



Riparian Vegetation Management Plan

559 Anambah Road

Prepared for

Thirdi Group Pty Ltd

May 2025

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DOCUMENT CONTROL

| Project Particulars | | | |
|---------------------|----------------------|--------|----------------|
| Project Name | 559 Anambah Road | | |
| Job Number | 23071 | | |
| Client | Thirdi Group Pty Ltd | | |
| Status | Draft | | |
| Version | Date | Author | Details |
| 1 | 29/05/2025 | CS/MD | For Submission |

Approval for use:



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29 May 2025

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SHORTENED FORMS

| | |
|--|--|
| AABR | Australian Association of Bush Regenerators |
| APZ | Asset Protection Zone |
| BC Act | Biodiversity Conservation Act 2016 (NSW) |
| CEEC | Critically Endangered Ecological Community |
| Council | Maitland City Council |
| DBH | Diameter at Breast Height over bark (tree) |
| DCCEEW | Australian Government Department of Climate Change, Environment, Energy & Water |
| NSW DCCEEW | NSW Government Department of Climate Change, Environment, Energy & Water |
| DPHI | NSW Department of Planning, Housing & Infrastructure |
| EC | Ecological Community listed under the EPBC Act |
| EPBC Act | Environment Protection and Biodiversity Conservation Act 1999 (Cwlth) |
| EP&A Act | Environmental Planning and Assessment Act 1979 (NSW) |
| EEC | Endangered Ecological Community |
| HTW | High Threat Weed |
| LLS Act | Local Land Services Act 2013 (NSW) |
| MCC | Maitland City Council |
| NPW Act | National Parks and Wildlife Act 1974 (NSW) |
| NSW | New South Wales |
| PCT | Plant Community Type |
| Provenance | Refers to the location of the natural population of origin of propagative material for revegetation, including seed or cuttings, translocation and grafting stock or scion |
| Rehabilitation | Any attempt to restore elements of structure or function to an ecological system |
| <ul style="list-style-type: none"> ▪ Reconstruction | Establishment of native vegetation in a location with a high degree of disturbance and a dearth or absence of native vegetation, seed bank or symbiotic soil function |
| <ul style="list-style-type: none"> ▪ Regeneration | Describes the restoration of natural ecosystems through the natural cyclic processes of renewal and self-maintenance of species and their populations. |
| <ul style="list-style-type: none"> ▪ Restoration | Re-establish exactly the original native plant community. |
| <ul style="list-style-type: none"> ▪ Revegetation | Replanting of native vegetation. |
| TEC | Threatened Ecological Community |
| VEC | Vulnerable Ecological Community |
| Vegetation SEPP | State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017 (NSW) |
| VIS | NSW BioNet Vegetation Information System |
| VMA | Vegetation Management Area |
| VMP | Vegetation Management Plan |
| WoNS | Weeds of National Significance |

RIPARIAN VEGETATION MANAGEMENT PLAN

1. Introduction

1.1 Purpose of this Plan

This Plan has been prepared to accompany a development application for a staged subdivision and residential development. This plan is intended as a summary of constraints and commitments associated with the rehabilitation of a riparian corridor within the development. This Plan has been prepared in anticipation of constructive feedback and collaborative target-setting with the Consent Authority (Maitland City Council), and the authors would like to keep open the possibility of varying from guidelines to efficiently achieve net-positive outcomes for the broader riparian catchment. This Plan has been prepared to ultimately comply with the requirements of relevant legislation and guidelines as outlined in **Sections 1.3 & 1.6**.

1.2 Aims & Objectives

The overarching aim of the VMP is to create a weed-free, resilient and self-sustaining ecosystem with minimal maintenance requirements, suitable for dedication as public land as a secure riparian habitat corridor. The following objectives are set:

- Remove priority weeds and their propagules from the riparian corridor;
- Establish native canopy and understorey, and riparian channel revegetation in alignment with an appropriate plant community assemblage;
- Maintain native revegetation at a density that resists weed infestation and complies with bushfire and engineering requirements;
- Secure the management area from unauthorised public access; and
- Monitor and report on the progress of rehabilitation of the management area over a prescribed period (5 years).
- Manage risks to the wider catchment

1.3 Legislative Considerations

Key legislation generally relating to this VMP and the site project approvals include the following:

- Commonwealth Environment Protection and Biodiversity Conservation Act 1997
- Biodiversity Conservation Act 2016
- Biosecurity Act 2015
- NSW Environmental Planning and Assessment Act 1979
- NSW Water Management Act 2000

The VMP has been prepared with due reference to the NSW DPI Guidelines for Vegetation Management Plans on Waterfront Land (2012), and the Maitland DCP (2025 in draft) Appendix C Biodiversity Guidelines. Reference has also been made to relevant sections of the TfNSW Biodiversity Management Guideline (2024).

1.3.1 NSW Water Management Act (2000)

Controlled activities carried out in, on or under waterfront land are regulated by the Water Management Act 2000 (WM Act). The department administers the WM Act and is required to assess the impact of any proposed controlled activity to ensure that no more than minimal harm will be done to waterfront land. Waterfront land includes the bed and bank of any river, lake or estuary and all land within 40 metres of the highest bank of the river, lake or estuary. This means that a controlled activity approval must be obtained from the department before commencing the controlled activity.

When a proposed controlled activity disturbs or substantially modifies the riparian corridor, its restoration or rehabilitation will be a requirement of the controlled activity approval. A vegetation management plan (VMP) details how the restoration or rehabilitation will be carried out. The main objective of a VMP is to provide a stable watercourse and riparian corridor which will emulate local native vegetation communities.

1.4 Proposed development

1.4.1 Development overview

The Project is for a Concept Development Application (CDA) seeking concept approval for the staged development of the concept master plan, and for which detailed proposals for the Site or for separate parts of the site are to be subject of subsequent Development Applications (DAs), apart from stage 1.

The masterplan creates a new urban subdivision within the Anambah Urban Release Area accommodating a mix of housing types with approximately 900 residential lots, and incorporates open space, roads, pedestrian networks, utilities and services, intersection upgrades and drainage infrastructure.

The application includes a development application for stage 1, which is made up of approximately 220 lots. This stage includes the subdivision of the land, construction of the lots including roads, services, bulk earth works and dedication of reserves. The application includes an intersection to provide access into the development via Anambah Road, together with an emergency flood access to be constructed via the unformed River Road. Refer to **Appendix A**.

1.4.2 Proposed development and the subject land

| | |
|---------------------|--|
| Locality | The site is in Anambah, NSW |
| Land Title/s | Lot 55 874170 Lot 177. 874171 Road Corridors (Anambah Rd, River Rd) |
| LGA | Maitland City Council |
| Area | Development Works Extent – 74.63 ha |
| Zoning | R1 General Residential; RU2 Rural Landscape |
| Boundaries | The site is bounded by Anambah Road in the east. To the north and west lie RU1 Primary Production and RU2 Rural Landscape zoned land respectively. To the south lie undeveloped R1 and C4 Environmental Living lands associated with the Anambah Urban Release Area. |

- Current Land Use** The broader study area and the associated subject land comprise predominantly cleared pastoral land actively and continuously grazed by cattle. The western extent of the study area includes areas of remnant timbered vegetation, from which stock are not excluded.
- Hydrology** Three (3) mapped 1st order watercourses flow north from the northern extent of the subject land, to join as they cross Anambah Road. Another 1st order watercourse flow east and then south, draining onto adjoining land. A 3rd order watercourse intersects the extreme south-west corner of the subject land, flowing east onto adjoining land. Three moderately sized dams are present within the subject land, one occurs on the northern boundary, with the second occurring near the eastern boundary, both of which connect to the northern 1st order watercourses. The largest dam occurs in the southern section of the subject land.
- Topography** The subject land is a gently rolling landscape typified by low relief associated with a series of gullies running downstream generally to the east and south. Elevation and relief increase to the west in the study area lot associated with low slopes, with a peak of 174 m to the west of the study area at Winders Hill. The subject land has a local peak of 53 m in the east, and mirrored in the west, and a low of 25 m in the south. All heights are AHD.

1.4.3 Supplied Information

Below documentation have been supplied to the authors and considered in the context of this appraisal:

- Bushfire Assessment Report – 559 Anambah Road, Gosforth – Bushfire Planning Australia 2025

1.5 Roles & Responsibilities

The key stakeholders associated with this VMP are:

- The person/firm preparing the VMP – Chris Spraggon, MJD Environmental.
- The proponent – DB20 Pty Ltd.
- The contractor(s) engaged for VMP implementation – Vegetation Contractor (TBC).
- The person/ firm who will undertake compliance of VMP implementation by the vegetation contractor(s) on behalf of the proponent and prepare monitoring statements – Consultant (TBC).

1.5.1 Qualifications of author/s

| Author | Title & Role | Qualifications |
|----------------|---|---|
| Chris Spraggon | Senior Ecologist, Lead Author | <ul style="list-style-type: none"> ▪ Accredited BAM Assessor (#BAAS25009) ▪ AABR Accredited Practitioner #1320 ▪ B. Science (Honours) ▪ Conservation & Land Management Cert III |
| Matt Doherty | Director, Reviewer | <ul style="list-style-type: none"> ▪ Accredited BAM Assessor (#BAAS17044) ▪ B. Landscape Management and Conservation (Soil and Water Management) ▪ Bush Regeneration Cert IV |

1.6 Future Approvals

This VMP has been prepared to accompany an application for development and as such is not subject to conditions of approval. Below, **Table 1** cross references sections of the VMP which address relevant (abridged) requirements of listed guidelines.

Table 1. VMP Requirements

| NSW Office of Water Controlled activities – Guidelines for vegetation management plans on waterfront land | |
|--|---|
| VMP should be prepared by a suitably qualified person | See Section 1.5.1 |
| An appropriate width for the riparian corridor should be identified. The VMP should consider the full width of the riparian corridor and its functions including accommodating fully structured native vegetation. | See Section 2.2 and Figure 3 |
| Maps or diagrams which clearly identify the riparian corridor and proposed activities | See Figure 3 |
| The location of the bed and banks or foreshore of waterfront land and the footprint of the riparian corridor should be clearly identified. Vegetated riparian zones must be indicated. | See Figure 3 |
| Photographs of the site should be supplied and photo points should be identified | See Section 6 , |
| Measures for controlling long-term access and encroachments | See Section 5.1.1 |
| Vegetation species composition, planting layout and densities should be identified. Planting densities should achieve quick vegetative cover and root mass to maximise bed and bank stability along the subject watercourse. | See Section 2.1.4 , Section 5.4 , Appendix B |
| Seed or plant sources should be identified. Where possible, native plants and seed sources of local provenance should be used. | See Section 5.4 |
| Exotic vegetation should be avoided. The use of exotic species for temporary soil stabilisation is permitted provided they are sterile, non-invasive and easily eradicated when permanent vegetation is established. | See Section 5.4.5 |
| Details of the planting program, rehabilitation methods and staging should be provided. Techniques such as hydro-seeding, direct seeding, brush matting or assisted natural regeneration may be considered. | See Section 5.4 |
| Project tasks should be defined and described, including a schedule detailing the sequence and duration of works necessary for the implementation of the VMP. | See Table 6 |
| Costings for the implementation of all components and stages of the work including materials, labour, watering, maintenance which includes plant replacement, monitoring and reporting should be prepared | TBC Post-approval |
| Processes for monitoring and review, including a method of performance evaluation should be identified. | See Section 6 |
| Regular reporting on the implementation and status of works covering progress, success or failures and completion should be provided | See Section 6 |
| Security such as bank guarantees may be required before a controlled activity involving the implementation of a VMP is commenced. | TBC Post-approval |
| Maitland DCP (Draft) Appendix C: Biodiversity Guidelines | |
| The VMP must be prepared by a qualified ecologist with experience in bush regeneration. | See Section 1.5.1 |
| The existing site context must be clearly described with references to a range of mapping, including historical, if relevant. | See Section 2 |
| The aims and objectives are to be site specific and led by the following principles: a. Maintain or enhance biodiversity, habitat and natural values b. Manage, control and eliminate invasive species | See Section 1.2 |

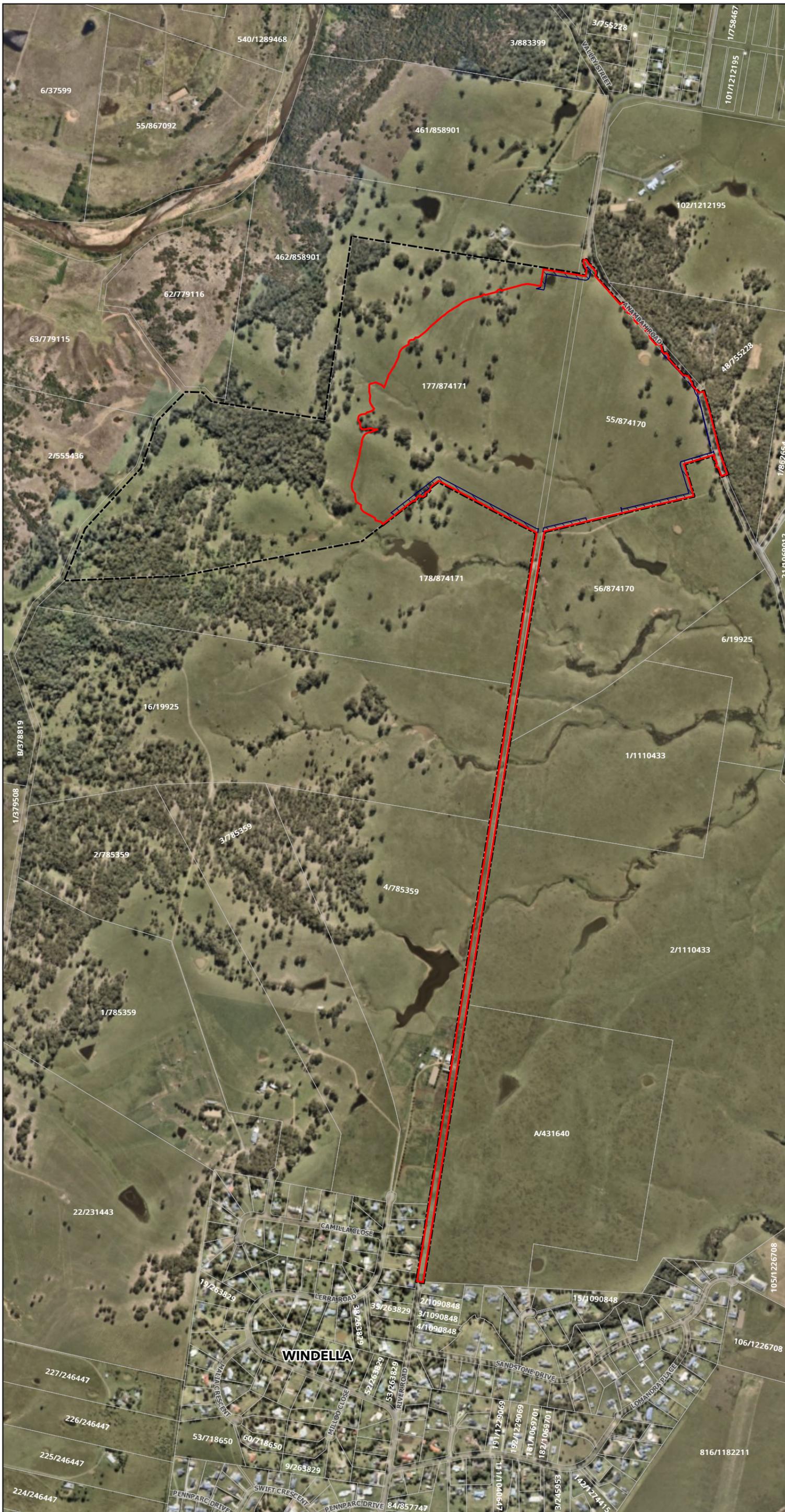
| | |
|--|---------------------------------|
| <p>c. Establish a low-maintenance, self-sustaining vegetation community that supports long-term ecological resilience and minimal intervention</p> <p>d. Promote and educate on native ecological sustainability through revegetation and restoration.</p> | |
| <p>All areas covered within the VMP must be separated into management zones to reflect the extent and type of management required.</p> | <p>See Section 4</p> |
| <p>Each management zone must be clearly mapped and described within the VMP.</p> | <p>See Figure 3</p> |
| <p>Management actions required to meet the objective of each zone must be described in sufficient detail</p> | <p>See Section 5</p> |
| <p>All boundaries between the development and the natural areas/revegetation area of the VMP must be fenced with fauna friendly materials. Signage is to be placed along the fence line to educate on the restoration efforts.</p> | <p>See Section 5.1.1</p> |
| <p>Completion criteria must be set as a benchmark for regular monitoring. Targets are to be prescriptive, and percentage based.</p> | <p>TBC Post-approval</p> |
| <p>The completion criteria are to include a trending target for the end of each year's maintenance period. End of year targets may be management zone specific</p> | <p>TBC Post-approval</p> |
| <p>Monitoring methodologies must be detailed within the VMP. A monitoring report is to be submitted annually to Council</p> | <p>See Section 6</p> |

559 ANAMBAH ROAD,
GOSFORTH

FIGURE 1: SITE LOCATION

Legend

-  Subject Land
-  Study Area
-  Proposed Asset Protection Zone
-  Cadastral Boundary



Metres
1:12000



Aerial: Nearmap (2024) | Data: MJD Environmental, Northrop, NSW Spatial Services (2025) | Datum/Projection: GDA2020 / MGA zone 56 | Date: 2025-05-29 | Version: 1 | Z:\23071 - 559 Anambah Road, Gosforth\QGZ\23071_BDAR_RFL_Master_20250528.qgz | This plan should not be relied upon for critical design dimensions.

