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CORPORATE PROCEDURE

Environmental Standard Brief

**REVEGETATION PLAN**

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#### REVISION STATUS RECORD

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| **Revision No.** | **Revision Date** | **Description of Key Changes** |
| 1 | Aug 06 | Revision of section 4 requirements  Minor text changes in section 2 scope to clarify requirements  Revision of attachments |
| 2 | 01/08/14 | The title of the brief was changed to align with the requirements of the two State-wide Purpose Clearing Permits CPS818 and CPS817. The project revegetation plan report checklist and references to landscaping works were removed. Update to ensure compliance with conditions of CPS818 and CPS817 and to meet DER revegetation plan requirements and guidelines. Update to document format and appendices, inclusion of amended Revegetation Plan Checklist. |
|  |  |  |
|  |  |  |

**ABOUT THIS STANDARD BRIEF**

Environmental standard briefs provide the basic technical specification for engagement of suitable consultants. The document will require editing to meet the individual requirements of each project site or revegetation site.

Advisory comments are included within this template and are shown as:

*Red italics* - *guidance notes to be read and deleted.*

Blue non-italicised - add relevant information, choose one of the selected options or provide information on the results once a task has been completed. Remove blue text or keep text and change font colour to black as relevant. If it was determined that the specific aspect is not relevant, this should be stated.

Black non-italicised - standard report information to be included in the Revegetation Plan (RP).

The first four pages of this document should be deleted once the standard brief has been completed. The footer and the title of the standard brief will need to be amended to include the name of the proposed project or name of the revegetation project. For advice in preparing this RP consultant standard brief, please contact the Environment Branch.

**Application**

This document has been developed to provide assistance with preparing a consultant brief for areas requiring revegetation. The RP consultant brief should be used by Main Roads WA (Main Roads) for projects that require revegetation as part of compliance with the conditions of the State-wide purpose clearing permits issued to Main Roads, either CPS 818 or CPS 817. The brief may also be used to produce a RP for project specific permits that require revegetation activities or for offsets proposals involving revegetation activities.

In order to comply with the conditions of CPS818 and CPS817, the RP must be designed by an environmental specialist. The RP must include a pre-clearing vegetation assessment, site preparation, species selection, vegetation establishment, weed control, dieback management (if relevant), completion criteria, monitoring, timeframes for completion of revegetation activities, contingency measures, revegetation reporting and roles and responsibilities for implementation of the plan. The RP should be completed to meet the requirements of the Department of Environment Regulation (DER). The RP may require modification following review by the department and a modified RP will require re-submission to the DER. An amended RP will then need approval by the DER prior to clearing native vegetation from the area that is to be revegetated or rehabilitated.

When native vegetation clearing is undertaken using CPS817 the RP should be submitted to the DER either prior to or during or immediately after native vegetation clearing. When clearing is undertaken using CPS817, the RP does not require approval by the DER prior to clearing. The Revegetation Plan Checklist provided in Appendix F should be completed by the author of the RP once the plan is finalised.

As part of compliance with the conditions of CPS818 and CPS817, an RP is not required when the area to be revegetated or rehabilitated is:

* 0.5 hectares or less,
* not located in an Environmentally Sensitive Area,
* is either not or not likely to be at variance with all of the ten clearing principles identified in Schedule 5 of the *Environmental Protection Act (1986)*.

These areas will still require revegetation or rehabilitation as required for best practice environmental management.

This brief is intended for use by an Environment Officer to engage a suitably qualified consultant with demonstrated experience in planning revegetation activities associated with road projects.

**Related Main Roads** **Documents**

The Revegetation Plan must be developed having regard to the Main Roads:

[*Revegetation Planning and Techniques Guideline*](file://mrwa.wa.gov.au/dfsroot/MyDocs-DAC/c4515/Desktop/Revegetation%20Planning%20and%20Techniques%20Guideline.DOC)*,*

[*Revegetation Topsoil Management Guideline*](http://iroads/FormsAndDocuments/OnlineDocuments/_layouts/MainRoads.iRoads/DocumentUrl.aspx?ListId=%7b8FA98B61-6A15-4635-9469-72AD8E4C5337%7d&ItemId=1025)*;*

[*Project Revegetation Plan*](http://trimwebdrawer/webdrawer/webdrawer.dll/webdrawer/rec/5044824/view)*,*

[*Vegetation Placement Within the Road Reserve*](http://iroads/FormsAndDocuments/OnlineDocuments/Lists/Online%20Documents/DispForm.aspx?ID=146)*.*

**Related Environmental Guidelines**

The Department of Environment Regulation guideline:

[*A guide to preparing revegetation plans for clearing permits.*](http://www.der.wa.gov.au/images/documents/your-environment/native-vegetation/Guidelines/A_guide_to_preparing_revegetation_plans_for_clearing_permits.pdf)

Consultant Brief

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#### Consultant Brief

**<insert Revegetation Plan name>**

# INTRODUCTION

**Project Purpose**

Briefly describe the project (e.g. new road, road widening, road realignment, bridge construction, intersection upgrade, borrow pits), to which the revegetation activities relate. Include the project components (material extraction areas, principle shared paths), project objectives and project location (road, road section, suburb/town, SLK start and finish, local government authority).

