use in the Rehabilitation area (Mason 2005).

The rehabilitation of this zone will involve a staged process of weed control and direct seeding of native grass species in bands migrating down the escarpment. Once the native grass layer has established, the shrub layer will be introduced via tubestock planting as in Appendix 1.

Seed source and provenance:

As per Appendix 1

Site Preparation:

The area to be rehabilitated must first be marked out on the ground with pegs in each four corners. The area must then be divided into the three rehabilitation bands (See Figure 2) with a marker peg placed at the starting point of each band. From this point the stages as outlined in Table should be followed.

An intensive weed control program is required at least one year in advance of direct seeding.

Kangaroo grass seed assumptions:

The following assumptions are made in the calculation of required Kangaroo grass seed for each rehabilitation band. These assumptions should be formalised after the collected Kangaroo grass seed has had germination trials undertaken. Approximations are given to allow for estimation of costs and pre-order of seed.




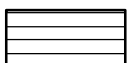
- A Derek wool pack of Kangaroo grass weighs approximately 20Kg.
- Each Derek wool pack of Kangaroo grass chaff seed contains approximately 480,000 ripe Kangaroo grass seeds.
- Approximately 20% of the ripe seed will germinate in the field.
- Approximately 25% of the germinated seed will survive.
- A competitive stand of Kangaroo grass to outcompete Chilean Needle grass requires approximately 60 seedlings per m².
- Accounting for germination, survivorship and the number of seeds per Derek wool pack, one Derek wool pack will cover an area of approximately 400 square meters (i.e. 40m x 10m).
- Approximately 52g of Kangaroo chaff will contain the number of seeds required to achieve a germination and emergence of 60 seedlings. This is equivalent to a heaped 1.5L plastic ice cream container full of seed spread over 1m².
- A straw thatch is required to keep moisture in the soil and to reduce weed emergence in the areas that have been direct seeded. This thatch is then removed in early October following direct seeding preferably by burning or hand removal. One 15Kg straw bale will thatch 4m² (4m x 4m).


Table 12: Rehabilitation schedule

Step	Task	Timing
1	Place order for Kangaroo grass chaff containing ripe seed. <ul style="list-style-type: none"> Rehabilitation Band (RB) 1 = approximately 0.14ha requires 4 x 20Kg Derek wool packs of Kangaroo grass RB 2 = approximately 0.18ha requires 5 x 20Kg Derek wool packs of Kangaroo grass RB 3 = approximately 0.13ha requires 4 x 20Kg Derek wool packs of Kangaroo grass. 	RB 1 = September 2010 RB 2 = September 2011 RB 3 = September 2012
2	Order seed free straw thatch material <ul style="list-style-type: none"> RB 1 = approximately 0.14ha requires 88 bales of straw RB 2 = approximately 0.18ha requires 113 bales of straw RB 3 = approximately 0.13ha requires 81 bales of straw. 	RB 1 = September 2010 RB 2 = September 2011 RB 3 = September 2012
3	Slash each band to a height of approximately 100mm.	RB 1 = Late March/April 2011 RB 2 = Late March/April 2012 RB 3 = Late March/April 2013
4	Apply herbicide to Chilean Needle grass that has begun to re-sprout.	RB 1 = Late April/ May 2011 RB 2 = Late April/ May 2012 RB 3 = Late April/ May 2013
5	Once Chilean Needle grass is dead, till the soil to a depth of approximately 5 -10cm using a rotary hoe. It is best that this task be undertaken immediately after rain.	RB 1 = Late May 2011 RB 2 = Late May 2012 RB 3 = Late May 2013
6	Within 2-3 days of tilling the soil apply the Kangaroo grass chaff containing seed at the required rate. Immediately after spreading the chaff, lay the straw thatch at the required rate. It is best if this task is undertaken immediately before a rain event (approx. 1-2 days). If rain is not predicted, investigate hosing the thatched area to settle the thatch and increase soil moisture under the thatch.	RB 1 = Late May 2011 RB 2 = Late May 2012 RB 3 = Late May 2013
7	Undertake monthly inspections and spray any emerging weeds.	Monthly
8	In early October once the ambient temperature has exceeded 25° during the day for more than 2-5 days the thatch can be removed. It is best to again time the removal of thatch to 1-2 days before a rain event. Removal of the thatch is best done via a controlled complete burn. IF this is not possible, hand removal is possible but as much as possible of the straw thatch must be removed without disturbing the soil profile – No Rakes	Early October.
9	Over the next year spot spray any emergent weeds with a suitable herbicide. Preferable a pre-emergent C4 (summer growing photosynthesis type) selective herbicide so that the C4 Kangaroo grass is not killed but any emerging C3 (winter growing photosynthesis type) weeds are killed.	Ongoing.
10	Repeat steps 1 – 9 for RB 2 and 3	
11	Order the required woody and herb species from Appendix 2 along with tree guards	RB 1 = September 2011 RB 2 = September 2012 RB 3 = September 2013
12	Plant out woody and herb species in a random but well distributed pattern through each RB.	RB 1 = July 2012 RB 2 = July 2013 RB 3 = July 2014
13	Ongoing weed control as required	