2. Site Context

2.1 Existing Environment

2.1.1 General location

The site is located in the locality of Anambah, in Maitland LGA in the lower Hunter valley. The locality is one of four (4 – Gosforth, Anambah, Windermere and Windella) generally bounded by the New England Highway and a broad meandering bend in the Hunter River. This area comprises of approximately 4000 hectares of undulating land, defined by a minimum elevation of at most approximately 20 m AHD, with a series of generally central low hills peaking at approximately 180 m AHD at Winders Hill. The area has a substantial catchment area extending south of the New England Highway, and a significant proportion of the area is flood-prone.

2.1.2 Current and past land-use history

Land is currently used for low intensity grazing of beef cattle, and the broader has been subject to intensive agricultural activities over many generations. Aerial photo interpretation (API) of NSW Historical Imagery shows the site in a cleared state as early as 1954.

2.1.3 Landscape features

The site is gently sloping, generally towards its centre where overland flows collect into a coarse network of incised gullies. A watercourse associated with the development footprint in the south, as a 1st order natural nonperennial watercourse with a confined bed and several small to moderate pools or dams. The watercourse is part of a wide network of tributaries to a wetland located approximately 1 km south of the site, associated with the Hunter River floodplain. The wetland is generally defined by the 10 m elevation contour. The site and associated watercourse occur in the upper reaches of these watercourses, which originate up to 2 km from the wetland.

The site is founded on Permian basalt geology associated with the Lochinvar formation: Undulating rises with elevation ranging from 20 – 80 m. Local relief is around 20 m, with slope gradients of 4 – 6%. Average slope lengths are 800 – 1,000 m. Drainage lines occur at 400 – 800 m intervals. The main soils are Non-calciic Brown Soils on the gentle slopes with Brown Podzolic Soils on the steeper areas. There are Yellow Solodic Soils on the mid to lower slopes of the steeper hills and in some drainage lines.

2.1.4 Native vegetation

NSW State Vegetation Type Map shows a range of communities over the site, generally associated with Dry Sclerophyll forms. NSW SVTM 1750 modelling indicates the site was once at the interface between Dry Sclerophyll Forest and the Swamp Forests and Wetlands marginal to Riparian Rainforests of the Hunter River. The riparian land to the south of the site is mapped as containing Forested Wetlands, Freshwater Wetlands and even Dry Rainforest. However, these are generally mapped over exotic vegetation, too finely for the local scale and without the benefit of reference plots in the locality. A remnant Forested Wetland (PCT 4042) is mapped over native canopy to the west of the site, in a similar landform, elevation and pastoral context.

Site assessment confirmed there is no extant plant community in the riparian corridor; only scattered canopy persists. There is limited native vegetation present in the watercourse. It is uncertain how diverse of a riparian community was supported by the watercourse pre-clearing, notwithstanding changes to flow regimes from clearing and grazing.

On the basis of the above, the low elevations associated with the riparian corridors on the site, and local remnant ecosystems, PCT 4042 has been selected as most appropriate for target community.

Table 2. Plant Community Type Details

| | |
|-----------------------------|---|
| PCT ID | 4042 |
| PCT name | Lower North Riverflat Eucalypt-Paperbark Forest |
| Vegetation formation | Forested Wetlands |
| Vegetation class | Coastal Floodplain Wetlands |

A species list for this community is **Appendix B**.

Rounded benchmarks for PCT 4042 are listed below, as targets for established revegetation. Listed benchmarks are indications of projected foliage cover at maturity.

Foliage Projective Cover (FPC) is defined as the vertically projected percentage cover of photosynthetic foliage from green trees and shrubs taller than two metres.

Revegetation planting densities are prescribed in **Section 5.4**.

Table 3. PCT 4042 Vegetation Cover Benchmarks

| Stratum | Projected Foliage Cover at Establishment / Maturity |
|---|--|
| Tree PFC (approx. 50% of canopy area coverage) | 20% |
| Shrub PFC (effectively 100% of shrub area coverage) | 20% |
| Groundcover PFC* | 75% |

*Ground Cover includes species listed in NSW BioNet VIS under Graminoid, Forb and Other

Other native vegetation communities in the locality include PCT 3446 (*Lower North Foothills Ironbark-Box-Gum Grassy Forest*), PCT 3433 (*Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest*), and PCT 3328 (*Lower Hunter Red Gum-Paperbark Riverflat Forest*).

2.1.5 Connectivity & Corridors

The extant native vegetation on site forms a disjointed corridor east-west from the RU2 Lands to the riparian corridor. This has the capacity to form a strong future link between remnant native forest and woodland west of the landholding and the broad wetland (and associated woodland remnants) to the south.

It is acknowledged that current landscape connectivity is limited, and achieving the riparian corridor linkages will require coordinated strategic management over time, beyond the scope of this plan.

2.1.6 Weeds

The site is generally dominated by pasture, and exotic species associated with highly disturbed agricultural land. Weeds on site that are listed by DPI or NSW DCCEEW are tabled in **Section 3**. In general, weed infestation in the riparian corridor is minimal. Woody weeds and *Juncus acutus* (Spiny Rush) present the primary weed constraint. Tussock and rhizomatous grasses are likely to require management under the plan, however these are likely to be manageable under a similar regime with most other common species.

2.2 Riparian Areas & Watercourses

2.2.1 Hydroline Mapping Matrix

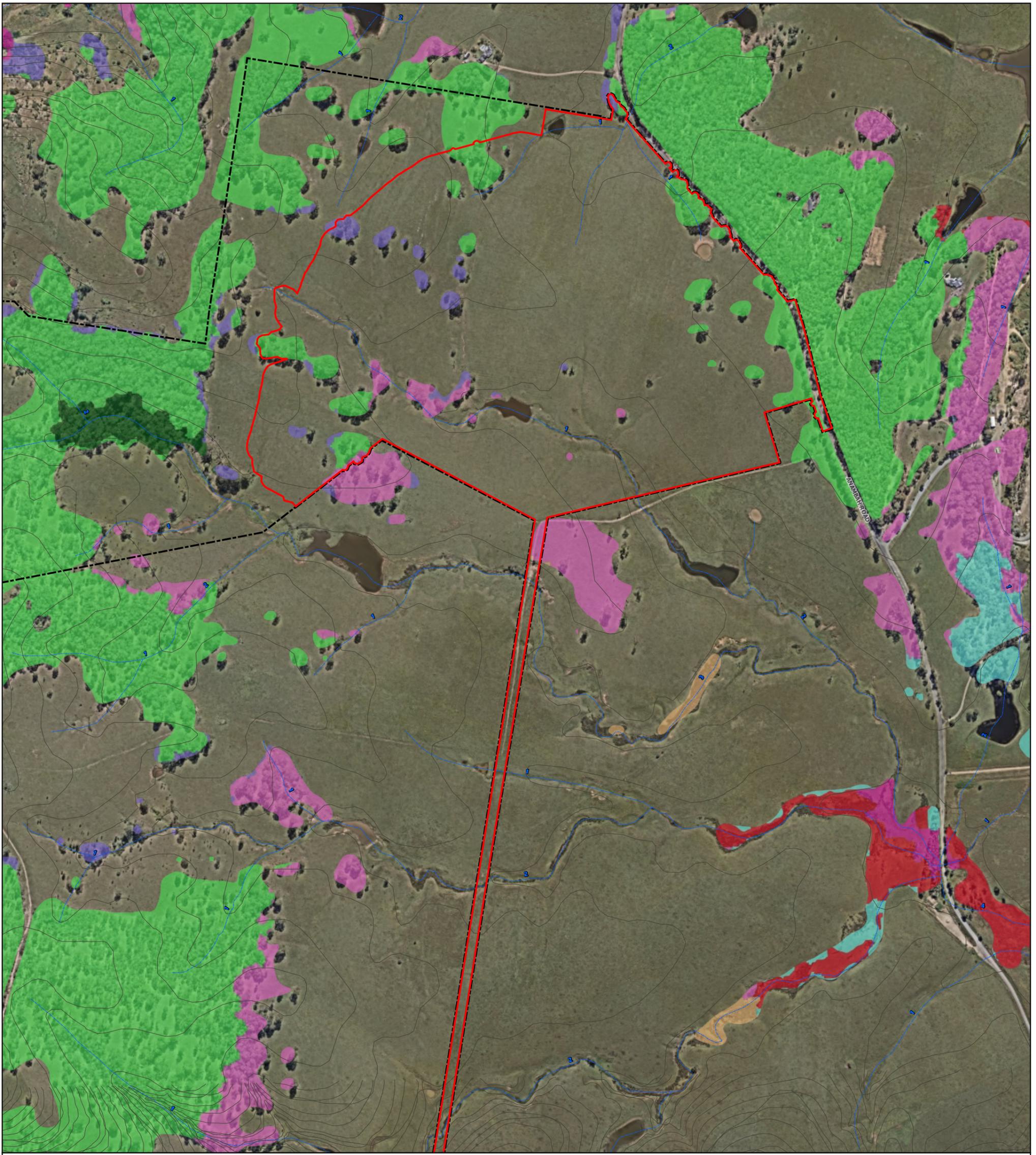
The primary watercourse originates to the west, as a steep network of unmapped incised gullies. At the central area of the development, the main watercourse joins a moderate (approx. 0.3 ha) dam. A significant proportion of the catchment of the primary watercourse is gained directly rather than tributary.

The primary watercourse is assessed as a 1st order Strahler, natural nonperennial watercourse with a channel width of 2 m to 20 m.

2.3 Information sources

Existing information sources used to assist siter context for this VMP include:

- NSW State Vegetation Type Map (DCCEEW 2022)
- NSW BioNet (VIS)
- NSW Landscape - Modified (DEM-S) Elevation layer
- NSW DPI Hydroline Spatial Data



559 ANAMBAH ROAD, GOSFORTH

0 70 140 210 280



Metres
1:7500

FIGURE 2: ECOLOGICAL CONTEXT

Legend

- Subject Land
- Study Area
- Contours (5 m)
- Watercourse
- PCT 3083 - Lower Hunter Tuckeroo Riparian Rainforest
- PCT 3244 - Lower North Spotted Gum-Mahogany-Ironbark Sheltered Forest
- PCT 3328 - Lower Hunter Red Gum-Paperbark Riverflat Forest
- PCT 3433 - Hunter Coast Foothills Spotted Gum-Ironbark Grassy Forest
- PCT 3446 - Lower North Foothills Ironbark-Box-Gum Grassy Forest
- PCT 3975 - Southern Lower Floodplain Freshwater Wetland
- PCT 4023 - Coastal Valleys Swamp Oak Riparian Forest
- PCT 4042 - Lower North Riverflat Eucalypt-Paperbark Forest



Aerial: Nearmap (2024) | Data: MJD Environmental, Northrop, NSW
 Spatial Services (2025) | Datum/Projection: GDA2020 / MGA zone 56
 | Date: 2025-05-29 | Version: 1 | Z:\23071 - 559 Anambah Road,
 Gosforth\QGZ\23071_BDAR_RFI_Master_20250528.qgz | This plan
 should not be relied upon for critical design dimensions.

3. Weeds

3.1 Weeds of National Significance

Weeds of National Significance (WoNS) are the highest priority species targeted for sustained nationally coordinated action under the Australian Weeds Strategy. This strategy provides for national management to eradicate WoNS species from parts of the country where Australia's productive capacity & natural ecosystems are affected. Each WoNS has a strategic plan that outlines strategies and an action required to control the weed and identifies those responsible for each action. Individual landowners and managers are ultimately responsible for managing WoNS species. State and territory governments are responsible for overall legislation and administration. WoNS which occur on site based on field assessment:

- *Senecio madagascariensis* (Fireweed)
- *Lantana camara* (Lantana)

WoNS are under review as at May 2025, and the obligations of land managers may change as a result of new species adopted. The approval of this plan, or a subsequent revision, does not discharge any future obligations under changes to biosecurity instruments.

3.2 NSW Biosecurity Act 2015

The NSW Biosecurity Act 2015 replaces the repealed Noxious Weeds Act as of July 2017. The new Act establishes a General Biosecurity Duty as well as several key management tools to allow for effective, risk-based management of biosecurity matters (Refer to Table 3). Applicable to all species determined either State level priority weeds (by NSW DPI) or Regional listed priority weeds (by Hunter Local Land Services), the General Biosecurity Duty requires that "any person [landholder] who deals with a biosecurity matter and has a biosecurity duty to ensure that, so far as is reasonably practicable, the biosecurity risk is prevented, eliminated or minimised." Commensurate with this requirement, the Hunter Regional Strategic Weed Management Plan categorises specific management objectives to demonstrate compliance in relation to priority weeds occurring in the Hunter Local Land Services Region.

The Hunter Regional Strategic Weeds Management Plan contains demonstrated outcomes that fulfil the general biosecurity duty for priority weeds. Priority weeds which occur on site based on field assessment:

- *Juncus acutus* (Spiny Rush)
- *Lantana camara* (Lantana)
- *Olea europaea* subsp. *cuspidata* (African Olive)

3.3 NSW Biodiversity Conservation Act 2016

The Biodiversity Assessment Method (BAM) is established under the NSW Biodiversity Conservation Act 2016 which assesses 'high threat weeds' or 'high threat exotic plant cover' as plant cover composed of vascular plants not native to Australia that if not controlled will invade and out compete native plant species plant cover composed.

High threat exotics should be suppressed where they occur and excluded and eradicated from vegetation management areas during establishment.

3.4 Site Weed Matrix

Table 4. Weeds present on site

| Species | Common Name | Biosecurity Area | Biosecurity Act 2015 | WoNs | HTE |
|--|-----------------|----------------------------------|---|------------|-----------------------|
| <i>Axonopus fissifolius</i> | Carpet Grass | NA | NA | NA | Not manageable |
| <i>Briza subaristata</i> | NA | NA | NA | NA | Not manageable |
| <i>Cenchrus clandestinus</i> | Kikuyu | NA | NA | NA | Not manageable |
| <i>Juncus acutus</i> | Spiny Rush | All of NSW; <u>Hunter</u> | General Biosecurity Duty; <u>Regional Recommended Measure*</u> | NA | Not manageable |
| <i>Lantana camara</i> | Lantana | All of NSW; <u>Hunter</u> | General Biosecurity Duty & Prohibition on Dealings; <u>Regional Recommended Measure*</u> | Yes | Manageable |
| <i>Olea europaea</i> subsp. <i>cuspidata</i> | African Olive | All of NSW; <u>Hunter</u> | General Biosecurity Duty; <u>Regional Recommended Measure**</u> | NA | Manageable |
| <i>Paspalum dilatatum</i> | NA | NA | NA | NA | Not manageable |
| <i>Romulea rosea</i> var. <i>australis</i> | Onion Grass | NA | NA | NA | Not manageable |
| <i>Senecio madagascariensis</i> | Fireweed | All of NSW | General Biosecurity Duty & Prohibition on Dealings | Yes | Not manageable |

*Land managers should mitigate the risk of the plant being introduced to their land. Land managers should mitigate spread of the plant from their land. A person should not buy, sell, move, carry or release the plant into the environment. Land managers should reduce the impact of the plant on assets of high economic, environmental and/or social value.

**Entire Hunter Local Land Services region: Land managers should mitigate the risk of the plant being introduced to their land. Exclusion zone: Notify local control authority if found. Land managers should eradicate the plant from the land and keep the land free of the plant. A person should not deal with the plant, where dealings include but are not limited to buying, selling, growing, moving, carrying or releasing the plant. Core infestation: Land managers should mitigate spread of the plant from their land. A person should not buy, sell, move, carry or release the plant into the environment. Land managers should reduce the impact of the plant on assets of high economic, environmental and/or social value.

Table 5. Hunter Regional Strategic Weed Management Plan 2023-2027 – Regional priority weeds

| Regional Priority Weeds – Asset Protection | | | |
|---|---|--|---|
| Priority Weed Category & Species (Common name) | Land area where requirements apply | Outcomes to demonstrate compliance with general biosecurity duty | Strategic response in the Hunter Region |
| For Asset Protection: <i>Juncus acutus</i> (Spiny Rush) | Entire Hunter Local Land Services region | <ul style="list-style-type: none"> Land managers should mitigate the risk of the plant being introduced to their land. Land managers should mitigate spread of the plant from their land. A person should not buy, sell, move, carry or release the plant into the environment. Land managers should reduce the impact of the plant on assets of high economic, environmental and/or social value. | <ul style="list-style-type: none"> The plant is managed by all landholders to reduce its extent and spread. Where the plant poses a risk to assets of high economic, environmental and/or social value (section 4.1) it is managed by all landholders to mitigate the risk. Improved collaborative management across all landholder boundaries. Promoting and using best-practice quarantine and weed hygiene procedures. Development of local plans and guidelines that assist all landholders in demonstrating compliance with their general biosecurity duty. Particular focus on protecting high value environmental assets such as the Ramsar listed Hunter Estuary and Myall Lakes Wetlands |
| For Asset Protection: <i>Lantana camara</i> (Lantana) | Entire Hunter Local Land Services region | <ul style="list-style-type: none"> Land managers should mitigate the risk of the plant being introduced to their land. Land managers should mitigate spread of the plant from their land. A person should not buy, sell, move, carry or release the plant into the environment. Land managers should reduce the impact of the plant on assets of high economic, environmental and/or social value. | <ul style="list-style-type: none"> The plant is managed by all landholders to reduce its extent and spread. Where the plant poses a risk to assets of high economic, environmental and/or social value (section 4.1) it is managed by all landholders to mitigate the risk. Improved collaborative management across all landholder boundaries. Promoting and using best-practice quarantine and weed hygiene procedures. Development of local plans and guidelines that assist all landholders in demonstrating compliance with their general biosecurity duty |
| For Containment: <i>Olea europaea</i> subsp. <i>cuspidata</i> (African Olive) | An exclusion zone is established for all land in the region, except the core infestation [the site is part of the core infestation] | <p><u>Entire Hunter Local Land Services region:</u></p> <ul style="list-style-type: none"> Land managers should mitigate the risk of the plant being introduced to their land. <p><u>Core infestation:</u></p> <ul style="list-style-type: none"> Land managers should mitigate spread of the plant from their land. | <p><u>Entire Hunter Local Land Services region:</u></p> <ul style="list-style-type: none"> Targeted inspection and treatment programs. Enforcement action on all lands where necessary. Detailed surveillance and mapping to locate all infestations. High level pathways analysis to identify potential introduction areas and preventative options. |

| Regional Priority Weeds – Asset Protection | | | |
|--|------------------------------------|---|---|
| Priority Weed Category & Species (Common name) | Land area where requirements apply | Outcomes to demonstrate compliance with general biosecurity duty | Strategic response in the Hunter Region |
| | | <ul style="list-style-type: none"> ▪ A person should not buy, sell, move, carry or release the plant into the environment. ▪ Land managers should reduce the impact of the plant on assets of high economic, environmental and/or social value. | <ul style="list-style-type: none"> ▪ Monitoring progress towards eradication and ensuring containment to core infestation. ▪ Improved collaborative management across all landholder boundaries. ▪ Promoting and using best-practice quarantine and weed hygiene procedures. ▪ Individual significant, mature trees that are providing essential services to the landholder may be retained, providing that all juvenile plants are destroyed and the tree is being replaced with a more suitable species over time. ▪ Street trees to be phased out and replaced with a more suitable species over time. ▪ No new plantings of this species in streets, parks, gardens or other open spaces. ▪ Seedlings, saplings and isolated infestations are destroyed. ▪ Development of a Hunter Regional African Olive Management Strategy. <p><u>Core infestation areas:</u></p> <ul style="list-style-type: none"> ▪ The plant is managed by all landholders to reduce its extent and prevent its spread. ▪ Where the plant poses a risk to assets of high economic, environmental and/ or social value (section 4.1) it is managed by all landholders to mitigate the risk. ▪ Development of local plans and guidelines that assist all landholders in demonstrating compliance with their general biosecurity duty. ▪ Identification and support of research opportunities for developing innovative management options in core infestation areas. |

4. Vegetation Management Areas

4.1 Basins

Three (3) basins will manage stormwater and runoff volume capture and quality improvement prior to discharge into the primary watercourse.