Provide some brief details regarding when the road project will proceed (or how the project will proceed if staged). Identify whether native vegetation is to be cleared and the amount of native vegetation to be cleared in hectares. Identify whether the vegetation to be cleared is temporary clearing.

Include a brief statement to describe why the revegetation project (and RP) is required (For example, to revegetate cleared areas as part of an approval condition).

*Clearly state the name of the revegetation project as the revegetation project is to be referred to in the RP. If the revegetation is required as part of a road project, ensure the name of the RP relates to the road project.*

*Concisely describe the road project to which the revegetation or rehabilitation relates or outline the aim of the revegetation plan if a stand-alone revegetation project. Mention any relevant previous revegetation activities located in the area.*

*Describe any factors that may influence the revegetation activities and outcomes.*

*Provide as many details as possible to assist the consultant to develop the RP.*

Main Roads Western Australia (Main Roads) requires a Revegetation Plan (RP) for the project described above. The purpose of the RP is to provide an overarching plan to manage revegetation at the site. The plan includes site preparation, weed control, regeneration, direct seeding or planting, a vegetation establishment period, revegetation success completion criteria, remedial actions, ongoing maintenance and monitoring of the area to be revegetated, timeframes for completion of revegetation activities and management commitments that will be achieved. The RP is required to comply with the conditions of <CPS818> <or insert CPS817> < or insert project specific permit number> and meet the requirements of the Department of Environment Regulation (DER). The RP will be used to implement, manage and monitor revegetation activities at the <insert project site> <or insert revegetation site>.

End with a concise statement identifying the purpose of the revegetation project.

*Note: If the Revegetation Plan is being used for a project specific permit or as part of an offset proposal adapt the information in the paragraph above and throughout the brief accordingly>.*

*Include one of the paragraphs below if revegetation is required for temporary clearing using either CPS818 or CPS817.*

The RP must be provided to the DER for approval prior to clearing native vegetation from the area that is to be revegetated and rehabilitated as part of the requirements of CPS 818. The RP must be reviewed by the Main Roads’ Environment Officer, followed by approval through the Main Roads Central Review and Submission Process (CRSP). The RP will then be submitted to the DER. If it is necessary to modify the RP once reviewed by the DER, then the modified RP must be re-submitted to the department for approval. The consultant must allow for review and revision of the RP by the DER until the RP is approved. Submission of a comprehensive RP to the DER is therefore important to limit the need for further modifications of the plan and delays to project delivery.

**OR**

When CPS817 is used to undertake native vegetation clearing, the RP should be provided to the DER under specified circumstances prior to clearing native vegetation from the area that is to be revegetated and rehabilitated.

*Note: Under CPS817 a RP is not required if the area to be revegetated and rehabilitated is less than 0.5 hectares, not located in an ESA and an area where the clearing is not at variance with one or more of the Clearing Principles.*

## Project Background

*Include this section if relevant, otherwise remove.*

Provide some background information of the project (i.e. briefly describe the history of the project and previous revegetation that was undertaken in the area and when this was undertaken, if applicable. Outline how the current revegetation project will fit into previous revegetation undertaken).

## Revegetation Requirements

*Describe in detail why revegetation is required.*

*Refer to the permit conditions the revegetation activities are meeting. For example:*

* *Condition 13 (a) of CPS818/11 for temporary works; or*
* *As an offset for Condition 13 of CPS818/11 utilising the Department of Environment Regulation’s offset calculator; or*
* *Revegetating within 28 days of clearing for an unplanned event under Condition 10 of CPS817/5, etc.*

*Outline when the revegetation will commence and related information. (e.g. land may need to be acquired or further consultation should occur).*

*Outline what will occur following the end of the 5 year revegetation monitoring period on MRWA land or other lands.*

# 

# Road Project Location

The road project clearing area is located on <insert road name>, section or Lot No, suburb/town, SLK start and finish and local government authority.

Describe the full extent of the proposed road works including temporary access tracks, material pits, connecting roads, pedestrian and cycle ways, turning pockets, passing lanes, laydown areas, site office (if relevant). Label the major roads and minor roads (if necessary) located adjacent to the project area to assist the consultant in identifying the area.

Include the MGA reference, Latitude and Longitude.

The location and project area are shown in Figure 1 *(insert project location and project area on a map to be provided on the following page. Ensure all figures are full page, legible, of suitable quality, include a north point, scale bar and legend).*

<insert Figure 1- Road Project Location Map - Insert name of project>.