Legend

-  MZ8
-  Rehabilitation Band 1
-  Rehabilitation Band 2
-  Rehabilitation Band 3

	FINAL 1:1,000 
CONSULTANT:  SMEC AUSTRALIA PTY LTD <small>Level 5/71 Queens Road, Melbourne VIC 3004 T + 61 3 9514 1500 F + 61 3 9514 1502 Website: www.smec.com.au</small>	
PROJECT: Flora & Fauna Assessment Cobbleicks Ford, Quandong	
TITLE: Figure 2 - MZ 8 Rehabilitation Area.	
DRAWN BY: Christine Spits	DATE: 16/03/2010
CHECKED BY: Bram Mason	DATE: 16/03/2010
APPROVED BY: Bram Mason	DATE: 16/03/2010
GEOGRAPHIC COORDINATE SYSTEM: GCS_GDA_1994	
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APPENDIX 4 REVEGETATION SCHEDULE - REPAIR

Objective:

Repair involves using a direct seeding method to kill weeds in isolated patches within remnants and then reseed with desirable species. The steps outlined in Appendix 3 are followed but on a smaller scale. Timelines as indicated in Appendix 3 apply to the repair method.

Seed source and provenance:

As per Appendix 2

Site Preparation:

Site preparation must be selective when undertaking repair works within a remnant area. IF the weed invasion is small it may be best to hand remove all weeds. If the required effort is too great, herbicide application is possible but must be undertaken by a registered chemical handler with experience in working within remnant areas. If possible, herbicide application should be undertaken at a time of year when natives are more dormant and weeds are still actively growing. It may also be possible to use a selective non-persistent herbicide if available and registered for use on the weed species of concern.

Timing:

As per Appendix 3

Maintenance:

Ongoing weed control (Table 5) will be required in the short term.

APPENDIX 5 LANDCARE NOTE – NOXIOUS WEEDS



Declared Noxious Weeds - Listed by Common Name

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This note describes the legislative classification of weeds in Victoria, outlines the responsibilities of land owners for control of weeds and the legal restrictions on trade and dispersal of noxious weeds, and provides a list of noxious weeds with their current classifications.

Under the *Catchment and Land Protection (CaLP) Act 1994* certain plants are declared as noxious weeds in Victoria. These plants cause environmental or economic harm or have the potential to cause such harm. They can also present risks to human health. The CaLP Act defines four categories of noxious weeds:

- State Prohibited Weeds
- Regionally Prohibited Weeds
- Regionally Controlled Weeds
- Restricted Weeds.

The Regions referred to in the CaLP Act are the ten catchment Regions in Victoria (see Figure 1). Each Region recommends to the Minister for Environment and Climate Change, through a Catchment Management Authority (CMA), which plants should be declared noxious weeds, and the categories in which they should be placed.



Figure 1. Victoria's Catchment Management Regions.

Plants which have also been proclaimed noxious under the Fisheries Act 1995 are known as Noxious Aquatic Species.

State Prohibited Weeds

These weeds either do not occur in Victoria but pose a significant threat if they invade, or are present, pose a

serious threat and can reasonably be expected to be eradicated. If present, infestations of a State Prohibited Weed are relatively small. They are to be eradicated if possible from Victoria or excluded from the State. The Victorian Government is responsible for their eradication, but under Section 70(1) of the CaLP Act it may direct land owners to prevent their growth and spread. See those weeds marked with an "S" in the following table.