Current Condition

Basins will be constructed in accordance with approved engineering plans. At the commencement of vegetation management works in the basins, the finished form is expected to be moderate batters of stable fill with a top dress suitable for revegetation. Vegetation management in the basins will be based on approved landscaping plans.

Priorities

- Low-maintenance
- Revegetation (with native vegetation) compliant with requirements of engineering and bushfire
- Canopy vegetation is not expected to be consistent with engineering batters.

Target Condition

Shrub and groundcover vegetation should be dense, and species selection is to grade with tolerance to modelled inundation. Basins should not allow the establishment of exotic vegetation in the beds when low or dry. A variety of native species and growth forms will encourage natural regeneration from seed when established, and allow the natural dominance of assemblages best suited to the microhabitat. The inherent wet-dry cycles in the design of stormwater basins are likely to reduce overall permanent foliage cover, however a high cover should be maintained to prevent weed infestation.

4.2 Channel

The channel or bed of the primary watercourse varies in width adjacent to the development from 2 to 20 m and is defined by a flat area subject to irregular inundation and periodic moderate water flow. The substrate is likely to be perennially wet outside of sustained dry periods, and support macrophyte vegetation in addition to flood-tolerant canopy species.

The channel is likely to be inundated briefly and regularly in high rainfall events, with high flows only occurring in low percentage events. Few parts of the channel regularly hold water and all but the largest would periodically dry.

Current Condition

The channel is nearly devoid of native vegetation, with very occasional canopy trees (*Corymbia gummifera* and *Eucalyptus moluccana*) on the margins and some native species in the ground layer. It is dominated by pasture grasses.

Priorities

- Minimise loss of existing canopy trees;
- Eradicate *Juncus acutus* from the watercourse;
- Establish a self-sustaining riparian vegetation community;

- Establish a physically stable, meandering watercourse that can tolerate associated flows and resist erosion.

Target Condition

Macrophyte cover should be extremely dense, sufficient to exclude aggressive riparian weeds and maintain a stable watercourse. Canopy should generally be restricted to point bars to avoid impeding water flows or creating erosional obstacles. The channel should ultimately take the form of a dense sedge-land (replacing the exotic *Juncus acutus* with a diversity of native macrophytes, dominated by sedges and rushes) with occasional emergent canopy (comprised of species tolerant of regular inundation).



Plate 1. Sedge-land target condition example

4.3 Stream Banks

The banks above the channel provide for water flows, stream stability and native vegetation connectivity. This area is expected to rarely be subject to active flows, and only inundated in extreme events.

Current Condition

The Stream Banks are nearly devoid of native vegetation, with very occasional canopy trees (*Corymbia maculata* and *Eucalyptus moluccana*) on the margins. It is dominated by pasture grasses. The Stream Banks are therefore effectively cleared, for the most part.

Priorities

- Minimise loss of existing canopy trees;
- Establish a self-sustaining riparian vegetation community;

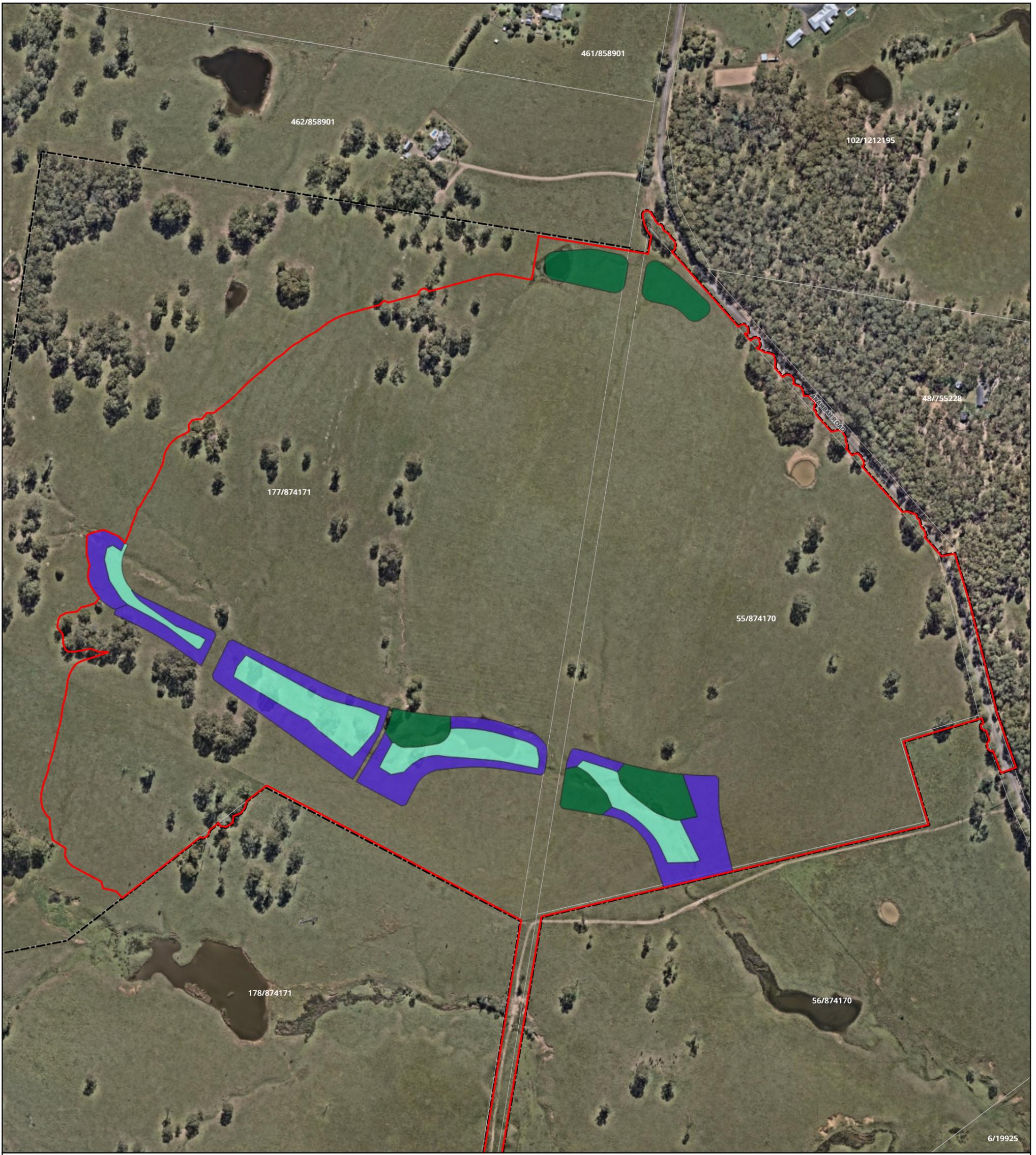
- Establish a physically stable, meandering watercourse that can tolerate associated flows and resist erosion;
- Establish a functional habitat corridor contributing to a wider connectivity network.

Target Condition

Benchmark canopy, shrub and groundcover densities (see **Section 2.1.4**) using a mosaic of canopy clusters and dense shrub and groundcover revegetation. Canopy gaps should not exceed 50 m between clusters, to ensure facilitation of safe wildlife movement through the ultimate corridor network. The ultimate form of the Outer VRZ will be an open forest or woodland with dense grass and shrub understorey.



Plate 2. Grass-shrub open forest target condition example

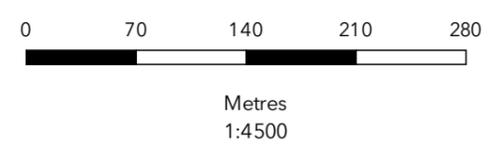


559 ANAMBAH ROAD, GOSFORTH

FIGURE 3: PLANT COMMUNITY TYPES & VEGETATION ZONES

Legend

- Subject Land
- Study Area
- Cadastral Boundary
- VMA 1 - Basin
- VMA 2 - Channel
- VMA 3 - Stream Banks



Aerial: Nearmap (2024) | Data: MJD Environmental, Northrop, NSW Spatial Services (2025) | Datum/Projection: GDA2020 / MGA zone 56 | Date: 2025-05-29 | Version: 1 | Z:\23071 - 559 Anambah Road, Gosforth\QGZ\23071_BDAR_RFI_Master_20250528.qgz | This plan should not be relied upon for critical design dimensions.

5. Vegetation Management Actions

Table 6. Summary table – Statement of management commitments

| Objective | Management Action & Timing | Notes |
|------------------------|--|---|
| <i>Weed Control</i> | <ul style="list-style-type: none"> Primary weed control of priority weeds and disposal of refuse to be complete within six months of commencement of this plan Secondary weed control of priority weeds over at least one growing season (at least 4 months between October and April). Must be complete prior to revegetation of understorey (canopy may be installed prior if long-stem method is used) Maintenance weed control to suppress late recruitment from seedbank or seed donation from upstream to be undertaken ongoing, and must be actively undertaken post-revegetation. | <ul style="list-style-type: none"> Burn outside of hazard period. Apply herbicide when plants are actively growing (spring). |
| <i>Revegetation</i> | <ul style="list-style-type: none"> Revegetation of all strata to required densities to be established within three years of commencement of this plan. | <ul style="list-style-type: none"> Plant at conclusion of hot or dry weather (early autumn) Long-stem Canopy planting. |
| <i>Establishment</i> | <ul style="list-style-type: none"> Planting density targets to be met and demonstrated, compliant with bushfire requirements and not posing a risk to engineering features. Native vegetation structure to be demonstrably approaching a reasonable measure of the PCT benchmark To be achieved and demonstrated to the satisfaction of Council by the conclusion of the prescribed plan lifetime (5 years). | <ul style="list-style-type: none"> 100% of benchmark is not a realistic goal for the VMP outcomes, however planting densities and strata are all aimed at benchmark vegetation integrity |
| <i>Security</i> | <ul style="list-style-type: none"> Fauna-friendly fencing with restoration-informative signage to be installed prior to occupation of development. Construction fencing to exclude vehicles and machinery to be installed prior to revegetation. | <ul style="list-style-type: none"> Access through construction fencing should be possible if machinery is required for primary treatment or removal of priority weeds |
| <i>Monitoring</i> | <ul style="list-style-type: none"> Quarterly reports to be issued by vegetation contractor Monitoring of compliance with this plan to be conducted annually and report issued. Photo points to be established with star pickets no later than concurrently with commencement of revegetation of the understorey | |
| <i>Risk management</i> | <ul style="list-style-type: none"> Erosion and sediment control plan compliant with NSW standards approved by council and implemented prior to primary treatment of priority weeds. Jute or similar surface reinforcement prior to revegetation of understorey if erosion risks persist | <ul style="list-style-type: none"> Potential water quality disruptions to downstream areas must be minimised |

5.1 Risk Management

5.1.1 Access

Fencing or barriers will be required to exclude public access, dumping of rubbish, establishment of tracks or other encroachment. Signage will be required on fences to inform residents of the restoration function of the riparian corridor. Fencing or barriers should be functional, while being consistent with local development controls and suitable for residential interface.

All fencing on the site must be Fauna-Friendly.

5.1.2 Erosion & Sediment Management

Earthworks and primary weed removal create an inherent risk of erosion and sedimentation in watercourses. All works should be guided by an approved Erosion & Sediment Control Plan, compliant with *Managing Urban Stormwater: Soils and Construction* (the NSW 'Blue Book', Landcom 2004 <https://www.environment.nsw.gov.au/publications/managing-urban-stormwater-soils-and-construction-volume-1>)

5.1.3 Vehicle and Machinery Clean Down

To reduce the risk of introducing weeds to the site, or transporting them from the site to unaffected areas, vehicles and machinery should be washed down prior to float to or from the site. DPI guidelines are **Appendix E**.

5.2 Weed Control

5.2.1 Weed Control Stages

Primary Weed Control

The strategic initial removal of parts of a weed infestation, generally targeting the most heavily affected areas. Primary weed control extent should not exceed an area that can be effectively maintained following secondary weed control. Clearing of large infestations followed by inaction will result in the reinfestation of the area, and wasted resources. Conversely, failing to control weeds that threaten a strategic area (e.g. upstream infestations that will continue to donate seed) will create a greater management burden for strategic areas. Primary weed control is generally undertaken in a short time, either in a single effort or over a single season.

Secondary Weed Control

Following initial strategic weed removal, follow-up is required to control recovery from seed bank or surviving adult material such as crowns or rhizomes. This serves to deplete the seed bank, ensure total destruction of adult weed material and prepare the site for rehabilitation. It is not expected that secondary control will destroy all weed seeds or weed resilience in the strategic area but it must be sufficient to reduce the weed incidence to a manageable level in parallel with revegetation. Secondary weed control may require multiple efforts over multiple seasons, or up to two (2) years.

Maintenance Weed Control

Ongoing control of emergent weeds from the seed bank. Generally conducted in parallel with rehabilitation such as replanting, brush matting or direct seeding. Best practice bush regeneration methods as per

Appendix C should be used for maintenance weeding, and herbicide use kept to a minimum to reduce off-target damage to revegetation and desirable or benign vegetation.

5.2.2 Herbicides

Chemical control should be considered as part of an integrated weed management regime, and not relied upon above other control methods. Application of herbicides in riparian areas must be undertaken in accordance with approved directions of use for suitable herbicides, and the suite of chemicals available for use in these areas without contradicting the label is generally very limited. Caution should be taken when considering use of any herbicide within the low-flow erosional channel (see **Section 4.2**). Herbicides registered for use in pasture should be suitable for application in the Channel *outside* of the inundated areas if no rain is predicted (timing per the herbicide label) and groundwater saturation is low.

Particularly in the case of the priority weed *Juncus acutus*, the use of adjuvants and other agents to increase the effectiveness of herbicide (and therefore minimise cumulative herbicide use) should be considered. Penetrants such as organosilicones and ammonium sulphate have been shown to be effective in *J. acutus*.

5.2.3 Burning

Burning can be a useful component of integrated weed management, and should be implemented early in the plan before significant development works or infrastructure have been commenced, to avoid potential damage. Burning is useful as a method of disposal of biomass that may contain propagative material, and for in-situ removal of biomass, destruction of seed and stimulation of weed seed bank. All appropriate notifications and permits should be in place prior to burning.

5.2.4 Priority Weeds – *Juncus acutus*

Juncus acutus is a systemic threat to waterways, and must be controlled in the higher reaches of the catchment to ensure lower reaches and wetlands are not compromised.

Juncus acutus – DPI Weedwise

Wear personal protective clothing to prevent injuries from the sharp stems and leaves when controlling this plant.

- Mechanical removal
 - Dense infestations can be removed using cutters, graders or ploughs. Cultivation can also be effective but plants need to be collected and disposed of. Burning is an effective disposal method. Resow pastures or revegetate treated areas. Use salt tolerant species in saline areas.
- Herbicide
 - Wiping – Wiping can be used on spiny rush growing in crops or pastures. The wiper needs to be at least 10 cm higher than the crop or pasture and the spiny rush must be at least 15 cm higher than the crop or pasture. If plants have many dead leaves or stems it is best to slash first and then wipe when the spiny rush regrows to a suitable height.

Juncus acutus – Other Publications

- Government of South Australia – Declared Plant Policy (*Juncus acutus*):
 - Due to the lack of accessibility for dense infestations, mechanical control is often the most effective method of control. Machinery is used to cut spiny rush just below the ground surface. After physical removal, plants are heaped and burnt, and then the soil is cultivated

to encourage the growth of seedlings. Follow-up cultivations over the following two summers are necessary to destroy seedlings, although some seed will remain to germinate in following years.

- Burning or slashing and then spraying or wiping new growth with herbicide can increase herbicide uptake, making the treatment more effective.
- Plants do not flower until at least two years old. The rhizomes and associated fibrous root system enables regeneration after cutting or clearance. Seed may persist for many years in the soil.

5.2.5 Priority Weeds – Woody Weeds

Lantana and African Olive are known on the site and these bird-dispersed species are likely to continue to emerge in management areas. They can be controlled with best-practice weed management as per **Appendix C**, and are unlikely to warrant special consideration in this context. Coordinated weed management across the development landscape is likely to have positive outcomes for resource-effectiveness, and ensure uncontested dedication of land.