*In Appendix A, include three or four site photographs of the project area if this may be useful to the consultant.*

# location of revegetation Area

*Describe the location of the revegetation area(s)* <revegetation area(s) are within X km radius of the project area and/or Lot No. X or describe parcel of land if revegetation is required for the development of an Offset Proposal>. *If the revegetation area is not located within or near the road project area, clearly describe where revegetation will take place.*

*Include which side of the road (N, S, E or W) and all SLK ranges.*

*Provide an estimate of the centre point of the revegetation areas.*

Include the MGA reference, Latitude and Longitude

The location of the revegetation area <areas> is <are> shown in Figure 2 *(insert project location(s) and project area(s) on a map to be provided on the following page. Amend as appropriate. Ensure all figures are full page, legible, of suitable quality, include a north point, scale bar and legend).*

<Insert Figure 2- Location of Revegetation Areas - Insert name of project or name of revegetation if activities are not related to a road project>.

# Project Scope

The consultant shall undertake desktop and fieldwork as required to prepare a RP for the <insert proposed road project> or *<* insert revegetation project, if revegetation does not relate to a road project>.An initial site assessment to determine the existing environment of the project area / revegetation area is required to be undertaken by the consultant.

The consultant will include the following items in the RP:

* Provide summary details of the revegetation location, purpose and objectives;
* Provide summary details of the road project purpose, background and location;
* Provide a description of the vegetation that is being cleared using survey data or a site visit and desktop assessment results (include vegetation type, extent using Shepherd *et al,* 2001 and vegetation condition using Keighery, 1994);
* Provide a brief description of the vegetation representation in the project area using Beard vegetation associations, (Government of Western Australia, 2013),
* Provide a description of soil type, topography and other relevant attributes within the project area;
* Provide a general description of the revegetation area and include site history, current land use, adjoining land use, access to the site, site factors that need to be addressed (e.g. compaction);
* Include a comprehensive description and map of revegetation area(s),
* Include an objective of the revegetation (include how the plan addresses the clearing principles being impacted as part of project clearing if the RP is being used as part of an Offset Proposal);
* Use the DER’s Offset Calculator when revegetation activities are required to be undertaken using CPS818 <or insert CPS817>;
* Outline the rehabilitation approach to include a pre-clearing vegetation assessment, site preparation, species selection, vegetation establishment, weed control and dieback management, if relevant;
* Submit revegetation completion criteria based on the pre-clearing vegetation assessment and using the SMART principles (include species diversity, plant density, plant composition, plant structure and weed cover) as identified in table X;
* Outline revegetation monitoring activities and methodology used to determine whether completion criteria have been achieved and whether contingency measures are required;
* Provide a revegetation timeline and an outline of management actions required using table X provided in Appendix X;
* Outline contingency measures that will be implemented, when revegetation monitoring identifies that completion criteria are not being met;
* The RP will include the roles and action areas of those persons responsible for implementation of revegetation activities using table X.

*Edit the information above as required/add to suit project requirements.*

# Implementation Plan

The consultant will include the following components in the RP:

## Pre-clearing Vegetation Assessment

Prior to native vegetation clearing commencing the consultant will undertake a preliminary survey of the project/revegetation area(s) (via quadrats, transects and / or photo point monitoring) to enable realistic and justifiable completion criteria to be determined (Appendix A). The survey will focus on broad vegetation condition and vegetation structure determination, counts of species composition and an estimate of the percentage of weed cover present. This data is the baseline data used to determine and justify the nominated completion criteria (refer Section 3).

The consultant will need to detail the methodology used to complete the preliminary survey. (For example; quadrat or transect sampling, number of quadrats and size, length of transect etc.).

## Site Preparation

The consultant will provide relevant details regarding the necessary site preparation needed. Site preparation may include removal or respreading of soil, soil improvement, soil erosion control, earthworks, management of surface water, rubbish and weed control etc.

## Species Selection

The consultant should identify how the plant species selection list was developed (e.g. A list of species formulated using species located within the vicinity of the road project area or by undertaking research to produce a suitable target seed mix or using representative species to address specified Clearing Principles).

Precedence should be given to sourcing seed from local provenance stock (within 50-100km) of the revegetation area.

A list of suitable plant species located in the vicinity of the revegetation area(s) should be provided in Appendix B of the RP. (Note: this list may be from online databases such as the Department of Environment and Conservation (DEC) Naturemap Plant Species List or Florabank).

*Note: If the area that is being revegetated is different to the vegetation that is being cleared, the consultant should detail the reasoning for revegetating using a different vegetation type to that which has been cleared.*

The species list determined for revegetation area(s) should be provided in Appendix C of the RP *(or as a separate attachment if a large document)*.