Regionally Prohibited Weeds

Regionally Prohibited weeds are not widely distributed in a Region but are capable of spreading further. It is reasonable to expect that they can be eradicated from a Region and they must be managed with that goal. Land owners, including public authorities responsible for Crown land management, must take all reasonable steps to eradicate Regionally Prohibited weeds on their land. See those weeds marked with a "P" in the following table.

Regionally Controlled Weeds

These weeds are usually widespread and are considered important in a particular Region. To prevent their spread, continuing control measures are required. Land owners have the responsibility to take all reasonable steps to prevent the growth and spread of Regionally Controlled weeds on their land. See those weeds marked with a "C" in the following table.

Restricted Weeds

This category includes plants that pose an unacceptable risk of spreading in this State or to other parts of Australia if they were to be sold or traded in Victoria, and are a serious threat to another State or Territory of Australia. Trade in these weeds and their propagules, either as plants, seeds or contaminants in other materials is prohibited. See those weeds marked with an "R" in the following table.

Fisheries Act Noxious Aquatic Species

These plants pose a serious threat to a fishery, the aquatic environment or human health. It is an offence to bring into Victoria or possess, sell, transport or release them. See those plants marked with an "F" in the following table.



Classification of declared noxious weeds in Victoria under the Catchment and Land Protection Act, proclaimed in Victorian Government Gazettes of 22 May 2003, 27 October 2005 and 5 April 2006, 6 March 2008, and plants declared Noxious Aquatic Species under the Fisheries Act.