5.2.6 Other Weeds

Other weeds on the site should be managed according to best-practice techniques. Techniques will vary by the stage of management, with early works generally requiring landscape-scale weed treatment and earthworks. Late stages of the plan should be managed using best-practice bush-regeneration techniques.

Weed control methods post primary and secondary priority weed control should be in alignment with **Appendix C**.

5.2.7 Disposal

Physically removed weed material, especially that which might contain viable seed, must be disposed of appropriately:

- Manageable volumes may be disposed of at a waste management facility.
- Larger volumes may require on-site disposal.
- Locations must be selected to reduce the risk of introducing seed to management areas.
- Some species (*Juncus acutus*) should be allowed to dry and the refuse burned to destroy seed.
- The material remaining following burning should be incorporated into deep topsoil away from management areas, in association with site earthworks.

5.3 Stabilisation of banks

In alignment with **Section 5.1.2**, weed removal may destabilise the banks of the watercourse. If staged weed removal cannot remove this risk, the installation of geotextile fabric or similar may be required. A natural material such as jute would be preferable in riparian corridor, as it can naturally break down as the native vegetation establishes.

5.4 Revegetation

5.4.1 Canopy

Canopy plantings are recommended to be installed using the Long-Stem planting technique. While the time to initial establishment of stock is increased, the increased survival, reduced maintenance and deep root structure are of great benefit. This is particularly true in a riparian setting where water flow can result in new plants being washed out of the ground. Long-Stem planting is detailed in **Appendix D**.

Canopy plantings should be installed in clumps, at a density within the clump of not more than one (1) tree per 16m² (this should not be averaged – each tree should have at least 4 x 4 m to establish roots). This is to ensure sufficient spacing for the development of wide and deep root structures, and to prevent stunting of canopy resulting from crowding.

To achieve benchmark PFC (see **Section 2.1.4**) for canopy, assuming six (6) metre canopy spread at maturity, an average across the site of one (1) tree per 70 m² will need to be established to maturity. In order to take account of losses and reduce replanting and maintenance, an ideal initial target would be one (1) tree per 50 m² (averaged across the site).

It is recommended that canopy planting occur prior to understorey and channel revegetation, as the long-stem method does not integrate efficiently. This could be done following primary weed control, as long as clumps are located away from areas where they may be lost to off-target herbicide damage.

It is recommended that canopy plantings be established across a wider area of the riparian corridor than required for the first development application, to significantly increase the efficiency of canopy establishment and assist with erosion control and weed suppression in areas subject to future works. Establishment in these areas is not a requirement of this plan, is at the discretion of the proponent, and if implemented will not be bound by monitoring.

5.4.2 Understorey

'Understorey' in this plan refers to all vegetation growing below the canopy.

Planting should be undertaken in cool weather (early autumn) to minimise heat and water stress, and allow plants to establish good root systems prior to cold winter weather. This stratum should not be installed until weed control reaches a maintenance phase as large losses can be expected from off-target herbicide damage.

Terrestrial groundcovers, shrubs and macrophytes (see **5.4.3** below) can be planted in a single allocation of resources. Shrubs should be installed at a density of one (1) plant per 5 m² (averaged across the site). Groundcovers and macrophytes should be installed at a density of four (4) plants per square metre. This is to ensure that plants can establish at a sufficient density to exclude weed infestation, or at a minimum, slow it to an easily managed degree. A higher initial cost will be offset as infill planting and off-target losses can be minimised or avoided. Native *Juncus* spp. should be avoided initially to reduce the risk of overlooking emergence of *Juncus acutus* from soil seed bank.

If bank erosion occurs, jute matting should be used to stabilise planting substrates (see **Section 5.3**).

5.4.3 Macrophytes

Planting can coincide with understorey and shrub planting. The only specific consideration will be the risk of substrate erosion, or water flows washing out plants. If higher than average rainfall is predicted for the season, installation of macrophytes may be delayed or advanced, and may be undertaken in warmer weather as the substrate is likely to remain hydrated.

A diversity of macrophyte species should be selected to give the greatest chance of native species colonising the channel in its entirety with minimal infill planting. Ensure particularly that a diversity is established at the upper reaches of the planting area, to donate seed downstream once mature.

If bank erosion occurs as a result of site earthworks or primary weed control, jute matting may be required in some areas to stabilise planting substrates (see **Section 5.3**).

5.4.4 Direct Seeding to complement revegetation

To increase diversity, offset potential plant losses and encourage ideal microhabitat occupation, native seed mixes of easily germinated species can be used. These should be withheld until understorey revegetation has occurred, to protect seeds from birds, wind and overland flow. It will also allow seeds to collect in undulations in the substrate resulting from revegetation. Ideal species include *Acacia* (and other Fabaceae), Myrtaceous shrubs (not eucalypts), most Poaceae (grasses), and *Lomandra*.

5.4.5 Cover Crops

In areas that have been cleared by primary weed control, and erosion is a risk, a cover crop may be appropriate. Use of cover crops is a way of providing stabilisation and soil improvement. Cover crops have included various combination of legumes, or grains. Cover crops can be ploughed into the soil or slashed prior to revegetation, or left as nurse plants if suitable species have been selected. The latter is likely to be preferred if used for this plan.

Utilise cover crops on a case-by-case basis, as a temporary or transitional method of providing stabilisation and soil improvement and dust control. Species should be sterile, not present a competitive risk to the establishment of native vegetation, but should be fast-growing species cultivated for repeated sowing rather than seed stock.

Native grasses should be incorporated into cover crops that will be retained.

Species with any weed risk (local, state or community) should not be used as cover crops in management areas.

5.4.6 VMA Planting Density Matrix

Target foliage cover and planting densities for each VMA described in **Section 4** are tabled below. Note that the basins do not require woody shrub cover, but smaller shrubs shallow root systems may be desirable. A mixture of terrestrial groundcovers and macrophyte species is expected to be suitable, at the discretion of the landscape contractor and in compliance with approved landscape plans.

Installation density targets are further discussed in **Section 2.1.4**.

Table 7. VMA Target PFC and Install Densities

| VMA | Basins | Channel | Stream Banks |
|---------------------|---|------------------------------|------------------------------|
| Stratum/Growth Form | Projected Foliage Cover (PFC) Target / Installation Density | | |
| Canopy | None | 0-10%** | 20% / 1 per 50m ² |
| Shrub | 0-20%** | None | 20% / 1 per 5m ² |
| Groundcover | 85%* / 4 per m ² | 100%* / 4 per m ² | 85% / 4 per m ² |
| Macrophyte | 85%* / 4 per m ² | 100%* / 4 per m ² | 0-20%** |

*aggregate PFC across growth forms

**non-binding target

5.5 Irrigation and Mulching

5.5.1 Irrigation

Given the volume of water available on the site from the established dams, water for irrigation should be sourced therefrom. The riparian area has heavy soils that hold water, and a large proportion of the catchment is directly gained. Therefore irrigation needs are likely to be reduced compared to terrestrial revegetation, given careful timing of installation (late March into April).

Long-stem planting typically is not dependent on irrigation.

Irrigation regimes should encourage deep rooting, and rapid acclimation of tubestock. As such, initial irrigation should be planned (at a minimum) for the first day, the first week (end of), and the first month (end of). These should be targeted waterings utilising a high volume per hectare to ensure soil penetration. Frequent light irrigation is undesirable, as it will encourage shallow rooting of canopy and woody shrubs, and fail to harden off tubestock over the establishment period rendering them vulnerable to hot or dry weather.

Additional irrigation may be required if conditions at the time of planting are warm or dry. As a guide, an increased regime may be first day, fourth day, eighth day, 16th day and 24th day. If conditions persist, irrigation fortnightly should be sustained until typical conditions return.

5.5.2 Mulching

Mulching is unlikely to be feasible give the substantial water flows carried by the subject watercourse, and the lack of vegetation proposed for removal. To avoid compromising public infrastructure, no mulch application is proposed under this plan.

In place of mulch, jute matting may be required (see **Section 5.3**) to stabilise substrates, and may be advantageous in reducing weed reinfestation (although *Juncus acutus* is unlikely to be suppressed, other species including pasture grasses are).

5.6 Maintenance

Maintenance of native vegetation rehabilitation with a natural landform target is best undertaken by qualified and experienced bush regeneration contractors. Bush regeneration is generally carried out with less equipment and herbicide, and relies on care and knowledge of native and exotic species at different growth stages. A willingness to “get knees dirty” is preferable to a reliance on powered gear or spray.

5.6.1 Maintenance Weed Control

As per **Section 5.2.1**, however of particular note is that herbicide application should be absolutely minimised once groundcover and shrub revegetation is installed. Manual removal of weed recruitment before a significant root structure is established is ideal to reduce ground disturbance. Herbicide wands may be used with care to target *Juncus acutus* seedlings while reducing off-target damage.

5.6.2 Revegetation Maintenance

If herbicide application is to be carried out among revegetation (this should be minimised), then it must be undertaken judiciously. Resource wastage from off-target damage is far too common on landscaped sites and can set back the establishment of the community years, and increase costs significantly (see below).

Revegetation maintenance includes infill planting as required to maintain density. Note carefully if similar species or growth forms have all failed in one area. This area should be replanted with a different assemblage that may be more suited, if the losses cannot be put down to other particular causes.

If certain species are flourishing in any one place, consider augmenting the revegetation with direct seeding of these or similar species to ensure effective establishment in suitable microhabitats.



Plate 3. (left) large bare areas resulting from careless herbicide use; (right) dense infestation of exotic grass in bare areas devoid of native plantings

6. Monitoring & Reporting

A key component of the VMP implementation is monitoring and compliance of works carried out by contractors on Site and preparation of compliance reports.

6.1 Monitoring

Key vegetation metrics for ongoing monitoring of VMP outcomes:

- Count of tree stems >5cm per size class (refer baseline number installed)
- Total aggregate area of canopy species clumps (smallest convex polygon)
- DBH of all trees (<5cm, 5-10, 10-19, 20+)
- Foliage cover of shrubs
- Foliage cover of groundcover & macrophytes
- Weed frequency (total of management areas)
- Weed hotspots
- Erosion or other unanticipated issues
- Photo monitoring points – established at time of understorey revegetation. Photo points should be marked with steel star-pickets oriented in the direction of photos to ensure consistent replication of monitoring. Photos should be taken at a 1:1 zoom ratio (assuming a mobile phone is used) with the device placed at the top of the star picket.

6.2 Reporting

To assist in tracking monitoring and compliance, vegetation contractors must submit regular update reports (at least quarterly) to the proponent and person / firm undertaking compliance on activities carried out within the VMP. These updates should include (but not be limited to):

- Status of rehabilitation – success of natural regeneration and comments on revegetation as required including plant survival;
- Establish photo monitoring locations and provide updated photos with each report,
- Weeds– areas and extent of treatment required including methods employed;
- Issues relating to unsolicited access or damage, dumping of rubbish etc; and
- Detail any corrective actions that are required and/or have been employed.

To ensure ongoing maintenance of biodiversity values under the VMP a compliance report on the progress of the VMP implementation will be prepared

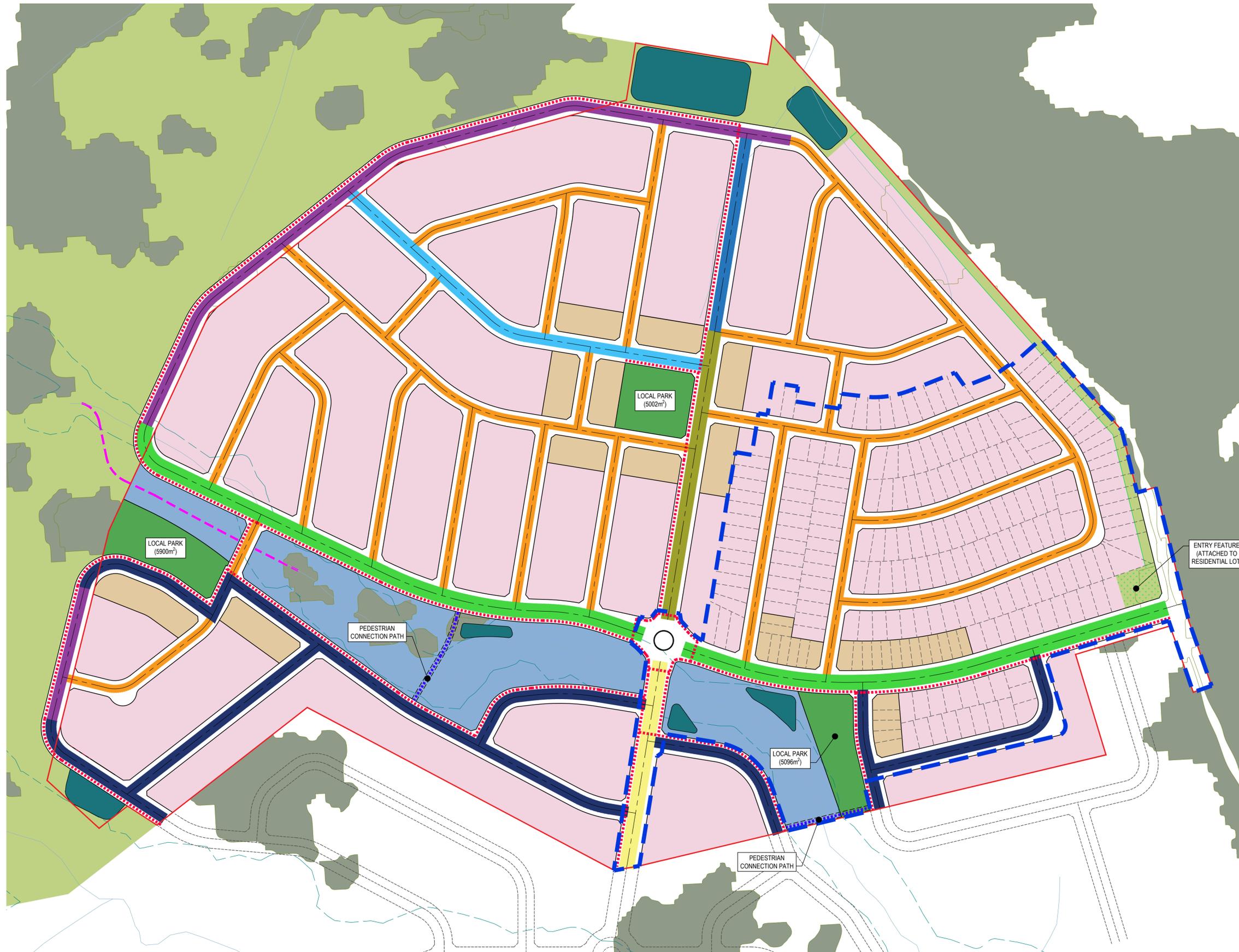
- one (1) year following commencement of works and then
- monitoring reports produced annually thereafter for five (5) years
- at completion of works, prior to assessment for dedication.

Reports are to be submitted to Council within one (1) month of each compliance inspection such that any overarching approval obligations can be met.

7. References

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Appendix A. Concept Layout



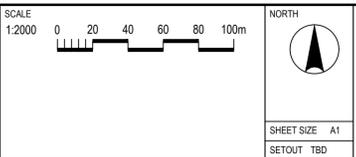
| LEGEND | |
|--------|--|
| | SITE BOUNDARY LINE |
| | LOT BOUNDARY LINE |
| | STAGE 1 BOUNDARY LINE (WATER BOOSTER AND 1 SEWER PUMP STATION) |
| | CREEK DIVERSION |
| | SHARED PATH NETWORK |
| | 8.0m ROAD WITH 17m ROAD RESERVE |
| | 10.5m ROAD WITH 20.5m ROAD RESERVE |
| | 11.0m ROAD WITH 20m ROAD RESERVE |
| | 12.0m ROAD WITH 22m ROAD RESERVE |
| | 12.0m ROAD WITH 21m ROAD RESERVE |
| | 14.0m ROAD WITH 24m ROAD RESERVE |
| | 15.4m ROAD WITH 24.4m ROAD RESERVE |
| | 15.4m ROAD WITH 25.4m ROAD RESERVE |
| | LOCAL PARK |
| | RIPARIAN CORRIDOR |
| | MEDIUM DENSITY DEVELOPMENT |
| | STANDARD RESIDENTIAL DEVELOPMENT |
| | WATER QUALITY INFRASTRUCTURE |
| | GREEN SPACE |
| | EXISTING VEGETATION |

| NUMBER OF LOTS | |
|---------------------------|------------|
| | STAGE 1 |
| SMALL LOTS | 26 |
| STANDARD RESIDENTIAL LOTS | 194 |
| TOTAL | 220 |

| REV | DESCRIPTION | ISSD | APP | DATE | PROJECT MANAGER | CLIENT |
|-----|------------------------|------|-----|----------|-----------------|--------|
| B | ISSUED FOR INFORMATION | JB | AB | 09.04.25 | A.BROWN | |
| C | ISSUED FOR INFORMATION | JB | AB | 15.04.25 | DESIGNED | |
| D | ISSUED FOR INFORMATION | JB | AB | 02.05.25 | J.BEVITT | |
| E | ISSUED FOR INFORMATION | JB | AB | 08.05.25 | DRAFTED | |
| F | ISSUED FOR INFORMATION | CWH | AB | 16.05.25 | J.BEVITT | |
| G | ISSUED FOR INFORMATION | JB | AB | 26.05.25 | VERIFIED | |
| H | ISSUED FOR INFORMATION | JB | AB | 27.05.25 | TBD | |

PROJECT MANAGER: A.BROWN
 CLIENT: [Blank]
 PROJECT MANAGER: J.BEVITT
 PROJECT MANAGER: J.BEVITT
 PROJECT MANAGER: TBD

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 DRAWING TITLE: CONCEPT MASTER PLAN - ROAD LAYOUT

STATUS: FOR INFORMATION ONLY
 NOT TO BE USED FOR CONSTRUCTION
 PROJECT - SET - DRAWING - SHEET: 250055-MP-001-02
 REVISION: H