*Note: For the northern and eastern regions of Western Australia and areas with variable rainfall patterns (for example; Kimberley, Pilbara, Goldfields-Esperance) species selection is not required at this stage as the revegetation method is the respread of topsoil and stockpiled vegetation only. Species selection will be required as a contingency measure if the respreading of topsoil does not meet the completion criteria. The consultant should develop a species list in the event that respread of topsoil does not meet the completion criteria.*

## Vegetation Establishment

The consultant should detail the necessary activities required to achieve vegetation establishment. Methods used for revegetation through natural regeneration should be included, if applicable. If natural revegetation will be used, a description as to why this method will be used should be provided in the RP.

With the exception of areas using natural revegetation, the RP should include information on seedlings planted in month(s)/year at density of X stems / hectare OR direct seeding in months(s)/year at a rate of X kilograms of seed/hectare. Details of whether a combination of planting and direct seeding will occur should be provided in the RP.

## Weed Control

The RP should include details of the methods used to minimise the risk of introduction and spread of weeds. The consultant should detail the weed control methods, locations and timing to be employed to manage weeds at the revegetation area(s).

## Dieback Management

The RP should outline whether dieback management is needed for the revegetation area(s).

The consultant will detail the necessary hygiene measures to be implemented in dieback susceptible areas to manage and prevent the potential introduction of pathogens including dieback into revegetation areas.

When revegetation activities are undertaken using State-wide Clearing Permits CPS818 or CPS817, specified management actions will need to be undertaken. These include the following:

* All machinery, plant and equipment shall be free of soil and vegetative matter prior to entering the road reserve and when leaving the site,
* No entry will be permitted to vegetated areas outside of the road reserve boundary,
* The movement of soil shall be avoided in wet conditions,
* Road building materials or mulch provided from offsite areas and used in the revegetation area must be sourced from locations uninfested with dieback,
* Restrict the movement of machines and other vehicles to the limits of the extent of the revegetation area.

*Note: When CPS818 and CPS817 will be used for revegetation activities and if movement of soil is necessary in conditions other than dry conditions, a dieback management plan must prepared, implemented, adhered to and developed in consultation with the Department of Parks and Wildlife (DPaW).*

# completion criteria

The RP must include specified completion criteria to determine the success of revegetation activities. The five completion criteria are to be based on the pre-clearing vegetation assessment. The completion criteria will include species diversity, vegetation density, vegetation composition, structure and weed cover. The consultant should provide details of the completion criteria in Table X for inclusion in the RP. Performance against the completion criteria targets will determine if contingency measures are required. Completion criteria must be consistent with the SMART principles outlined below:

**Specific**: what will be achieved is clearly defined.

**Measurable**: is there a way of measuring what will be achieved?

**Achievable**: is the objective realistic given the resources available?

**Relevant**: is the objective relevant to the vision for the revegetation?

**Time-bound**: is there a realistic and feasible time by which the objective is to be met?

Table X will need to be amended for each cell or zone in the revegetation area if there is likely to be significant variability across the site.

The consultant shall justify targets used, for example no over storey vegetation (i.e. no trees) in areas of the road reserve for the purpose of promoting road safety. The use of frangible vegetation is necessary in the road reserve for road safety purposes. Revegetation within the road reserve shall be consistent with Main Roads Guideline ‘Vegetation Placement within the Road Reserve’. Revegetation activities will minimise maintenance and protect the integrity of the road asset.

**Table X – Completion criteria for target species, composition and structure**

|  |  |  |
| --- | --- | --- |
| **Criteria** | **Target for 20xx (allow for min 5 years)** | **Justification of Target** |
| Species diversity | *e.g. total of xx species, xx% of species list with a minimum composition of x native species per monitoring quadrat* | *The species diversity was chosen to best match adjacent vegetation type* |
| Vegetation density | *e.g. xx stems/hectare, xx% survival rate* | *Density target was chosen to best represent the Beard Vegetation Association in excellent (Keighery, 1994) condition.* |
| Vegetation composition | *E.g. native species consistent with mapped Beard Vegetation association/type XX after XX years (Shepherd et al, 2001).* |  |
| Structure | *e.g. 20% over storey, 70% mid-storey, 10% understorey* |  |
| Weed cover | *e.g. < 30% cover* | *Limit weed cover as much as practical given surrounding weed invasion* |
| *<insert other relevant criteria specific to the project>* |  |  |

*Note: the table above may be amended as required in the RP. However, all five completion criteria must be addressed as a minimum. Targets can be set for individual years or set for assessment as a final year target (e.g. Fencing to be completed within 6 months of initial planting or 50% weed cover first year 40% second and 30% third etc.).*

# monitoring

Monitoring of the revegetation area will determine if completion criteria have been achieved and if contingency measures are required. The methodology for monitoring will involve onsite visual assessment/s to determine whether revegetation has been implemented as planned and that completion criteria have been met as outlined in Table X. The parameters used to monitor revegetation success include: species diversity, vegetation density, vegetation composition, vegetation structure and weed cover. The DER requires a minimum of five years for monitoring and maintenance of revegetation activities.