Common Name	Scientific Name	Mallee	North Central	Wimmera	Glenelg-Hopkins	Corangamite	Port Phillip	Goulburn Broken	North East	West Gippsland	East Gippsland
African Boxthorn	<i>Lycium ferocissimum</i>	C	C	C	C	C	C	C	C	C	C
African Daisy	<i>Senecio pterophorus</i>	R	P	P	C	P	C	P	P	P	R
African Feather-grass	<i>Pennisetum macrourum</i>	P	P	P	C	P	P	P	P	P	P
African Love-grass	<i>Eragrostis curvula</i>	R	C	R	R	C	C	C	C	C	C
Alligator Weed	<i>Alternanthera philoxeroides</i>	S	S	S	S	S	S	S	S	S	S
Amsinckia	<i>Amsinckia</i> spp.	R	C	R	P	P	C	C	C	P	C
Angled Onion	<i>Allium triquetrum</i>	R	R	R	R	R	R	R	R	R	R
Apple of Sodom	<i>Solanum linnaeanum</i>	R	R	R	R	R	C	R	P	C	C
Artichoke Thistle	<i>Cynara cardunculus</i>	C	C	R	R	C	C	P	P	P	R
Athel Pine, Tamarisk	<i>Tamarix aphylla</i>	R	R	R	R	R	R	R	R	R	R
Bathurst Burr	<i>Xanthium spinosum</i>	R	C	C	C	C	C	C	C	C	C
Bear-skin Fescue	<i>Festuca gautieri</i>	S	S	S	S	S	S	S	S	S	S
Bindweed	<i>Convolvulus arvensis</i>	R	R	C	R	R	C	R	C	C	P
Blackberry	<i>Rubus fruticosus</i> agg.	R	C	C	C	C	C	C	C	C	C
Black Knapweed	<i>Centaurea nigra</i>	S	S	S	S	S	S	S	S	S	S
Boneseed/Bitou Bush	<i>Chrysanthemoides monilifera</i>	C	P	C	C	C	C	C	P	C	P
Branched Broomrape *1	<i>Orobanche ramosa</i> *1	S	S	S	S	S	S	S	S	S	S
Bridal Creeper	<i>Asparagus asparagoides</i>	R	R	R	R	R	R	R	R	R	R
Buffalo Burr	<i>Solanum rostratum</i>	R	R	P	R	R	P	C	P	R	R
Cabomba	<i>Cabomba caroliniana</i>	R	R	R	R	R	R	R	R	R	R
Californian/Perennial Thistle	<i>Cirsium arvense</i>	R	P	C	C	C	C	C	P	C	C
Caltrop	<i>Tribulus terrestris</i>	R	C	C	C	C	P	C	C	P	R
Camel Thorn	<i>Alhagi maurorum</i>	S	S	S	S	S	S	S	S	S	S
Cape Broom/ Montpellier Broom	<i>Genista monspessulana</i>	R	R	C	R	C	C	C	C	C	C
Cape Tulip (One-leaf)	<i>Moraea flaccida</i> (gazetted as <i>Homeria flaccida</i>)	P	C	C	C	C	C	P	C	C	C
Cape Tulip (Two-leaf)	<i>Moraea miniata</i> (gazetted as <i>Homeria miniata</i>)	P	C	P	C	P	C	P	C	P	P
Caulerpa	<i>Caulerpa taxifolia</i>	F	F	F	F	F	F	F	F	F	F
Chilean Cestrum	<i>Cestrum parqui</i>	R	R	C	R	R	P	C	C	P	P
Chilean Needle-grass	<i>Nassella neesiana</i>	R	R	R	R	R	R	R	R	R	R
Devil's Claw (Purple-flower)	<i>Proboscidea louisianica</i>	R	R	R	C	R	P	C	C	R	R
Devil's Claw (Yellow-flower)	<i>Proboscidea lutea</i> (gazetted as <i>Ibicella lutea</i>)	R	R	R	C	R	P	C	C	R	R