Appendix B. PCT 4042 Species List

Flora species in all growth forms are listed below in order of frequency in PCT 4042. Consideration of the placement of the species in the growth form list should be taken prior to selecting one species over another.

| Tree Species | Shrub Species | Graminoid Species | Forb Species | Fern Species | Other Species |
|-----------------------------------|---|--|---------------------------------------|------------------------------------|-------------------------------------|
| Glochidion ferdinandi | Breynia oblongifolia | Lomandra longifolia | Dichondra repens | Adiantum aethiopicum | Parsonsia straminea |
| Notelaea longifolia | Melaleuca linariifolia | Microlaena stipoides | Dianella caerulea | Pteridium esculentum | Polymeria calycina |
| Angophora floribunda | Callistemon salignus | Oplismenus imbecillis | Lobelia purpurascens | Cheilanthes sieberi subsp. sieberi | Glycine clandestina |
| Eucalyptus siderophloia | Melaleuca nodosa | Entolasia marginata | Pseuderanthemum variabile | Botrychium australe | Geitonoplesium cymosum |
| Eucalyptus tereticornis | Melaleuca styphelioides | Imperata cylindrica | Vernonia cinerea | Doodia aspera | Eustrephus latifolius |
| Eucalyptus resinifera | Acacia irrorata | Entolasia stricta | Centella asiatica | Hypolepis muelleri | Gynochthodes jasminoides |
| Allocasuarina littoralis | Leucopogon juniperinus | Carex longibrachiata | Oxalis perennans | Adiantum hispidulum | Pandorea pandorana subsp. pandorana |
| Allocasuarina torulosa | Denhamia silvestris | Gahnia clarkei | Brunoniella australis | Adiantum formosum | Billardiera scandens |
| Eucalyptus amplifolia | Hibbertia aspera | Echinopogon ovatus | Desmodium gunnii | Asplenium australasicum | Hibbertia scandens |
| Eucalyptus globoidea | Leptospermum polygalifolium | Ottochloa gracillima | Hydrocotyle laxiflora | Blechnum cartilagineum | Clematis glycinoides |
| Eucalyptus propinqua | Pittosporum revolutum | Oplismenus aemulus | Lagenophora stipitata | Davallia solida var. pyxidata | Glycine microphylla |
| Alphitonia excelsa | Myrsine howittiana | Paspalidium distans | Gonocarpus tetragynus | Histiopteris incisa | Clematis aristata |
| Corymbia maculata | Polyscias sambucifolia | Gahnia aspera | Hydrocotyle sibthorpioides | Platynerium bifurcatum | Dioscorea transversa |
| Corymbia intermedia | Acacia longifolia | Lepidosperma laterale | Veronica plebeia | | Glycine tabacina |
| Eucalyptus microcorys | Bursaria spinosa | Panicum simile | Viola hederacea | | Smilax glycyphylla |
| Casuarina glauca | Persoonia linearis | Digitaria diffusa | Arthropodium sp. South-east Highlands | | Cassytha glabella |
| Eucalyptus pilularis | Acacia floribunda | Echinopogon caespitosus | Galium leiocarpum | | Plectorrhiza tridentata |
| Eucalyptus fibrosa | Dodonaea triquetra | Carex appressa | Oxalis exilis | | Smilax australis |
| Syncarpia glomulifera | Melaleuca decora | Cymbopogon refractus | Desmodium rhytidophyllum | | Hardenbergia violacea |
| Acmena smithii | Pultenaea villosa | Themeda triandra | Hybanthus stellarioides | | Cissus hypoglauca |
| Eucalyptus carnea | Myrsine variabilis | Lomandra filiformis | Hydrocotyle tripartita | | Cordyline stricta |
| Eucalyptus robusta | Rubus parvifolius | Lomandra multiflora subsp. multiflora | Commelina cyanea | | Stephania japonica var. discolor |
| Eucalyptus saligna | Ozothamnus diosmifolius | Digitaria ramularis | Dianella revoluta | | Cissus antarctica |
| Acacia maidenii | Melaleuca sieberi | Lomandra confertifolia | Lagenophora gracilis | | Desmodium varians |
| Angophora costata | Pittosporum multiflorum | Ptilothrix deusta | Opercularia diphylla | | Calochlaena dubia |
| Cryptocarya microneura | Rubus moluccanus | Eragrostis brownii | Arthropodium milleflorum | | Cassytha pubescens |
| Clerodendrum tomentosum | Sannantha pluriflora | Juncus usitatus | Geranium solanderi | | Kennedia rubicunda |
| Eucalyptus moluccana | Backhousia myrtifolia | Aristida vagans | Gonocarpus teucroides | | Cayratia clematidea |
| Eucalyptus seeana | Exocarpos cupressiformis | Carex maculata | Goodenia heterophylla | | Maclura cochinchinensis |
| Guioa semiglauc | Synoum glandulosum subsp. glandulosum | Paspalum orbiculare | Gymnostachys anceps | | Marsdenia rostrata |
| Acacia parramattensis | Pittosporum undulatum | Carex breviculmis | Dianella longifolia | | Notothixos incanus |
| Corymbia gummifera | Pultenaea retusa | Digitaria parviflora | Geranium homeanum | | Sarcopetalum harveyanum |
| Eucalyptus paniculata | Zieria smithii | Fimbristylis dichotoma | Plectranthus parviflorus | | Amyema congener subsp. congener |
| Melaleuca quinquenervia | Acrotriche divaricata | Poa labillardierei var. labillardierei | Poranthera microphylla | | Cassytha filiformis |
| Trochocarpa laurina | Callistemon linearis | Dichelachne micrantha | Ranunculus inundatus | | Dendrophthoe vitellina |
| Eucalyptus placita | Duboisia myoporoides | Gahnia melanocarpa | Ranunculus lappaceus | | Amyema gaudichaudii |
| Acacia melanoxylon | Melicope micrococca | Juncus subsecundus | Acianthus fornicatus | | Convolvulus erubescens |
| Cupaniopsis parvifolia | Acacia falcata | Carex inversa | Arthropodium minus | | Cymbidium suave |
| Elaeocarpus obovatus | Acacia leiocalyx subsp. leiocalyx | Cynodon dactylon | Brunoniella pumilio | | Tylophora paniculata |
| Eucalyptus umbra | Acacia linifolia | Eragrostis leptostachya | Caladenia catenata | | Calystegia marginata |
| Jagera pseudorhus var. pseudorhus | Elaeocarpus reticulatus | Lomandra hystrix | Eclipta platyglossa | | Dendrobium linguiforme |
| Acacia binervata | Hibbertia empetrifolia subsp. empetrifolia | Machaerina articulata | Euchiton japonicus | | Embelia australiana |
| Eucalyptus acmenoides | Hibiscus heterophyllus subsp. heterophyllus | Poa sieberiana | Galium binifolium | | Hibbertia dentata |
| Eucalyptus grandis | Melaleuca thymifolia | Carex gaudichaudiana | Gonocarpus micranthus | | Jasminum volubile |
| Eucalyptus piperita | Sannantha angusta | Chorizandra cybaria | Hypericum gramineum | | Livistona australis |
| Tristaniopsis laurina | Sannantha crassa | Cyperus polystachyos | Murdannia graminea | | Muehlenbeckia gracillima |
| Acacia aulacocarpa | Sannantha similis | Eragrostis alveiformis | Solanum prinophyllum | | Palmeria scandens |
| Acacia concurrens | Acacia implexa | Gahnia sieberiana | Tricoryne elatior | | Papillilabium beckleri |
| Angophora bakeri | Acacia longissima | Hemarthria uncinata | Viola betonicifolia | | Ripogonum album |
| Angophora paludosa | Callistemon rigidus | Ischaemum australe | Alternanthera denticulata | | Tylophora barbata |
| Angophora subvelutina | Cassinia uncatata | Juncus continuus | Caladenia carnea | | |
| Angophora woodsiana | Clerodendrum floribundum var. floribundum | Lepidosperma elatius | Goodenia paniculata | | |

| Tree Species | Shrub Species | Graminoid Species | Forb Species | Fern Species | Other Species |
|---------------------------|------------------------------|-----------------------------|--|--------------|---------------|
| Brachychiton acerifolius | Cryptocarya rigida | Lepidosperma quadrangulatum | Haloragis heterophylla | | |
| Corymbia henryi | Daviesia ulicifolia | Lomandra cylindrica | Hydrocotyle acutiloba | | |
| Cupaniopsis anacardioides | Goodenia ovata | Machaerina juncea | Hydrocotyle geraniifolia | | |
| Diploglottis australis | Hakea salicifolia | Poa affinis | Hypoxis hygrometrica | | |
| Endiandra sieberi | Melaleuca biconvexa | Schoenus apogon | Pomax umbellata | | |
| Eucalyptus eugenioides | Melaleuca ericifolia | Austrostipa pubescens | Pterostylis longifolia | | |
| Ficus rubiginosa | Phyllanthus gunnii | Austrostipa ramosissima | Sigesbeckia orientalis subsp. orientalis | | |
| Lophostemon confertus | Prostanthera scutellarioides | Carex fascicularis | Vittadinia cuneata | | |
| Melia azedarach | Pultenaea myrtoidea | Carex lobolepis | Alpinia caerulea | | |
| Polyscias elegans | Solanum cinereum | Cyperus flaccidus | Artanema fimbriatum | | |
| Schizomeria ovata | Syzygium oleosum | Cyperus gracilis | Brachyscome angustifolia | | |
| Streblus brunonianus | Wilkiea huegeliana | Cyperus imbecillis | Caesia parviflora | | |
| Toona ciliata | Acacia ulicifolia | Cyperus lucidus | Caladenia fuscata | | |
| | Acronychia imperforata | Deyeuxia parviseta | Centipeda minima subsp. minima | | |
| | Acronychia oblongifolia | Digitaria breviglumis | Chiloglottis diphylla | | |
| | Capparis arborea | Isolepis inundata | Cryptostylis erecta | | |
| | Commersonia dasyphylla | Juncus mollis | Cycnogeton procerum | | |
| | Commersonia fraseri | Juncus planifolius | Dampiera purpurea | | |
| | Elaeodendron australe | Lachnagrostis filiformis | Dampiera stricta | | |
| | Eupomatia laurina | Lepidosperma concavum | Daucus glochidiatus | | |
| | Ficus coronata | Lepidosperma gunnii | Dianella tasmanica | | |
| | Hibbertia vestita | Lepidosperma urophorum | Drosera spatulata | | |
| | Homalanthus populifolius | Lomandra obliqua | Gonocarpus humilis | | |
| | Leucopogon ericoides | Machaerina rubiginosa | Gratiola pedunculata | | |
| | Leucopogon lanceolatus | Oplismenus undulatifolius | Hydrocotyle pedicellosa | | |
| | Leucopogon muticus | Paspalum distichum | Libertia paniculata | | |
| | Lissanthe strigosa | Pseudoraphis paradoxa | Lobelia surrepens | | |
| | Logania albiflora | Schoenus melanostachys | Microtis parviflora | | |
| | Notelaea ovata | Sporobolus elongatus | Mitrasacme polymorpha | | |
| | Notelaea sp. A | Sporobolus laxus | Opercularia aspera | | |
| | Notelaea venosa | Tetraria capillaris | Oxalis chnoodes | | |
| | Persoonia stradbokensis | | Patersonia glabrata | | |
| | Phyllanthus hirtellus | | Phyllanthus similis | | |
| | Pimelea linifolia | | Plantago debilis | | |
| | Podolobium ilicifolium | | Pterostylis collina | | |
| | Podolobium scandens | | Pterostylis erecta | | |
| | Prostanthera incisa | | Pterostylis pedunculata | | |
| | Psychotria loniceroides | | Ranunculus plebeius | | |
| | Rhodamnia rubescens | | Senecio diaschides | | |
| | Rhodomyrtus psidioides | | Senecio hispidulus | | |
| | Rubus rosifolius | | Senecio pinnatifolius | | |
| | Syzygium australe | | Thelymitra pauciflora | | |
| | Trema tomentosa var. aspera | | Veronica calycina | | |
| | | | Viola banksii | | |

Appendix C. Weed Control Methods

Acceptable weed removal techniques

Note this list is not exhaustive, however intended to provide a guide to assist in VMP implementation.

General

- The contractor shall take all care not to poison existing desirable vegetation when undertaking herbicide control methods;
- The correct herbicide shall be selected and used appropriately to ensure effective results on all noxious weeds;
- Herbicide control is not to be used within or near water courses. The contractor shall obtain all required permits prior to use of herbicides near any water course and submit details of proposed spraying and chemicals to be used for approval prior to commencement;
- Noxious weed removal shall be carried out as described utilising weed removal techniques outlined in this specification. Should the contractor feel that techniques selected in the report will prove un-effective or inefficient; the contractor shall notify the ecologist nominating alternative procedures for review;
- All herbicide spraying is to be undertaken using apparatus deemed as appropriate, generally this will be Knap-Sack or vehicle mounted spray boom in large areas. All other methods of herbicide application are not to be used onsite unless discussed and approved in writing by the Ecologist; and
- The contractor shall ensure any spray drift is kept to an absolute minimum.

Herbicide Spraying

- Herbicides should not be applied prior to rain occurring. This reduces the herbicides effectiveness as well as being transported in runoff to creek lines and waterways. The use of herbicides should be considered when;
- There are small areas of dense noxious weeds with few or no native plants to protect;
- There are large areas of noxious weeds;
- The noxious weeds are growing too rapidly for physical removal; and
- The spraying of weeds must only be undertaken by experienced persons with Chemcert or equivalent qualifications. The success of each treatment must be evaluated by the operator after a set period of time and re-applied (if Necessary) according to the labelled effectiveness for each herbicide. Care must be taken when applying herbicides near drainage lines to avoid excess use due to the sensitivity of the alter bodies into which runoff will eventually flow.

Mechanical Removal

- Mechanised removal using plant in a manner that does not impact the watercourse bed and bank.
- Once initial treatment has occurred follow up cut and paint will be required to ensure any remaining plants are treated. Should any plants be found that are small enough to pull out successfully by hand this is preferred. Ensure that all roots are removed. Hand pulling techniques are outlined below; and
- Hand removal will be required most probably after initial treatment and will be used in the event of new seedling emergence which will have recolonised after initial removal. Hand removal shall be employed ensuring that all roots are removed as described below.

Hand Removal

- Best undertaken when the soil profile is moist to ensure full and ease of removal and disposal off site;
- Apparent seeds and fruit are to be removed and placed in a bag for removal and disposal off site;
- Firmly take hold of the seedling at ground level, pull and manipulate backwards and forwards until it releases cleanly. If the plant is held too high it may break resulting in root material left behind in the soil. Remaining plant material may re-establish in this instance;
- All roots remaining within the soil shall be removed;
- Should the seedling have a spreading root system, roots will require individual removal; and
- All seedlings and hand pulled weeds are to be placed in a bag, removed from site and disposed of sensibly.

Woody Weed Removal Techniques

- Cut and Paint woody weeds to 10cm basal diameters;
- Stem injection;
- Frilling or Chipping - Plants should be actively growing and in good health;
- Deciduous plants should be treated in spring and autumn when leaves are fully formed;
- For multi-stemmed plants, inject or chip below the lowest branch to treat each stem individually; and
- Herbicides must be injected immediately before plant cells close (within 30 seconds) and translocation of herbicide ceases.

Appendix D. Long-Stem Planting Technique



The **Long-stem Planting** Guide





Australian Plants Society

NSW Ltd. Central Coast Group

www.australianplants.org



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This guide has been compiled by members of The Australian Plants Society Central Coast Group and Gosford City Council and is funded by NSW Environmental Trust.

Acknowledgements: Thanks to Hunter-Central Rivers Catchment Management Authority and Bill Hicks for their contributions.

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Design by Marjo Patari, Gosford City Council.

Photos on front cover: long-stem planting along Ettalong Creek, long-stem planting, long-stem root ball, long-stem seedling about to be planted. Back cover: coastal area, Patonga Beach; riparian area, Umina; saline area, Yarrawa; rainforest area, Katandra Reserve, Holgate.

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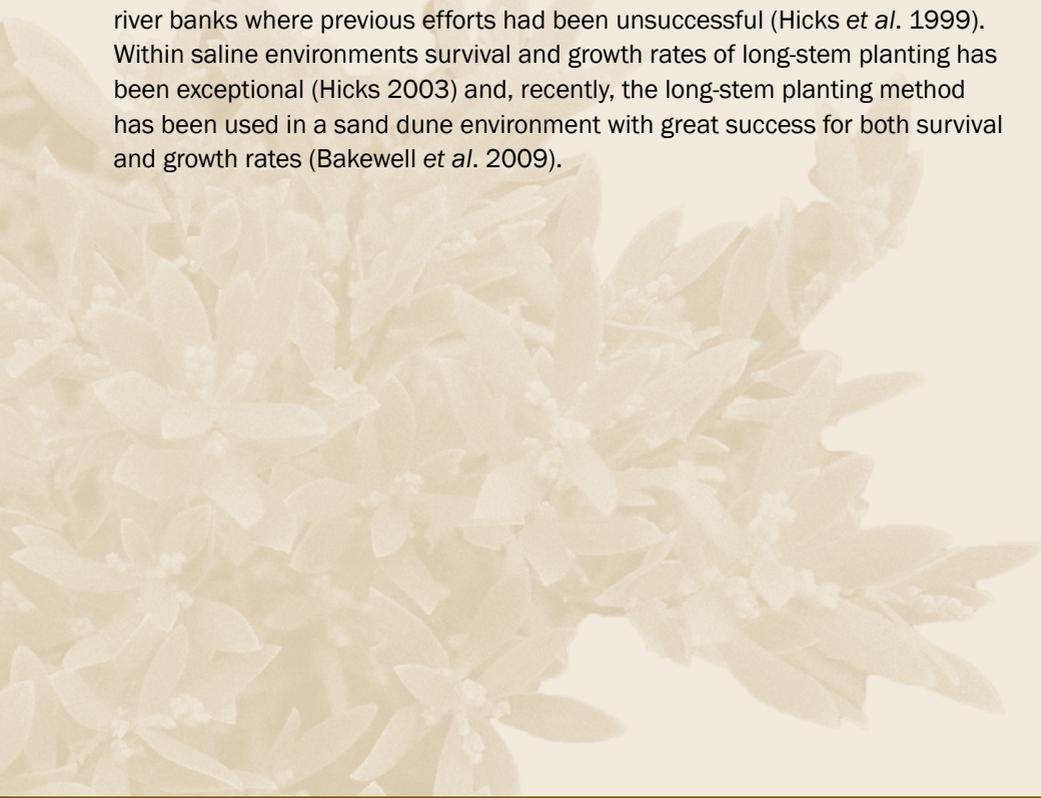
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|---|----|
| Introduction | 4 |
| What is long-stem planting? | 5 |
| How the long-stem method was developed | 7 |
| Step-by-step guide to long-stem planting | 9 |
| General benefits | 17 |
| Riparian environment | 19 |
| Rainforest environment | 21 |
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Long-stem planting...