The consultant is required to provide details of the revegetation monitoring methodology. For example:

* The number of on-site visual assessment to be completed,
* The location of photo monitoring points,
* The number and location of quadrats measuring for density, diversity and weed cover,
* The timing of proposed monitoring.

# revegetation timeline

The RP shall include details outlining the revegetation management actions, responsible persons and a proposed timeline using table X in Appendix E.

# contingency measures

Where monitoring provides information that the completion criteria (refer Section 3) are not being met then the RP shall provide contingency measures that will be undertaken, until the completion criteria are met.

# Stakeholder Consultation

*Edit this section as necessary. The information in Section 7 will need to reflect whether or not the consultant should complete stakeholder consultation or whether Main Roads will undertake this task*. *If Main Roads will complete stakeholder consultation, relevant correspondence including evidence of consultation if available (e.g. formal correspondence) should be provided to the consultant for inclusion in the RP. Details of stakeholder consultation undertaken by Main Roads should be provided to the consultant (for e.g. consultation dates and comments) so that Table X below can be completed.*

Details of stakeholders who were consulted during the preparation of this RP should be provided in Table X. Correspondence relevant to the preparation of this RP will need to be included in Appendix D.

**Table X – Stakeholder Consultation**

|  |  |  |  |
| --- | --- | --- | --- |
| Name of Stakeholder | Organisation | Comments | Consultation Date |
|  |  |  | (day/mth/yr) |
|  |  |  |  |
|  |  |  |  |

The consultant should provide details of further stakeholder consultation that is required prior to implementation of the RP, if relevant.

*Note: Public consultation is not to be undertaken by the consultant.*

# Reporting

The consultant shall outline details of the reporting required as part of implementation of the RP. A revegetation activities and site assessment report outlining the revegetation activities and results of the monitoring for the revegetation sites will be prepared annually. The report will be submitted to DERby 30 June each year for revegetation works completed in the period 1 January to 31 December the preceding year.

# Responsibilities

The RP will outline areas of responsibility and the role of Main Roads employees for implementation of the revegetation plan, monitoring and reporting of actions. These details should be provided in Table X, Responsibility for Revegetation Activities.

**Table X – Responsibility for Revegetation Activities**

|  |  |  |
| --- | --- | --- |
| **Role** | **Actions Responsible For** | **Contact Name** |
| Regional Environment Officer | *Revegetation implementation, record keeping and internal reporting* |  |
| Roadside Vegetation Maintenance Officer | *Monitoring revegetation works and undertaking contingency measures* |  |
| Manager Environment | *Reporting externally ( annual reporting required as part of CPS818)* |  |
| Project Manager | *Transfer of land ownership, machinery operation.* |  |
| *Insert Others as required* | *Define action responsible for* |  |

# General Requirements For the Revegetation Plan

The RP should contain the standard components as well as the necessary sections outlined above in the scope of this brief.

The consultant will include the following figures in the report as a minimum:

* Project location map (include main roads/highways/minor roads, suburb/town, project area and related locational information) <include if revegetation relates to a road project, otherwise delete>;
* Map(s) clearly identifying all the areas to be cleared <include when revegetation is needed as part of project activities>;
* Map(s) identifying the existing vegetation, vegetation complexes and the condition of native vegetation located at the project site using Keighery, 1994;
* Map(s) showing all areas that require revegetation or regeneration activities as relevant;
* Aerial photography of the revegetation area(s);
* Each figure to be full page, legible, of a suitable quality and include a figure title, figure number, legend, scale bar and a north arrow and overlaid on aerial imagery.
* *Insert other figures considered necessary for the RP.*

# deliverables

The consultant will present a comprehensive RP to meet the following requirements:

<Insert number> draft report(s) will be submitted to the Environment Officer/Project Manager for comment. Comments are to be incorporated in the final report to the satisfaction of the Project Manager. The draft report(s) shall be provided to Main Roads in <insert electronic or hard> copy format.

*Include the format of reports required as draft if preferred*. *For example; draft report(s) are to be provided in Microsoft Word format.*



A <insert number> final report(s) shall be provided to Main Roads in <insert electronic or hard> copy format.

The consultant will provide an ESRI shapefile of the revegetation area <or insert offset proposal area> as required as part of recording conditions of CPS 818 and CPS 817. The shapefile will need to be provided to the DER as part of the permits annual reporting conditions.

The Revegetation Plan Checklist provided in Appendix F should be completed by the author of the RP once the plan is finalised.