Dodder	<i>Cuscuta</i> spp.	R	R	P	R	R	C	C	C	P	R
English Broom	<i>Cytisus scoparius</i>	R	R	P	R	C	C	C	C	C	P
Fennel	<i>Foeniculum vulgare</i>	R	R	R	R	C	R	R	R	R	R
Flax-leaved Broom	<i>Genista linifolia</i>	R	R	C	R	C	C	R	P	C	P
Giant Knotweed	<i>Fallopia sachalinensis</i>	S	S	S	S	S	S	S	S	S	S
Giraffe Thorn	<i>Acacia erioloba</i>	S	S	S	S	S	S	S	S	S	S
Golden Thistle	<i>Scolymus hispanicus</i>	R	C	R	P	C	C	C	P	R	R
Gorse/Furze	<i>Ulex europaeus</i>	R	C	C	C	C	C	C	C	C	P
Great Mullein	<i>Verbascum thapsus</i>	R	R	R	R	R	R	C	C	R	C
Hardheads/Russian Knapweed	<i>Acroptilon repens</i>	C	C	C	P	P	P	C	P	R	R
Hawkweed	<i>Hieracium</i> spp.	S	S	S	S	S	S	S	S	S	S
Hawthorn	<i>Crataegus monogyna</i>	R	R	C	R	R	C	C	C	C	C
Hemlock	<i>Conium maculatum</i>	R	R	R	R	C	C	C	C	C	R
Hoary Cress	<i>Lepidium draba</i> (gazetted as <i>Cardaria draba</i>)	C	R	R	R	C	C	C	P	C	R
Horehound	<i>Marrubium vulgare</i>	R	C	C	C	C	C	C	C	C	C
Horsetail	<i>Equisetum</i> spp.	S	S	S	S	S	S	S	S	S	S
Hymenachne	<i>Hymenachne amplexicaulis</i>	R	R	R	R	R	R	R	R	R	R
Illyrian Thistle	<i>Onopordum illyricum</i>	R	C	R	R	R	P	P	P	R	P
Ivy-leaved Sida	<i>Malvella leprosa</i> (gazetted as <i>Sida leprosa</i>)	S	S	S	S	S	S	S	S	S	S
Japanese Knotweed	<i>Fallopia japonica</i>	S	S	S	S	S	S	S	S	S	S
Japanese Knotweed hybrid	<i>Fallopia x bohemica</i>	S	S	S	S	S	S	S	S	S	S
Karoo Thorn	<i>Acacia karroo</i>	S	S	S	S	S	S	S	S	S	S
Khaki Weed	<i>Alternanthera pungens</i>	R	C	C	R	R	P	C	P	R	P
Lagarosiphon	<i>Lagarosiphon major</i>	S	S	S	S	S	S	S	S	S	S
Lantana	<i>Lantana camara</i>	R	R	R	R	R	R	R	R	R	R
Lobed Needle Grass	<i>Nassella charruana</i>	S	S	S	S	S	S	S	S	S	S
Marijuana	<i>Cannabis sativa</i>	S	S	S	S	S	S	S	S	S	S
Mesquite	<i>Prosopis</i> spp.	S	S	S	S	S	S	S	S	S	S
Mexican Feather Grass	<i>Nassella tenuissima</i>	S	S	S	S	S	S	S	S	S	S
Mimosa	<i>Mimosa pigra</i>	R	R	R	R	R	R	R	R	R	R
Nodding Thistle	<i>Carduus nutans</i>	S	S	S	S	S	S	S	S	S	S
Noogoora Burr /Californian Burr	<i>Xanthium strumarium</i> (incl. <i>X. occidentale</i> & <i>X. orientale</i>)	C	C	P	C	P	C	C	C	P	R
Onion Weed	<i>Asphodelus fistulosus</i>	R	R	C	C	R	R	R	R	R	R
Common Name	Scientific Name	Mallee	North Central	Wimmera	Glenelg-Hopkins	Corangamite	Port Phillip	Goulburn Broken	North East	West Gippsland	East Gippsland