Development of the long-stem planting method in Australia has seen an increase in the survival rates of seedlings planted in many different environments. The advantages of this method, such as no post-planting watering, increased growth rates and higher survival rates, have made a positive contribution to many rehabilitation projects and seen individuals and groups obtain successful outcomes in areas that were considered a challenge.

Within Katandra Reserve (Holgate, NSW) the long-stem planting method has been trialled on rainforest species, resulting in significantly greater growth rates in seedlings of some species planted using the technique (Chalmers *et al.* 2007). Furthermore, native riparian species planted using this method in the Hunter Valley (NSW) showed greater survival rates (20-50 per cent better, depending on the species) compared with standard planting methods on river banks and demonstrated that native plants could indeed be reintroduced on to river banks where previous efforts had been unsuccessful (Hicks *et al.* 1999). Within saline environments survival and growth rates of long-stem planting has been exceptional (Hicks 2003) and, recently, the long-stem planting method has been used in a sand dune environment with great success for both survival and growth rates (Bakewell *et al.* 2009).



What is long-stem planting ?

The long-stem planting method is an innovative way of planting that can result in higher survival and growth rates with minimal post-planting care. Using the long-stem method, seedlings are grown in pots for 10-18 months, so that they develop long woody stems. These seedlings are then planted with about three-quarters of their length below the soil surface, approximately 1 metre deep, which results in much of the woody stem being covered with soil.

The deep planting protects the roots from substantial changes in soil temperature, allows the plant access to deeper soil moisture and reduces competition from weeds. Once planted, the seedling develops roots from the buried stem and leaf nodes. This promotes the development of a robust root network which gives the seedling a greater chance of survival.

The long-stem planting method has challenged two long-held horticultural principles:

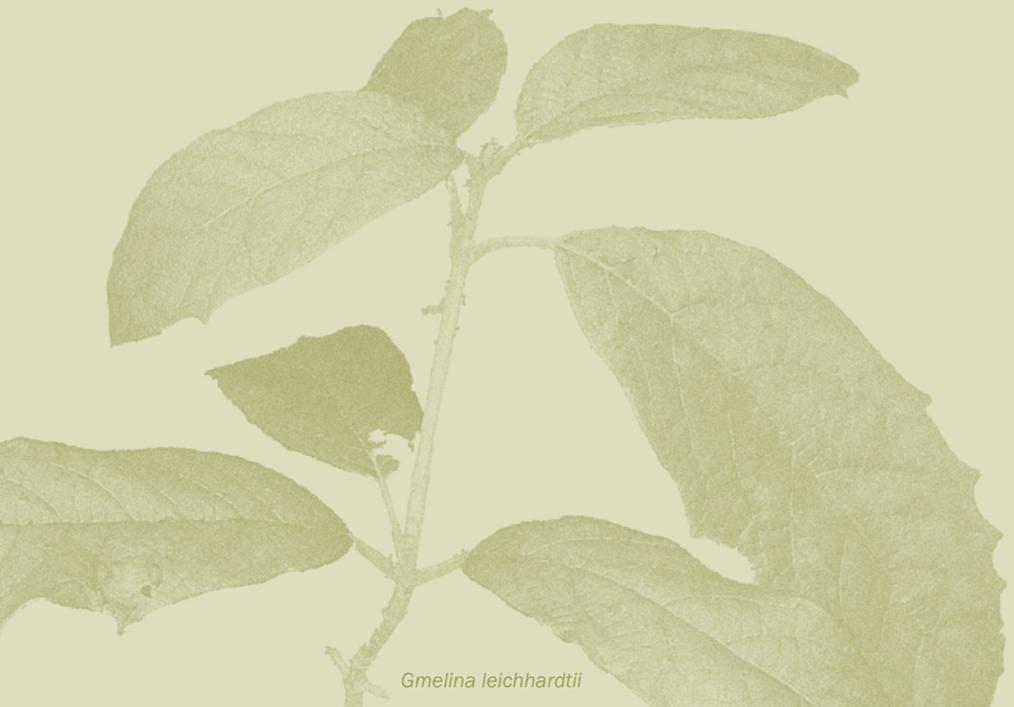
1. Large plants should not be grown in small containers as they will become root bound, thereby hindering the future growth of the plant.

The long-stem method uses plants that are relatively tall for the size of the pot they are grown in. This is achieved through the use of standard pots. In addition, slow-release fertilisers are placed in the centre of the pot so that the plant does not need to grow extended roots in search of further nutrients. This prevents the plant from becoming root bound in the pot and allows for the development of healthy roots when planted in the ground.

2. Stems of seedlings should not be planted below the surface of the soil as this subjects them to fungal attack and disease.

The long-stem planting method appears to challenge this long-held horticultural belief since most of the seedling's woody stem is planted underground, yet survival rates of these seedlings have been higher than that of those planted using traditional methods. While this has been observed during both scientific and field trials, further research is needed to determine why the stems of long-stem plants are not prone to disease and fungal attack.

Field trials using the long-stem method have included a variety of native species to demonstrate that seedlings can not only be grown successfully when these two traditional principles are not followed, but can have survival and growth rates that exceed those planted using traditional planting methods. It would appear that most, if not all, hard tissue plants are suitable for use in long-stem planting (Hicks 2010, pers. com.,nd).



Gmelina leichhardtii

How the long-stem method was developed

The long-stem planting method was pioneered by Bill Hicks for use on river banks in the Hunter Valley. Bill wanted to establish native species on river banks instead of willows (*Salix* spp) as was the recommended practice at the time. The spread of willows had become an environmental problem, impacting on the ecology of river systems and wetlands in much of temperate Australia. Willows affect the flow of water and reduce biodiversity. Willow species are now listed by the Australian Government as Weeds of National Significance (1998), and are no longer recommended for planting.

The riparian environment presents challenges for the planting of natives using traditional planting methods as the seedlings are continuously affected by changes in water levels, river flow, and processes of erosion and sedimentation. Once the long-stem planting method had been developed and tested, Bill conducted workshops throughout New South Wales, Victoria and South Australia to educate communities about the use of the method and its value in revegetating cleared, disturbed and hostile natural areas. Individuals and groups have since conducted scientific field experiments to examine the effectiveness of the method in a range of habitats, including rainforest, sand dunes and saline sites. The Australian Plants Society Central Coast Group have used the method for a number of years at their Bushcare site in Katandra Reserve. With assistance from Bill Hicks the method was altered slightly to suit:

- the local rainforest conditions at Katandra;
- the number of plants required each year; and
- the tools and materials available to the Bushcare group.

The long-stem method has now been used throughout Australia and overseas, including revegetation projects in New Mexico.



Clockwise from top left:
Equipment and seedlings ready for planting, long-stem seedlings ready for planting with bottles of water, materials needed for potting.



Step-by-step guide to long-stem planting

The long-stem planting technique contains a number of steps which are considered to be important to the overall success of the method. However, once you have tried the technique you may be able to make changes in order to suit your site's particular needs.

Tools and materials suggested/required for plantings are:

- **seedlings or seeds** for revegetation projects, local provenance seeds or seedlings are recommended as they will provide a range of ecological benefits including providing habitat for local fauna, and maintaining local genetic integrity.
- **pots** use standard 50 mm square-cornered pots.
- **potting mix** use a good quality mix for natives. Large pieces can be sieved from the mix and used at the bottom of the pot to stop the mix from escaping.
- **trace elements** for native plants (e.g. Micromax[®]).
- **slow-release fertilisers** suitable for native plants. Two types are required: a 5-6 month slow-release fertiliser; and an 8-9 month slow-release fertiliser.
- **potting racks** to hold the pots off the ground or bench while the seedlings are growing in your 'nursery'.
- **seaweed solution** use half-strength seaweed solution in a bucket of water to fully immerse the potted seedlings. This is recommended just before planting.
- **tools for planting** shovel, post hole digger or auger, or water lance.
- **water for planting** if a water supply is not available and the water needs to be carried to the site, the use of as little as 2 litres per plant has been successful, but more can be used if the sub-soil is dry.



Top left and right: half-fill pot and create a depression/hole for the fertiliser and seedling.

Centre left: place the fertilisers in the hole.

Centre right: select seedling.

Bottom: place potted seedling in rack.

How to grow the long-stem seedlings

1. Use seedlings that have been grown in seed-raising trays using conventional methods, or collect the seedlings from a suitable location. Within Katandra Reserve, for example, small seedlings were collected from pathways and fallen logs in the rainforest, where there was little chance the seedlings would survive to become adult trees. Collecting seedlings from the natural environment ensures that you have the strongest seedlings which have survived where others have died. These stronger seedlings transplant more successfully. Collecting seedlings from the natural environment also allows you to choose from a greater variety of species which may be representative of all layers of the forest canopy. Conditions apply to the collection of plant material in reserves and national parks. Please check with your local authorities prior to collecting seeds or seedlings.
2. Thoroughly mix the trace elements through the potting mix (5 ml of trace elements per 7.5 litres of potting mix).
3. Half fill the pots with the prepared potting mix, placing the larger sieved pieces at the bottom.
4. Create a depression deep enough to hold the slow-release fertiliser. This depression can be made with a pen or stick with a diameter of approximately 1.5 cm. Place the fertilisers in the well (half a teaspoon of 8-9 month slow-release fertiliser, then quarter of a teaspoon of 5-6 month slow-release fertiliser). Gently place the seedling in the pot, taking care not to damage the fine hair roots. Carefully fill with potting mix and tap the bottom of the pot to settle the potting mix and improve contact between the potting mix and the roots. Top up the rest of the pot with potting mix. Water the seedling thoroughly and add more potting mix if necessary.
5. Place the pots on 'potting racks' so that they do not have direct contact with the ground or table. The potting racks provide a space between the bottom of the pots and the ground/table that result in the roots being 'air pruned'. This means that when the roots reach the outside of the pot they dry off (aerial pruning) and stop growing. This allows the roots to spread out into the surrounding soil and form a strong network when the seedling is planted.



Top left: dig hole with auger.

Top right: pour 1 litre of water into the hole and allow to drain before placing the seedling.

Centre: gently backfill the hole using water to settle the soil and eliminate air pockets. Then build up dish-shaped depression.

Bottom: add remaining water.



6. Select a suitable place for the seedlings to grow in your nursery. Choose the location to suit the species you are growing. Generally a sunlit position is recommended to encourage strong stem and leaf growth.
7. Water seedlings regularly and rotate the pots periodically to ensure all plants get an equal amount of water and sunlight.
8. Seedlings can take between 10 and 18 months to reach a suitable height for long stem planting. Seedlings should reach 1 metre during this time, however this would depend on the plant species' natural growth habit.
9. Soak the seedlings (still in their pots) the night before planting in a half-strength seaweed solution to ensure the root ball is thoroughly wet. This saturates the potting mix and assists in stimulating root development once planted.

How to plant using the long-stem method

1. Dig holes that are deep enough to allow three-quarters of the plant to be buried. The use of power tools such as a soil auger in heavy clay may result in smooth walls in the hole, these may need to be roughened slightly to allow the roots to penetrate the smooth walls more easily.
2. Pour approximately 1 litre of water into the hole and allow it to soak in.
3. Prune side branches or large leaves from the lower portion of the stem that impede placement of the seedling in the hole when planting.
4. Place the plant in the hole and backfill carefully using soil and water alternately to ensure that no air pockets are left. This is important to prevent the roots from drying out.
5. Create a dish-shaped depression around the stem of the plant and add the remaining water. The depression will assist in catching any rain.
6. Generally no further maintenance is required. Since the root ball will be below the root zone of most weeds, competition from weed roots will be minimal. In moist environments, vine growth may need to be controlled.



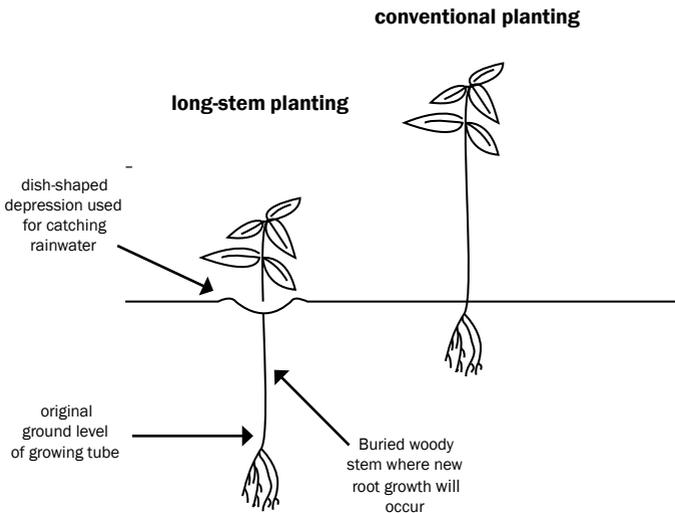
Clockwise from top left: long-stem seedling before planting, close-up of roots developed from buried part of stem with a white line marking ground level, demonstration of original ground level and growth of roots from buried stem.



The original Bill Hicks method of long-stem planting differs slightly from the step-by-step method described above as he had a supply of water at his planting sites. The original method sourced water from the nearby stream using a water pump and then a water lance was used to dig the hole and thoroughly wet the soil. In soils prone to collapse, such as sand, a tube was used to support the hole around the lance. The plant was then placed into the tube and the plastic tube carefully removed. Water from the stream was used to water the seedlings in.

This original method of long-stem planting came out of a need to plant the seedling deep enough into the river bank so they would not be washed out during flooding in the riparian environment. While doing this Bill realised that the survival and growth rates were enhanced.

Bill grew plants from seed he collected from local sources. Shortly after germination seedlings were planted out into separate pots using the long-stem method and grown for the 10-18 month term as described above.





Above: Jessica planting a seedling at Katandra Reserve, Holgate, in 2004.

Below: Jessica next to the same plant to her left in 2009. Notice the general regeneration of the site due to long-stem planting.



General benefits

The benefits of the long-stem planting method are significant and include advantages which are of great assistance to bush regenerators and others interested in plant survival.

Firstly, the long-stem method creates an older, stronger seedling for planting. This is due to the consistent nutrients, air pruning and longer nursery period. If the seedling is also sourced from the natural environment through collection it has the added advantage of having survived the natural culling process of its local environment. This produces a much stronger plant than an ordinary seedling and increases its survival rate.

Another notable benefit is that the deeply-planted root ball is insulated from the substantial changes in soil temperature and moisture compared with traditional plantings where the plant roots are close to the soil surface.

In drier and saline environments, planting more deeply allows the root ball to be further away from the hot, dry or damaging salt-encrusted topsoils which increases the seedling's chances of survival.

Newly planted long-stem seedlings are also more stable in the ground than those planted using traditional methods. Deeper planting means that seedlings are better able to withstand soil erosion due to wind such as on sand dunes, or the effects of moving water such as flood conditions in riparian zones. The development of a deep root system allows the plant to bind greater amounts of soil, which is also why these plants are so stable in the ground.

Another benefit is the relatively small quantities of water required when planting, and that no further watering is required post-planting. This benefit is important on sites with limited water.

An unexpected benefit of long-stem planting has been the reduced loss from vandalism as it is more difficult to pull up a deeply-planted root ball (Hicks 2010, pers. com.,nd) and seedlings can survive trampling by people walking through planted areas (Bakewell et al. 2009).



Above: A long stem seedling two months after planting, along a creek bank at Umina Beach.

Below: the same seedlings three years later.



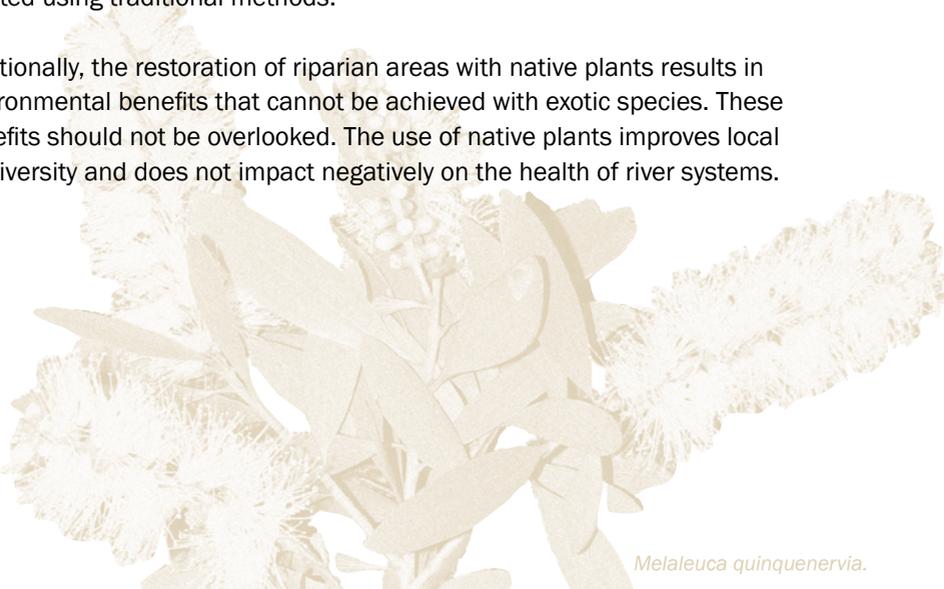
Finally, competition with shallow-rooted weeds is less likely to occur when seedlings are planted using the long stem method. The deeply-planted root ball accesses nutrients and soil moisture that is beyond the reach of shallow-rooted weed species. Given the reduced level of competition with shallow-rooted species, and that no follow-up watering is required, the after-planting care is minimised.