*Customise number and format of reports, as required.*

# schedule

The consultant will attend the following meetings and undertake the reporting in accordance with the following reporting schedule:

**Table X Indicative Reporting Schedule**

|  |  |
| --- | --- |
| **Item** | **Timeline** |
| Start – up meeting | <insert indicative date> *e.g. 30 December 2014* |
| Progress meeting <if required> | <insert indicative date> |
| <insert meetings, as required> | <insert indicative date> |
| Submit 1st draft report | <insert indicative date> |
| <insert Submit 2nd draft report, if required> | <insert indicative date> |
| Submit final report | <insert indicative date> |

*Amend the schedule above as required.*

# Information to be provided by Main Roads

The following information will be made available and provided upon request to the successful consultant:

* *ESRI shapefile in GDA94 format of project area(s) / revegetation area(s);*
* *Relevant plans, photos, reports or electronic data.*

*Nominate whether information is to be returned at the completion of the study.*

Main Roads Project Contact

Name: <Insert Name>

Position: <Insert Position>

Contact Number: <Insert Phone number>

Email Address: <Insert Email>

# References

Beard, J.S (1990). *Plant Life of Western Australia*. Kangaroo Press. Kenthurst, NSW.

Department of Environment Conservation. (2014). *NatureMap: Mapping Western Australia's Biodiversity*. Department of Parks and Wildlife. Accessed <insert date> from: http://naturemap.dec.wa.gov.au/

Department of Environment Regulation. (2013). *A guide to preparing revegetation plans for clearing permits under Part V of the Environmental Protection Act 1986.* Department of Environment Regulation; Perth, WA. Accessed <insert date> from: <http://www.der.wa.gov.au/images/documents/your-environment/native-vegetation/Guidelines/A_guide_to_preparing_revegetation_plans_for_clearing_permits.pdf>.

Government of Western Australia. (2013). *2013 Statewide Vegetation Statistics Incorporating the CAR Reserve Analysis (Full Report). Current as of June 2013.* Department of Parks and Wildlife, Perth, WA.

Keighery, B. J. (1994). *Bushland Plant Survey: A Guide to Plant Community Survey for the Community.* Wildflower Society of WA (Inc.). Nedlands, WA.

Main Roads WA (2003). *Environmental Guideline, Vegetation Placement Within the Road Reserve. Document No. 6707/022.* Main Roads WA, Perth, WA.

Main Roads WA (2004). *Environmental Guideline, Revegetation Planning and Techniques. Document No. 6707/031.* Main Roads WA, Perth, WA.

Main Roads WA (2013), *Environmental Guideline, Revegetation Topsoil Management. Document No. 6707/053*. Main Roads WA, Perth, WA.

Shepherd, D. P., Beeston, G.R., and Hopkins, A. J. M. (2001). *Native Vegetation in Western Australia, Technical Report 249*. Department of Agriculture, South Perth, WA.

**APPENDIX A Pre-Clearing VeGETATION assessment**

*Main Roads should supply site photos if possible. If the consultant is required to complete the pre-clearing vegetation assessment, edit this information to reflect this.*

*Note: Photos of the pre-clearing vegetation condition will assist in the assessment of completion criteria for revegetation activities. Remember when editing or removing the Appendices to rename the appendices and update the TOC on page 5.*

|  |  |
| --- | --- |
| 12 | 5 |
| *Photo 1. Looking north in Passing Lane 1. Area in predominately excellent (Keighery, 1994) condition. Area represents Banksia woodland consisting of Banksia attenuata, Banksia sessilis (parrot bush), Eucalyptus todtiana (blackbutt), Macrozamia riedlei, Acacia pulchella (prickly moses), and Petrophile and Xanthorrhoea species. Limited weed presence.* | *Photo 2. Looking south in Passing Lane 2. Area in completely degraded (Keighery, 1994) condition. Scattered Eucalyptus todtiana (blackbutt) trees. Understorey includes Petrophile species. Heavy weed presence.* |

**appendix B Plant SPECIES LIST**

DEC NATUREMAP PLANT SPECIES LIST

Search: xx km radius of coordinates xx E xx S for Kingdom Plantae

**Appendix C** **Target plant species list for revegetation**

*The consultant should prepare a table identifying how plant species will be sourced. The quantity is by tube stock numbers or seed weight.*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Species Name** | **Quantity** *(no.’s or g)* | **Type** *(overstorey, midstorey or understorey)* | **Species name** | **Quantity** *(no.’s or g)* | **Type** *(overstorey, mid or under)* | **Source** |
| *Acacia acuminata* | *41* | *Mid* | *Eucalyptus orthostemon* | *164* | *Overstorey* | *ABC nursery* |
| *Acacia erinacea* | *205* | *Mid* | *Eucalyptus salicola* | *164* | *Overstorey* | *XYZ seed supply* |
| *Etc.* |  |  |  |  |  |  |
|  | *TOTAL no. seedlings* | *5000* |  |  |

**Appendix D Stakeholder Correspondence**

*Edit Appendix D, as needed to reflect whether or not the consultant should complete consultation with stakeholders or whether Main Roads will undertake this task.*

*Use the following text:*

*The consultant may insert copies of correspondence with relevant stakeholders undertaken as part of the preparation of this RP. Include letters from stakeholders or concise email correspondence. If no correspondence was undertaken or is not required, remove this appendix and update the TOC on page 5. Be sure to adjust the letters corresponding to each Appendix accordingly.*

***Or***

*Main Roads will undertake consultation with a range of stakeholders as required and if necessary for the development of the RP. Evidence of stakeholder consultation undertaken by Main Roads shall be provided to the consultant for inclusion in the RP.*

***Note: Public consultation is not to be undertaken by the consultant.***

**Appendix E Management Action Timeline**

Management actions outlined in Table X will be undertaken, where appropriate and required, for the revegetation site.