Common Name	Scientific Name	Mallee	North Central	Wimmera	Glenelg-Hopkins	Corang-amite	Port Phillip	Goulburn Broken	North East	West Gipps-land	East Gipps-land
Ox-eye Daisy	<i>Leucanthemum vulgare</i>	R	R	R	R	C	C	C	R	C	R
Pampas Lily-of-the-Valley	<i>Salpichroa origanifolia</i>	R	R	R	R	R	C	R	C	R	P
Parkinsonia	<i>Parkinsonia aculeata</i>	R	R	R	R	R	R	R	R	R	R
Parthenium Weed	<i>Parthenium hysterophorus</i>	S	S	S	S	S	S	S	S	S	S
Paterson's Curse	<i>Echium plantagineum</i>	R	C	C	C	C	C	C	C	C	C
Perennial Ragweed	<i>Ambrosia psilostachya</i>	S	S	S	S	S	S	S	S	S	S
Pond Apple	<i>Annona glabra</i>	R	R	R	R	R	R	R	R	R	R
Poverty Weed	<i>Iva axillaris</i>	S	S	S	S	S	S	S	S	S	S
Prairie Ground Cherry	<i>Physalis viscosa</i>	C	C	P	R	C	C	C	C	R	R
Prickly Acacia	<i>Acacia nilotica</i> subsp. <i>indica</i>	R	R	R	R	R	R	R	R	R	R
Prickly Pear (Drooping)	<i>Opuntia monacantha</i> (gazetted as <i>O. vulgaris</i>)	C	C	C	R	R	C	R	C	P	R
Prickly Pear (Erect)	<i>Opuntia stricta</i>	C	C	C	R	R	C	R	C	P	R
Ragwort	<i>Senecio jacobaea</i>	R	R	R	C	C	C	P	P	C	C
Ricegrass/Common Cordgrass	<i>Spartina anglica</i>	F	F	F	F	F	F	F	F	F	F
Rubber Vine	<i>Cryptostegia grandiflora</i>	R	R	R	R	R	R	R	R	R	R
Saffron Thistle	<i>Carthamus lanatus</i>	R	R	C	R	R	C	C	C	C	C
Salvinia	<i>Salvinia molesta</i>	S	S	S	S	S	S	S	S	S	S
Sand Rocket/Sand Mustard	<i>Diplotaxis tenuifolia</i>	R	R	R	C	R	C	R	R	R	R
Scotch/Heraldic Thistle	<i>Onopordum acanthium</i>	R	P	R	C	C	P	C	C	C	C
Serrated Tussock	<i>Nassella trichotoma</i>	P	P	P	P	C	C	P	P	C	P
Silverleaf Nightshade	<i>Solanum elaeagnifolium</i>	C	C	C	P	C	P	C	C	R	R
Skeleton Weed	<i>Chondrilla juncea</i>	R	R	R	C	R	P	R	R	R	R
Slender/Shore Thistle	<i>Carduus tenuiflorus</i> / <i>C. pycnocephalus</i>	R	R	R	R	R	C	R	C	C	C
Soldier Thistle	<i>Picnemon acarna</i> (gazetted as <i>Cirsium arcana</i>)	R	P	R	R	R	P	C	C	R	R
Soursob	<i>Oxalis pes-caprae</i>	R	R	R	R	R	R	R	R	R	R
Spear Thistle	<i>Cirsium vulgare</i>	R	R	R	R	R	C	R	C	C	C
Spiny Broom	<i>Calicotome spinosa</i>	R	R	C	R	C	P	R	P	R	R
Spiny Burr Grass/Gentle Annie	<i>Cenchrus longispinus</i>	C	C	C	P	R	P	C	C	R	R
Spiny Emex	<i>Emex australis</i>	C	R	P	R	R	P	C	C	R	R
Spiny Rush	<i>Juncus acutus</i>	R	C	C	C	R	C	C	C	C	C
St Barnaby's Thistle	<i>Centaurea solstitialis</i>	R	R	C	P	P	P	C	C	P	P
St John's Wort	<i>Hypericum perforatum</i>	R	C	C	C	C	C	C	C	C	C
St Peter's Wort	<i>Hypericum tetrapterum</i>	R	R	R	R	R	C	R	C	R	R
Star Thistle	<i>Centaurea calcitrapa</i>	R	R	R	R	R	P	R	C	C	C
Stemless Thistle	<i>Onopordum acaulon</i>	R	R	R	R	R	P	R	C	R	C
Stinkwort	<i>Dittrichia graveolens</i>	R	R	R	R	R	C	R	C	R	R
Sweet Briar	<i>Rosa rubiginosa</i>	R	C	C	C	C	C	C	C	C	C
Tangled Hypericum	<i>Hypericum triquetrifolium</i>	S	S	S	S	S	S	S	S	S	S
Thorn Apple (Common)	<i>Datura stramonium</i>	R	C	R	C	R	C	C	C	C	R
Thorn Apple (Long-spine)	<i>Datura ferox</i>	R	C	R	C	R	C	C	C	C	R
Thorn Apple (Recurved)	<i>Datura innoxia</i>	R	C	R	C	R	P	C	C	P	R
Topped Lavender	<i>Lavandula stoechas</i>	R	R	R	R	R	R	R	C	R	R
Tree of Heaven	<i>Ailanthus altissima</i>	R	R	R	C	R	C	C	C	C	C
Tufted Honeyflower	<i>Melianthus comosus</i>	R	R	R	R	R	C	C	R	C	R
Tutsan	<i>Hypericum androsaemum</i>	R	R	R	R	R	C	C	C	C	C
Variegated Thistle	<i>Silybum marianum</i>	R	R	R	R	R	C	C	C	C	C
Viper's Bugloss	<i>Echium vulgare</i>	R	R	C	C	C	C	C	C	C	C
Wakame Seaweed	<i>Undaria</i>	F	F	F	F	F	F	F	F	F	F
Water Hyacinth	<i>Eichhornia crassipes</i>	S	S	S	S	S	S	S	S	S	S
Wheel Cactus	<i>Opuntia robusta</i>	C	C	C	R	R	P	R	C	R	R
Wild Garlic	<i>Allium vineale</i>	C	C	C	R	R	R	P	C	R	R
Wild Mignonette	<i>Reseda luteola</i>	R	R	R	R	R	R	R	R	R	R
Wild Teasel	<i>Dipsacus fullonum</i>	R	R	R	R	R	C	R	C	C	R
Wild Watsonia	<i>Watsonia meriana</i> var. <i>bulbillifera</i> (gazetted as <i>W. meriana</i> 'Bulbillifera')	R	R	R	R	C	C	R	C	C	C
Willows*2	<i>Salix</i> spp. *2	R	R	R	R	R	R	R	R	R	R
Common Name	Scientific Name	Mallee	North Central	Wimmera	Glenelg-Hopkins	Corang-amite	Port Phillip	Goulburn Broken	North East	West Gipps-land	East Gipps-land