Riparian environment

As part of the original trials in the Hunter Valley, Bill Hicks grew seedlings to a height of up to 1.5 m and then planted 70-90 per cent of the plant below the soil surface. These trials revealed that three of the four species used exhibited greater growth rates using the long stem method. Bill showed that native plants could be reintroduced into riparian environments using the long-stem planting method where previous plantings trials had not been effective.

One of the main benefits of using the long-stem method within the riparian context is that the roots of seedlings are planted more deeply into the river bank therefore, the seedling is not washed away during a flood event. Long-stem planting also allows the root ball to be protected from extremes of temperature, including frosts and drying out that can damage plants which are planted using traditional methods.

Additionally, the restoration of riparian areas with native plants results in environmental benefits that cannot be achieved with exotic species. These benefits should not be overlooked. The use of native plants improves local biodiversity and does not impact negatively on the health of river systems.



Melaleuca quinquenervia.



Top: Newly planted White Beech (*Gmelina leichhardtii*) long-stem seedling.

Below: Katandra Reserve, Holgate, where long-stem planting has been trialled.



Rainforest environment

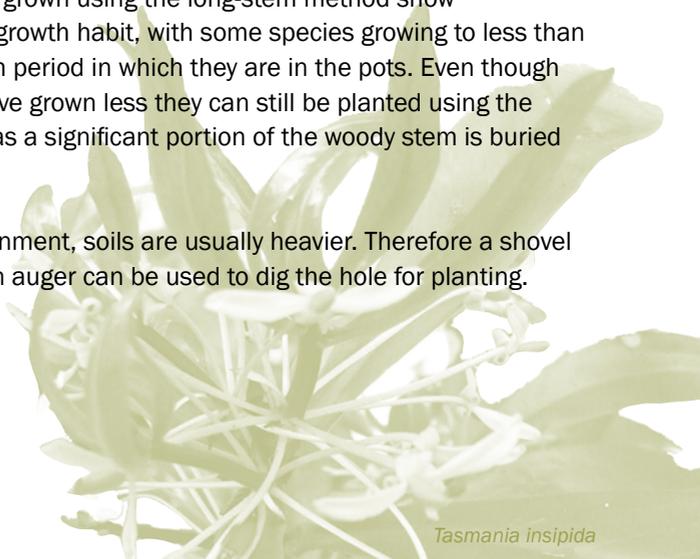
Research conducted in the rainforest at Katandra Reserve has indicated that some species show significantly greater growth rates when planted as long-stem seedlings (Chalmers et al. 2007). During these trials it was found that the growth of Cheese Tree, *Glochidion ferdinandi*, was significantly greater when planted using the long-stem method as opposed to traditional planting, while for Scentless Rosewood, *Synoum glandulosum*, the growth rate remained the same.

These trials at Katandra Reserve from 2002 to 2009 were conducted during an extended dry period. It is not known how long-stem planting would perform during a period of prolonged wet conditions. Field trials using a larger number of rainforest species are currently being undertaken to further study long-stem planting within rainforest environments.

Due to the great height of rainforest trees and the short seed 'shelf life' of many rainforest species it is often easier to collect seedlings from the forest floor in this environment. Collection of seedlings also provides benefits such as greater species selection and the harvesting of stronger individuals which have survived the germination process in forest conditions.

Rainforest species that are grown using the long-stem method show pronounced differences in growth habit, with some species growing to less than 1 metre in the 18-24 month period in which they are in the pots. Even though these species appear to have grown less they can still be planted using the long stem method as long as a significant portion of the woody stem is buried at planting.

Within the rainforest environment, soils are usually heavier. Therefore a shovel or a manual or petrol-driven auger can be used to dig the hole for planting.



Tasmania insipida



Top: Acacia long-stem seedling planted in a sand dune at Patonga Beach.

Below: Establishment of long-stem seedlings in the sand dune at Patonga Beach.



Coastal environment

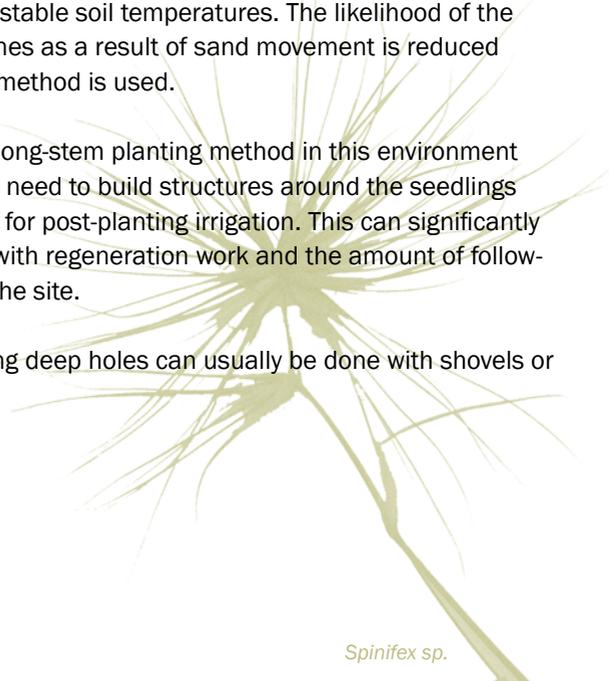
It has been shown that in coastal areas long-stem planting of native sand dune plant species has been successful without the need for protective planting sleeves or follow-up watering. Seedlings planted in dune areas using the long-stem method experienced greater survival and growth rates than tube stock planted using the traditional planting method.

At Patonga Beach (Central Coast, NSW) the long-stem planting method has been used in trials of Coastal Wattle, *Acacia longifolia* var. *sophorae*, to restore the beach dune area. Results of these trials concluded that the long-stem method produced higher survival rates compared with plants using a traditional planting method (79 per cent compared with 53 per cent). Greater growth was also recorded in the long stem seedlings (19 cm mean stem growth as compared to 8 cm for the traditional method) (Bakewell et al. 2009). Also, long-stem seedlings survived trampling and breaking of stems and shoots due to human impact in the planted areas.

Long-stem plants in sand dunes benefit from having reliable soil moisture, limited root competition, and stable soil temperatures. The likelihood of the root ball being exposed in dunes as a result of sand movement is reduced when the long-stem planting method is used.

The advantages of using the long-stem planting method in this environment include the elimination of the need to build structures around the seedlings to protect them and the need for post-planting irrigation. This can significantly reduce the costs associated with regeneration work and the amount of follow-up maintenance required at the site.

In sandy environments, digging deep holes can usually be done with shovels or other hand tools.



Spinifex sp.



Top: Two and a half year old long stem seedlings planted in a high saline area near Muswellbrook (Yarrawa) continue to show significant growth.

Below: Long stem plantings in the saline environment.



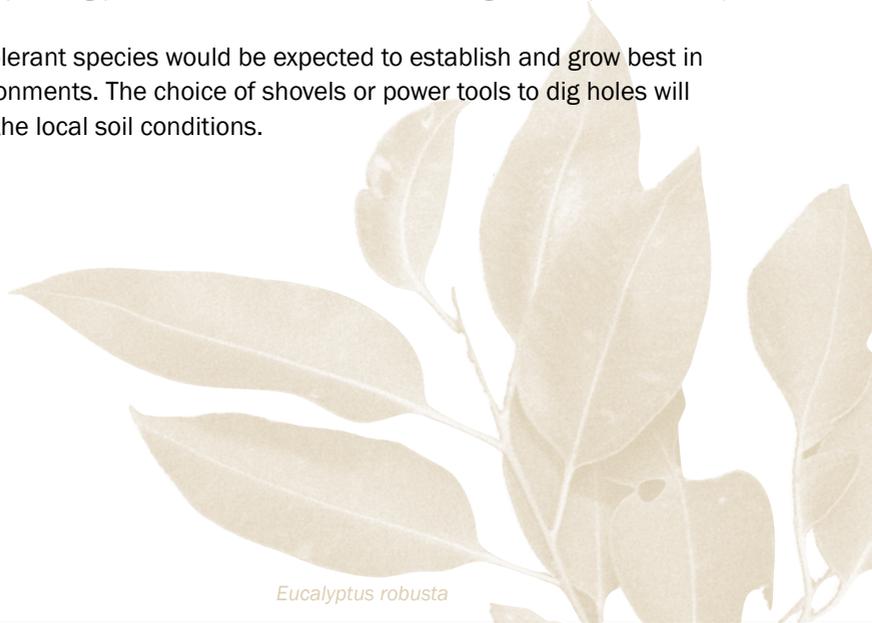
Saline environment

There has been great success in the use of long-stem planting within saline environments. After conducting trials within salt-affected lands in the Upper Hunter, Bill Hicks concluded that survival and growth rates of long-stem plantings had been outstanding (Hicks 2003). During these trials Bill planted 2,500 salt-tolerant seedlings. The trees survived a record drought, above-average temperatures and frosts as well as high salinity levels (Hicks 2003). It appears from these trials that virtually any native salt-tolerant species is suitable for long-stem planting.

The Hunter-Central Rivers Catchment Management Authority at Muswellbrook, NSW, has also used long stem planting at their saline site. Fresh water was used to water the seedlings in. At this site it was found that long-stem planting worked better on drier saline sites than wet saline ones and further research is needed to understand why.

The main benefit of this method in a saline environment is that the root system is planted below the salt-encrusted top layer of the soil. Soil salinity suppresses plant growth and creates a hot, dry and uninhabitable environment. As in other areas, deep planting places the root ball below the danger zone (Hicks 2010).

Local salt-tolerant species would be expected to establish and grow best in saline environments. The choice of shovels or power tools to dig holes will depend on the local soil conditions.



Eucalyptus robusta

Resources required

The actual cost and resource requirements for long-stem planting in comparison with traditional methods will vary between projects and site locations. The level of maintenance will be influenced by the environment being planted. The following table lists the resources that need to be considered when making comparisons between the two methods.

While long stem seedlings are kept for a longer time in the nursery, the advantages of reduced pre-planting site preparation, reduced cost of plant protection, reduced need for post-planting weed control and improved survival and growth rates are considered to be significant.

| Resource | Long-stem method | Traditional method |
|---|---|---|
| Site preparation including soil preparation and ground cover weed control | Not usually needed. May be required for large plantings | Weed control and ripping may be required |
| Plant sleeves or other materials to protect against wind and frost | Not usually needed. Can be useful to protect from browsing animals | Required in some locations |
| Post-planting maintenance such as watering, weed control, fertilising, and mulching | Not usually needed | Weed control and watering usually required |
| Use of power tools/ equipment to dig holes | May be required in some environments | Usually not required for small scale projects, but may be used for larger projects to save time |
| Length of time to dig holes | Usually longer for long stem planting | Usually shorter for traditional method |
| Length of time that potted seedlings require fertiliser | Only initial slow-release fertiliser required. None required post-potting | 3-6 months after potting |
| Length of time that potted seedlings require watering | 10-18 months | 3-6 months after potting |
| Length of time seedlings are in the nursery | 10-18 months | 6-12 months after potting |

Conclusion

The use of the long-stem planting method provides an opportunity to improve the survival rate of native plants in the restoration of degraded ecosystems. Long-stem planting has shown to be successful in a wide range of environments and conditions.

The long-stem planting method has been shown to be a particularly successful method to use in environments where the surface soil conditions are not generally favourable for planting. This may be due to low moisture levels, high temperatures, high salinity, or surface ground movement due to flooding or human activities such as walking. In these cases the long-stem planting method offers the advantage of planting the seedling more deeply into the ground and away from these adverse effects. It is unclear whether the method provides the same advantages in environments where subsoil moisture conditions are unfavourable during drought.

We encourage others to trial the method at their work sites and would welcome feedback on the results.

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For further information

Australian Plants Society Central Coast Group: www.australianplants.org/longstem.htm

Hunter-Central Rivers Catchment Management Authority: www.hcr.cma.nsw.gov.au

Bill Hicks Longstem Tubestock DVD: www.norkhiltechnologies.com

NSW Environmental Trust: www.environment.nsw.gov.au



Appendix E. DPI Vehicle & Machinery Clean Down Guide

NSW Department of Primary Industries and Regional Development Management Guide

Vehicle and Machinery Clean Down Procedures

April 2025



Published by the Department of Primary Industries and Regional Development

Title: Vehicle and Machinery Clean Down Procedures

Department reference number: INT24/4811

More information

Department of Primary Industries and Regional Development

Invasive Species Biosecurity, Weeds Biosecurity team.

Acknowledgements

This publication is based on the '*Vehicle and machinery cleandown procedures*', developed by Biosecurity Queensland, part of the Department of Agriculture and Fisheries, and has been adapted for use in New South Wales.

Cover image: NSW Department of Primary Industries and Regional Development.

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List of acronyms

DPIRD – Department of Primary Industries and Regional Development

LLS – Local Land Services

NSW – New South Wales

QLD – Queensland

VIC – Victoria

SA – South Australia

WA – Western Australia

TAS – Tasmania

NT – Northern Territory

ACT – Australian Capital Territory

Glossary of terms

Authorised officer – officers employed by the DPIRD or a local control authority that have been appointed as an authorised officer under Section 361 or 372 under the NSW *Biosecurity Act 2015*.

Biosecurity matter – means:

- (a) any living thing, other than a human, or
- (b) any part of an animal, plant or living thing, other than a human, or
- (c) a product of a living thing, other than a human, or
- (d) a disease, or
- (e) a prion, or
- (f) a contaminant, or
- (g) a disease agent that can cause disease in a living thing (other than a human) or that can cause disease in a human via transmission from a non-human host to a human, or
- (h) any thing declared by the regulations to be biosecurity matter.

Carrier – means anything (whether alive, dead, or inanimate, and including a human) that has, or is capable of having any biosecurity matter on it, attached to it, or contained in it.

Dealings – means:

- (1) Deal with biosecurity matter or a carrier, or engage in a dealing with biosecurity matter or a carrier, includes any of the following –
 - (a) keep biosecurity matter or a carrier,
 - (b) have possession, care, custody or control of biosecurity matter or a carrier,
 - (c) produce, manufacture or supply biosecurity matter or a carrier,
 - (d) import biosecurity matter or a carrier into the State,
 - (e) acquire biosecurity matter or a carrier,
 - (f) buy, sell, or dispose of biosecurity matter or a carrier,
 - (g) move biosecurity matter or a carrier,
 - (h) release biosecurity matter or a carrier from captivity,
 - (i) use or treat biosecurity matter or a carrier for any purpose,
 - (j) breed, propagate, grow, raise, feed or culture biosecurity matter or a carrier,
 - (k) experiment with biosecurity matter or a carrier,
 - (l) display biosecurity matter or a carrier,
 - (m) enter into an agreement or other arrangement under which another person deals with biosecurity matter or a carrier,
 - (n) agree to deal with biosecurity matter or a carrier,
 - (o) cause or permit a dealing in biosecurity matter or a carrier to occur,
 - (p) anything prescribed by the regulations as a dealing with, or engaging in a dealing with, biosecurity matter or a carrier.
-

(2) An occupier of land is taken to have possession of any biosecurity matter or carrier on that land unless the occupier establishes that the biosecurity matter or carrier was in the possession, care, custody, or control of another person.

(3) The regulations may specify circumstances in which a person is taken not to be dealing with or engaging in a dealing with biosecurity matter or a carrier for the purposes of the Act or any provision of the Act.

Local control authority – is the council of a local government area unless the weed control functions for that area have been conferred on a county council or joint organisation (within the meaning of the *Local Government Act 1993*) under any other Act (see Section 370 of the *NSW Biosecurity Act 2015*).

Regional priority weeds – are weeds that are regulated through the general biosecurity duty and described in the Regional Strategic Weed Management Plan for each LLS region.

Reproductive material – includes any part of a plant that is capable of growing to become a new plant (e.g. a bulb, rhizome, a stolon, a tuber, a stem, leaf cuttings or stem or root fragments).

State priority weeds – are weeds listed in the *NSW Biosecurity Act 2015* as prohibited matter, regulated under a biosecurity zone or with a mandatory measure that prohibits sale or import in the *NSW Biosecurity Regulation 2017*, or subject to a Biosecurity Control Order under the Act.

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Introduction

Correct and thorough clean down of vehicles and machinery reduces the risk of spreading state and regional priority weeds, and soil borne pests and diseases.

These clean down procedures have been developed to promote a consistent approach to cleaning vehicles and machinery across NSW. They have been prepared specifically to minimise the introduction and spread of weeds, including their seeds and other reproductive material.

The procedures also aim to assist those undertaking the cleaning and inspection of vehicles and machinery to understand their role in helping drivers and operators to discharge their general biosecurity duty.

General biosecurity duty

When vehicles and machinery move biosecurity matter, like weed seeds and other reproductive material, they are regulated as carriers under the NSW *Biosecurity Act 2015*. Any person who deals with biosecurity matter or a carrier of biosecurity matter has a legal responsibility to take reasonable and practical measures to prevent, eliminate or minimise the risk of those dealings having an adverse impact on the economy, environment, or community. This legal responsibility is referred to as a person's general biosecurity duty.

Owners or operators of vehicles and machinery can discharge their general biosecurity duty by cleaning their vehicle or machinery in accordance with the procedures identified in this document. It is an offence for a person not to discharge their general biosecurity duty. Fines and charges may apply.