The consultant shall adjust the table contents as required and remove sections if not applicable to the RP.

Table X: Further management actions for <revegetation plan name>

| **Topic** | **Action** | **Responsibility** | **Timing** |
| --- | --- | --- | --- |
| Pre-clearing vegetation | *For eg. Conduct a preliminary survey (via quadrats, transects and / or photo point monitoring) to determine vegetation baseline data to assist with completion criteria development.* | <insert role of responsible person> | <Month / year format> |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
| Site Preparation |  |  |  |
| Cleared vegetation |  |  |  |
|  |  |  |
|  |  |  |
| Topsoil |  |  |  |
|  |  |  |
|  |  |  |
| Vegetation Establishment |  |  |  |
| Dieback Management Plan |  |  |  |
| Weed control |  |  |  |
|  |  |  |
| Monitoring |  |  |  |
| Contingency measures |  |  |  |
| Machinery and earth moving equipment |  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
| Fire management |  |  |  |
| Rubbish removal |  |  |  |
| Access |  |  |  |
| Fauna habitat |  |  |  |
|  |  |  |
| Pest and other fauna control |  |  |  |
|  |  |  |
| Transfer land ownership and /or management |  |  |  |
|  |  |  |
| Record keeping |  |  |  |

**Appendix F Revegetation Plan Checklist**

*Note: the checklist will need to be completed by the consultant, once the RP is complete.*

|  |  |
| --- | --- |
| **Name of Checklist Assessor:** |  |

**Section 1 – Permit and clearing details**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **CPS No.** |  | | | **Permit Holder/Applicant:** | | Main Roads WA | |
| **Project Name:** | | | | |  | | |
| **Main Roads’ WA Region:** | |  | | | | **Proposed clearing amount (ha’s):** |  |
| **Clearing purpose:** | | |  | | | | |

**Section 2 – Revegetation site details and objectives**

|  |  |  |  |
| --- | --- | --- | --- |
| **Purpose of revegetation (revegetation of temporarily cleared areas or offset site):** |  | **Proposed revegetation amount (ha’s):** |  |
| **Property details of revegetation area:** |  | | |
| **Vegetation assocation/complex/type of revegetation area (include description):** |  | | |
| **Offset reveg only – vegetation condition (Keighery 1994) of revegetation area:** |  | | |
| **Temp clearing revegegation only – vegetation condition (Keighery 1994) of temporary clearing area pre-clearing:** |  | | |

**Section 3 – Stakeholder Consultation / Advice**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Stakeholder** | **When to seek advice** | **Advice required (Y/N)?** | **Date request sent**  **(Day/mth/yr)** | **Date response received**  **(Day/mth/yr)** | **Issues identified (Y/N)?\*** |
| DPaW Region | Revegetation within DPaW managed land |  |  |  |  |
| DPaW Species & Communities | Revegetation associated with significant flora, fauna, wetlands or ecological communities |  |  |  |  |
| Bush Forever | Revegetation within a Bush Forever site |  |  |  |  |
| <insert stakeholder> | <insert relevant aspect> |  |  |  |  |

\*If issues are identified please discuss in the relevant area of Section 4 of the checklist.

**Section 4 – Review of Revegetation Plan**

*Note: The ‘black filled’ boxes do not require a Y/N response, but do require a response in the comment box. The comment section should be completed by referring to the Section of the RP where the information is located.*

*Nature of the site:*

| **Factor** | **Y/N/?** | **Comments** *(Provide a clear and concise justification as to why the factor was not checked or is not relevant to the RP, if this is the case)* |
| --- | --- | --- |
| Has an adequate map / shapefile of the revegetation area been provided? |  |  |
| Have details of tenure/ ownership/ vesting/ zoning of the land been provided? *Please describe.* |  |  |
| Is land access / zoning etc. likely to be an issue? *If so, please describe.* |  |  |
| What is the historical land use of the site? |  |  |
| List any potentially limiting factors for the revegetation (e.g. soil type, dieback, weeds, salinity, waterlogging, compaction, erosion, feral animals, dumping, illegal access, landform, site dimensions etc.). |  |  |