Key to symbols in the table of declared weeds

S = State Prohibited P = Regionally Prohibited C = Regionally Controlled R = Restricted

F = Fisheries Act Noxious Aquatic Species

*1 Branched broomrape is also a declared exotic disease under the *Plant Health and Plant Products Act 1995*.

*2 Except *Salix alba* var. *caerulea*, *Salix alba* x *matsudana*, *Salix babylonica*, *Salix X calodendron*, *Salix caprea* 'Pendula', *Salix matsudana* 'Aurea', *Salix matsudana* 'Tortuosa', *Salix myrsinifolia* and *Salix X reichardtii*.

Strategic Approach

The Victorian government has adopted a strategic approach in the management of the risks posed by weeds. This is outlined in Victorian Pest Management – A

Framework for Action and applied in Regional Weed Plans (RWPs). Priority is given to:

- State Prohibited Weeds and weeds of regional significance, as determined by CMAs. The RWPs detail principles and approaches for weed

management and describe goals and actions for the region.

- Prevention and early intervention as the most cost effective means of weed management.
- Supporting community action that is based on a planned, long-term, integrated approach to land management and which results in public benefit.

Complying with the Catchment and Land Protection Act

Provisions of the CaLP Act are enforced by DPI Pest Management Officers. Priority for enforcement is given to the species and locations determined to be of greatest importance by the CMA in each Region.

Property owners who do not eradicate a Regionally Prohibited weed or prevent the growth and spread of a Regionally Controlled weed for which they are responsible, may be issued with a Land Management Notice or Directions notice that requires specific control work to be undertaken. Failure to comply with the conditions of a Notice may result in court action and fines of over \$25,000 or the issuing of an infringement notice and fine.

The Minister may declare an area of land to be a priority area for the control or eradication of any Regionally Prohibited or Regionally Controlled weed. The declaration will be published in the Government Gazette, a newspaper circulated in the area specified in the notice and may be sent to each landowner. A landowner within the specified area who fails to comply with the requirements outlined, can face court proceedings with fines up to \$2,200 or an infringement notice.

On expiry of a notice, the landowner must notify DPI within seven days in writing of the measures taken to comply, or if no measures were taken, the reason as to why. A landowner who fails to notify DPI can face legal proceedings and a fine of up to \$1,100.

Under the CaLP Act, DPI can also restrict the movement of grain, fodder, equipment or animals that are likely to spread noxious weeds. In the case of State Prohibited weeds, DPI can direct a land owner to prevent the growth or spread of the weed.

There are no legal requirements to eradicate or control Restricted Weeds growing on land, however Restricted Weeds can not be traded, transported or spread in Victoria.

Sections 70,70A and 71 of the CaLP Act for all declared noxious weeds, irrespective of category or Region, prohibits the:

- Movement from land on to a road of: –
 1. Vehicles and trailers used for carrying, moving or transporting hay, grain, fodder or livestock,
 2. Vehicles used for carrying, moving or transporting machinery or equipment for road and utility building or maintenance,
 3. Machinery, implements or other equipment without first taking precautions to ensure the vehicle and equipment is free from noxious weed seeds and

any other part of a noxious weed that is capable of growing (weed propagules).

- Purchase, sale, offering for sale or purchase, and possession for the purpose of sale, of a noxious weed or their propagules.
- Removal or sale of soil, sand, gravel or stone which comes from land on which a noxious weed grows, or contains or is likely to contain any part of a noxious weed.
- Removal or sale of fodder or grain containing noxious weed propagules.
- Sale, hire, or offering for hire of a substance or machine for use in primary production that contains noxious weed propagules.
- Sale of an animal carrying seeds of a noxious weed, except directly to an approved meat processing facility.
- Transport of a noxious weed or its propagules within Victoria.
- Deposition on land of a noxious weed or its seeds.
- Displaying a noxious weed or any part that is capable of growing.
- Planting or propagating of a noxious weed, seeds or its propagules within Victoria.
- A person to wilfully bring into Victoria a noxious weed or its propagules or cause to it to be brought in.

Offenders can be required to remove the weed from any infested goods, or destroy the weed at the cost of the offender. Infested goods can be impounded. Noxious weeds possessed illegally or being offered for sale can be seized. Offenders face court actions and fines of up to \$13,000.

Permits that allow a specifically prohibited activity may be granted if special circumstances apply.

Further Information

Please contact your local DSE/DPI office or call the Customer Service Centre on 136 186. Your local Pest Management Officer can also provide detailed information and advice on weed management.

This note is updated from time to time, please ensure you have the latest version. This Landcare note can be downloaded from <http://www.dpi.vic.gov.au/notes>

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APPENDIX 6 MONITORING PROFORMA

Management Zone	
Year	
Responsible Person and Assessor	
Objective and how was it measured	

Activity	Description	Timing	Completed (yes/no and date)	Comments