*Site preparation:*

| **Factor** | **Y/N/?** | **Comments** |
| --- | --- | --- |
| What site preparation is proposed? Please provide brief description (e.g. ripping, scalping, weed control, baiting, stockpiling topsoil & cleared veg etc.) |  | *For e.g. Refer Section 6.2.* |
| Is the site preparation proposed likely to be inadequate (e.g. is it unlikely to overcome any significant limiting factors identified above)? *If so, please describe.* |  |  |
| Is fencing of the revegetation site required (e.g. to prevent stock access)? |  |  |
| If fencing is required is it included as a requirement of the revegetation plan? |  |  |
| Is hygiene management adequately addressed in the revegetation plan and is it specific (where relevant) to the proposed works? |  |  |

*Vegetation establishment:*

| **Factor** | **Y/N/?** | **Comments** |
| --- | --- | --- |
| What is the vegetation establishment method proposed (e.g. natural regeneration, planting, seeding etc.)? |  |  |
| Is this method inappropriate (e.g. is there unlikely to be sufficient seed stored in the topsoil for natural regeneration, is the weed load likely to be too high for natural regeneration/ seeding etc.)? |  |  |
| Is the source of seed identified? |  |  |
| Is the source appropriate? |  |  |
| How many species are included on the revegetation species list? |  |  |
| Will all of these be seeded / planted? If not, what is the minimum number of species that will be seeded / planted? |  |  |
| Is the species list (and/or the list of species that will definitely be seeded/ planted) appropriate (e.g. how was it determined, does it include dominant species from the mapped vegetation type, does it include an appropriate mix of overstorey, midstorey and understorey species, does it include species adapted to the landform of the site etc.)? |  |  |
| What are the minimum seeding/planting rates proposed (e.g. minimum number of stems/kg per hectare, minimum number of species per hectare, minimum composition per hectare)? |  |  |
| Are these appropriate? |  |  |
| Are any additional establishment methods required (e.g. watering transplanted rare flora etc.)? |  |  |
| If so, are the methods described in the revegetation plan appropriate? *Please include a brief description of the methods proposed.* |  |  |

*Completion criteria:*

| **Factor** | **Y/N/?** | **Comments** |
| --- | --- | --- |
| What are the completion criteria proposed (do not include staged targets here only the final criteria)?  Note: Depending on the purpose of the revegetation plan, the following completion criteria should be included as a minimum:   * Species diversity (e.g. total no. species, no. species per hectare etc.) * Density (e.g. no. stems per hectare) * Structure (e.g. 10-30% understorey, 40-80% midstorey, 10-30% overstorey) * Species composition/ evenness/ abundance (e.g. vegetation representative of banksia woodland) * Weed cover |  |  |
| Do the completion criteria relate to the entire period of the revegetation plan or are staged targets included? |  |  |
| Are the completion criteria appropriate (both final targets and staged targets if included)? *If not, include reasons here.* If unknown, include here what further information would be required to assess the appropriateness of the completion criteria (e.g. information regarding the species diversity, density etc. of the area pre-clearing or of similar remnant vegetation nearby). *Describe what information would be required.* |  |  |

*Monitoring:*

| **Factor** | **Y/N/?** | **Comments** |
| --- | --- | --- |
| What monitoring methods are proposed (e.g. photo monitoring, quadrats, transects etc.)? |  |  |
| Is this appropriate for the site (e.g. will it cover enough of the site etc.)? |  |  |
| What will be recorded (e.g. species density, diversity, structure, weed cover etc.)? |  |  |
| Is this appropriate (e.g. will it record the necessary information to allow assessment against the completion criteria)? |  |  |
| What is the proposed frequency of the monitoring? |  |  |
| Is this appropriate? |  |  |
| What is the proposed term of the monitoring? |  |  |
| Is this appropriate (i.e. 5 years minimum)? |  |  |

*Contingency actions/maintenance/remedial actions:*

| **Factor** | **Y/N/?** | **Comments** |
| --- | --- | --- |
| What contingency/ maintenance requirements are identified in the revegetation plan (e.g. weed control, infill planting, pest control etc.)? |  |  |
| Are they triggered by monitoring against the completion criteria? *If not, what are they triggered by?* |  |  |
| What period do they relate to? |  |  |
| Is this appropriate (i.e. 5 years minimum)? |  |  |
| Are they appropriate (e.g. will they address the relevant completion criteria)? |  |  |

*Other:*

| **Factor** | **Y/N/?** | **Comments** |
| --- | --- | --- |
| Is the timing / schedule of the revegetation plan actions appropriate (e.g. timing of site prep, seeding/ planting, weed control, monitoring, contingency actions etc.)? |  |  |
| Is the proposed revegetation funded? |  |  |
| Please describe any other factors that may affect the success of the revegetation as proposed. |  |  |
| Does the revegetation plan need to address any permit specific requirements? *If so please describe/provide comment.* |  |  |

**Section 5 – Summary**

| **Factor** | **Y/N/?** | **Comments** |
| --- | --- | --- |
| Has the revegetation plan been previously assessed by the DER and have their comments been addressed? (i.e. is it a revised version)? |  |  |