How weeds spread with machinery

Weed fragments, seeds or other reproductive material can be carried by vehicles and machinery via animal transport and livestock vehicles (including on the feet/hooves, fur and in manure of animals), mud or dirt, radiators and other engine parts, shoes and clothing, tools and equipment, in the interior and on tyres and mudguards.

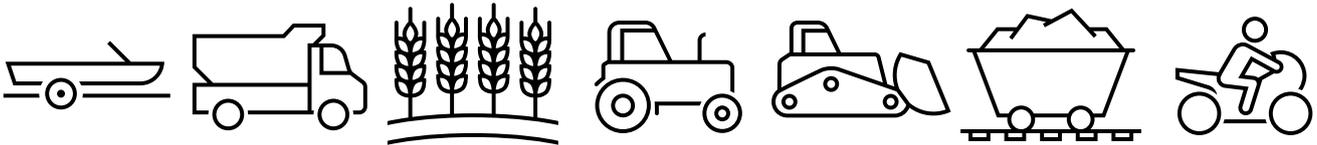


High risk vehicles, machinery, and equipment

Some vehicles, machinery and equipment have been identified as posing a high risk when it comes to the movement of weeds. Identified high risk vehicles, machinery and equipment include:

- aquatic weed harvesters
- boats and other personal watercraft

- cars, trucks, and four-wheel drives
- dozers, excavators, graders, and other heavy machinery
- farm implements such as slashers, ploughs, mulchers, and post-hole diggers
- grain harvesting machinery
- livestock trucks
- tractors, all-terrain vehicles, and other farm vehicles
- wheeled loaders and other mining and construction equipment.



Parthenium weed carriers

Grain harvesting machinery and equipment, and mineral exploration drilling rigs, are prohibited from entering NSW from QLD, unless accompanied by a Biosecurity Certificate issued by NSW DPIRD that states that:

- the machinery has been inspected at an approved facility
- the machinery has been cleaned down in accordance with Schedule 1 of the *Biosecurity Order (Permitted Activities) 2019*
- a Record of Movement has been submitted.

This is to minimise the risk of them introducing parthenium weed (*Parthenium hysterophorus*) into NSW from QLD, where it affects more than 60 million hectares.

Tips for reducing the risk of spread

To reduce spreading weeds via vehicles, machinery, and equipment, you can:

- avoid driving off-road (e.g. through paddocks) in areas known to contain state or regional priority weeds or in other areas that present a risk of vehicle or machinery contamination
- remove soil and plant material from clothing and footwear before stepping into vehicles

- clean vehicles and machinery suspected of carrying soil or plant material before leaving a site
- begin work in clean areas or in areas with the least number of weeds and work towards infested or high-density areas
- prioritise weed control efforts along roads, laneways, and buffer zones
- where possible, work infested areas separately and clean down equipment thoroughly before moving to another area
- avoid slashing and other work in infested areas during peak seed production times
- secure loads (e.g. grain, fodder) if you suspect they contain weed seeds
- avoid driving in high risk areas where state or regional priority weeds are present, especially in wet or dewy conditions.



Figure 1: Cleaning footwear after working in areas infested with high risk weed species.

High risk weed species and areas

The weeds listed in the table 1 (below) are state priority weeds, are either Prohibited Matter, Biosecurity Order or Biosecurity Zone weeds under the NSW *Biosecurity Act 2015*. Due to their dispersal mechanisms, are at high risk of being spread by vehicles, machinery and equipment if they are not thoroughly cleaned in accordance with these procedures.

It is important to note however, that there are other state and regional priority weeds (not listed below) that may also be dispersed by vehicles and machinery.

Table 1: State listed high risk weed species and known infestation locations.

| Weed name | Recorded in NSW | Current known extent* (High risk areas) | How is it spread? |
|--|-----------------|---|---|
| Alligator weed (<i>Alternanthera philoxeroides</i>) | Yes | QLD, VIC, and NSW (Sydney metropolitan area and many regional areas) | Plants spread from parts of the plant that break off, both on land and in water. Often with excavation machinery, boats and trailers, the movement turf, hay, soil, landscape supplies, and attached to livestock. |

| Weed name | Recorded in NSW | Current known extent* (High risk areas) | How is it spread? |
|--|-----------------|--|---|
| Bitou bush and boneseed (<i>Chrysanthemoides monilifera</i> subsp. <i>rotundata</i> and subsp. <i>monilifera</i>) | Yes | QLD and NSW (Mostly in coastal habitats except for Western NSW) | Seeds may be spread in contaminated soil and gravel, on tyre treads, by soil adhering to vehicles and equipment, on boots, by water, wind and animals. |
| Black knapweed (<i>Centaurea x moncktonii</i>) | Yes | SA, TAS, VIC, and NSW (Tenterfield Shire Council area) | Seeds are spread by wind, water, animals, people, and vehicles. It can grow from root fragments which are spread by machinery, soil movement or water. |
| Bridal veil creeper (<i>Asparagus declinatus</i>) | No | WA, SA, and VIC | Rhizomes and tubers spread in dumped garden waste and soil movement. Seeds can spread in water and garden waste, or via earthmoving equipment. |
| Broomrape (<i>Orobanche</i> spp. exc. <i>O. cernua</i> var. <i>australiana</i> and <i>O. minor</i>) | No | SA | Seeds spread by wind, livestock, vehicles, clothing, flood waters and contaminated fodder, seed, and soil. |
| Chinese violet (<i>Asystasia gangetica</i>) | Yes | QLD and NSW (Currumbin in QLD and the North Coast, Hunter, and Greater Sydney LLS regions in NSW. Particularly in Port Stephens, Newcastle, and Lake Macquarie) | Plant parts and seeds can be spread by earth moving machinery, slashers, mowers, and vehicles. |
| Eurasian water milfoil (<i>Myriophyllum spicatum</i>) | No | Not known to occur in Australia. | Seeds and plant fragments are spread in water, by birds and by human activities such as boating. |

| Weed name | Recorded in NSW | Current known extent* (High risk areas) | How is it spread? |
|--|-----------------|--|--|
| | | | May be traded as an aquarium plant. |
| Frogbit and spongeplant (<i>Limnobium</i> spp.) | Yes | QLD and NSW (Frogbit only) | Seeds and fruit develop in the water or in the mud which could be transported by vehicles. Has been traded as an ornamental plant for ponds. Also spreads by plant parts. Seedlings are moved by water flow, wind and can attach to birds or watercraft. |
| Gamba grass (<i>Andropogon gayanus</i>) | No | WA, NT, and QLD (As far south as Rockhampton) | Seeds are spread by wind, water, movement of contaminated hay, sticking to mud attached to vehicles, slashers and other machinery. |
| Hawkweeds (<i>Hieracium</i> and <i>Pilosella</i> spp.) | Yes | TAS, VIC, and NSW (Snowy Monaro Regional Council and Snowy Valleys Council areas) | Seeds can be spread by wind, water, contaminated fodder, garden waste and hiking equipment. Also spreads vegetatively. |
| Hydrocotyl (<i>Hydrocotyle ranunculoides</i>) | No | WA | Seeds, stolon, and root fragments can be spread by water movement or on vehicles and machinery. |
| Karoo acacia (<i>Vachellia karroo</i>) | Yes | WA, VIC, QLD, and NSW (As far south as Toowoomba QLD and Bega Valley Shire Council area in NSW) | Seeds spread by wind, water, and animal droppings. |
| Kochia (<i>Bassia scoparia</i> exc. subsp. <i>Trichophylla</i>) | No | WA, SA, and TAS | Branches with weeds, break off the shrub and get blown in the wind like tumbleweed. Small seeds may be spread by vehicles and machinery. |

| Weed name | Recorded in NSW | Current known extent* (High risk areas) | How is it spread? |
|---|-----------------|--|---|
| Koster's curse (<i>Clidemia hirta</i>) | No | QLD (Recorded as far south as Tully) | Seeds spread by water machinery and vehicles. Also spread by fruit-eating birds and mammals. |
| Lagarosiphon (<i>Lagarosiphon major</i>) | No | Historic records only. No known infestations in Australia. | Spreads in waterways via stem fragments and creeping underground stems. Usually introduced into new water bodies by dumped aquarium waste, however, could be moved by boats and other aquatic vessels. |
| Mexican feather grass (<i>Nassella tenuissima</i>) | Yes | VIC, ACT, TAS, WA, and NSW (Leeton, Bathurst, and Sutherland Shire Council areas) | Seeds spread on clothing, livestock, vehicles, by contaminated seed and fodder. |
| Miconia (<i>Miconia</i> spp.) | Yes | QLD and NSW (North Coast region) | Seeds are spread by birds, small mammals and by humans on shoes, clothing, and on tyres. Also spreads vegetatively. |
| Mikania vine (<i>Mikania micrantha</i>) | No | QLD (Recorded as far south as north QLD) | Seeds are spread by wind, water, animals, and machinery. Also spreads vegetatively. |
| Mimosa (<i>Mimosa pigra</i>) | No | WA, NT, and QLD | Seeds are spread by water, stock and feral animals (in manure and fur) and humans (attached to clothing and mud stuck to vehicles, boats or machinery). |
| Parkinsonia (<i>Parkinsonia aculeata</i>) | Yes | WA, NT, SA, QLD, and NSW (Western and North West LLS regions of NSW) | Seeds are spread by water, animals (that eat the seeds), contaminated soil, and mud attached to machinery, vehicles, animals, and footwear. |

| Weed name | Recorded in NSW | Current known extent* (High risk areas) | How is it spread? |
|--|-----------------|--|---|
| Parthenium weed (<i>Parthenium hysterophorus</i>) | Yes | QLD and NSW (Especially the QLD Central Highlands and along the Newell Highway in the North West LLS region of NSW. See Figure 2) | Seeds spread by wind, water, animals, vehicles, machinery (harvesters and bulldozers), clothing and contaminated agricultural feed. |
| Prickly acacia (<i>Vachellia nilotica</i>) | No | WA, NT, SA, and QLD (Recorded as far south as Beaudesert - considered to be widespread in QLD) | Seeds spread primarily by livestock that eat mature pods, but also by vehicles and water. |
| Rubber vine (<i>Cryptostegia grandiflora</i>) | Yes | QLD, NT, WA, and NSW (Western LLS region of NSW) | Seeds spread by water, wind and attached to animal fur or soil/mud stuck to machinery. |
| Siam weed (<i>Chromolaena odorata</i>) | No | QLD and NT (Recorded as far south as City of Moreton Bay Council) | Seeds can attach to vehicles, machinery, clothing, footwear, and animals. |
| Spotted knapweed (<i>Centaurea stoebe</i> subsp. <i>micranthos</i>) | No | ACT | Seeds are spread by wind, machinery, vehicles, birds, and other animals, in water, and as contaminants of agricultural produce (such as hay). Can grow from plant parts. |
| Tropical soda apple (<i>Solanum viarum</i>) | Yes | QLD and NSW (North Coast, Northern Tablelands and Hunter LLS regions) | Seeds spread by animals (especially in manure), water, contaminated fodder, and soil, or by sticking to vehicles and machinery. |
| Water caltrop (<i>Trapa</i> spp. - all) | Yes | NSW (Woody fruit and seeds traded in Greater Sydney region) | Seeds can be spread by waterbirds and other animals, fishing nets and traps, boats, clothing, and vehicles that go in the water. |

| Weed name | Recorded in NSW | Current known extent* (High risk areas) | How is it spread? |
|---|-----------------|--|---|
| Water hyacinth (<i>Eichhornia crassipes</i>) | Yes | All states, except TAS and SA. | Seeds can be moved to new locations by water flows or via mud stuck to birds, machinery, and footwear. Plants can also be spread by contaminated fishing equipment, watercraft, and boat trailers. |
| Water soldier (<i>Stratiotes aloides</i>) | No | Not known to occur in Australia | Seeds and plant fragments spread in water. May be traded as an ornamental pond plant. |
| Witchweed (<i>Striga</i> spp. exc. <i>S. parviflora</i>) | No | WA, NT, and QLD (Recorded as far south as Hervey Bay) | Seeds spread by contaminated crop seed, wind, water, and soil attached to animals, machinery, tools, footwear, and clothing. |
| Yellow burrhead (<i>Limnocharis flava</i>) | Yes | QLD and NSW (Lismore City Council area) | Seeds are spread by water, mud stuck to vehicles and machinery, footwear, animals, and birds. Also spreads by plant parts. |

* At time of publishing

For assistance and more information

To reduce the risk of transporting invasive plant material, it is highly recommended that you consult with local council weed biosecurity officers (NSW) or other relevant government agencies (interstate) prior to moving high risk machinery or equipment.

Each of the 11 LLS regions has a Regional Strategic Weed Management Plan and Regional Inspection Plan. The [Regional Strategic Weed Management Plans](#) are five-year plans that prioritise weeds in each region based on the risk posed by the weed and feasibility of coordinated control. The Plans articulate how communities and stakeholders work together to identify, respond to and manage the identified weeds. The Regional Inspection Plans outline the procedures for inspecting and monitoring locations, including high-risk pathways and sites.

More information about state and regional priority weeds and their current known distribution in NSW can be found on the NSW WeedWise website: weeds.dpi.nsw.gov.au.

Case study: Parthenium weed

Vehicles and machinery that have been used, driven, or sourced from the QLD are at high risk of being contaminated with parthenium weed (*Parthenium hysterophorus*) seeds.

In NSW, the majority of parthenium weed detections continue to occur along roadsides in the North West LLS region of NSW, particularly along the Newell Highway (as shown in Figure 2).

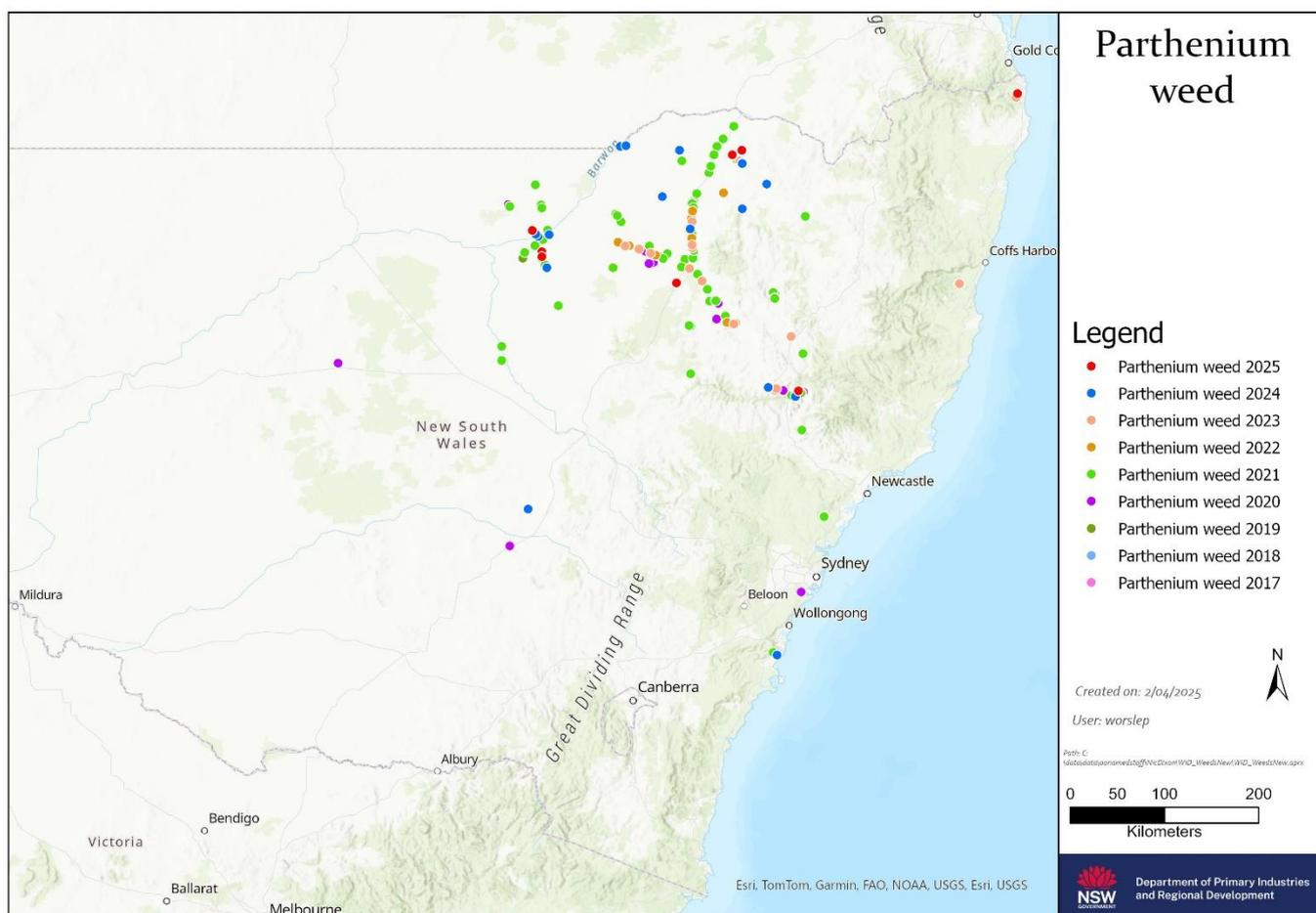


Figure 2: Parthenium weed (*Parthenium hysterophorus*) occurrences in NSW from 2017-2025.

It is suspected that these new weed incursions have resulted from contaminated vehicles, machinery or equipment entering NSW from infested areas in QLD. This is likely to be due to mud containing (parthenium weed seeds) drying and falling from vehicles as they travel along these routes, from QLD or one infested area to another destination.

Similarly, most parthenium weed infestations found on private property, have been linked to the movement of vehicles and machinery. Since 1982, around 40% of new parthenium weed incursions were associated with the introduction of headers, and a further 10% were from other vehicles/machinery entering private property (refer to Figure 3).

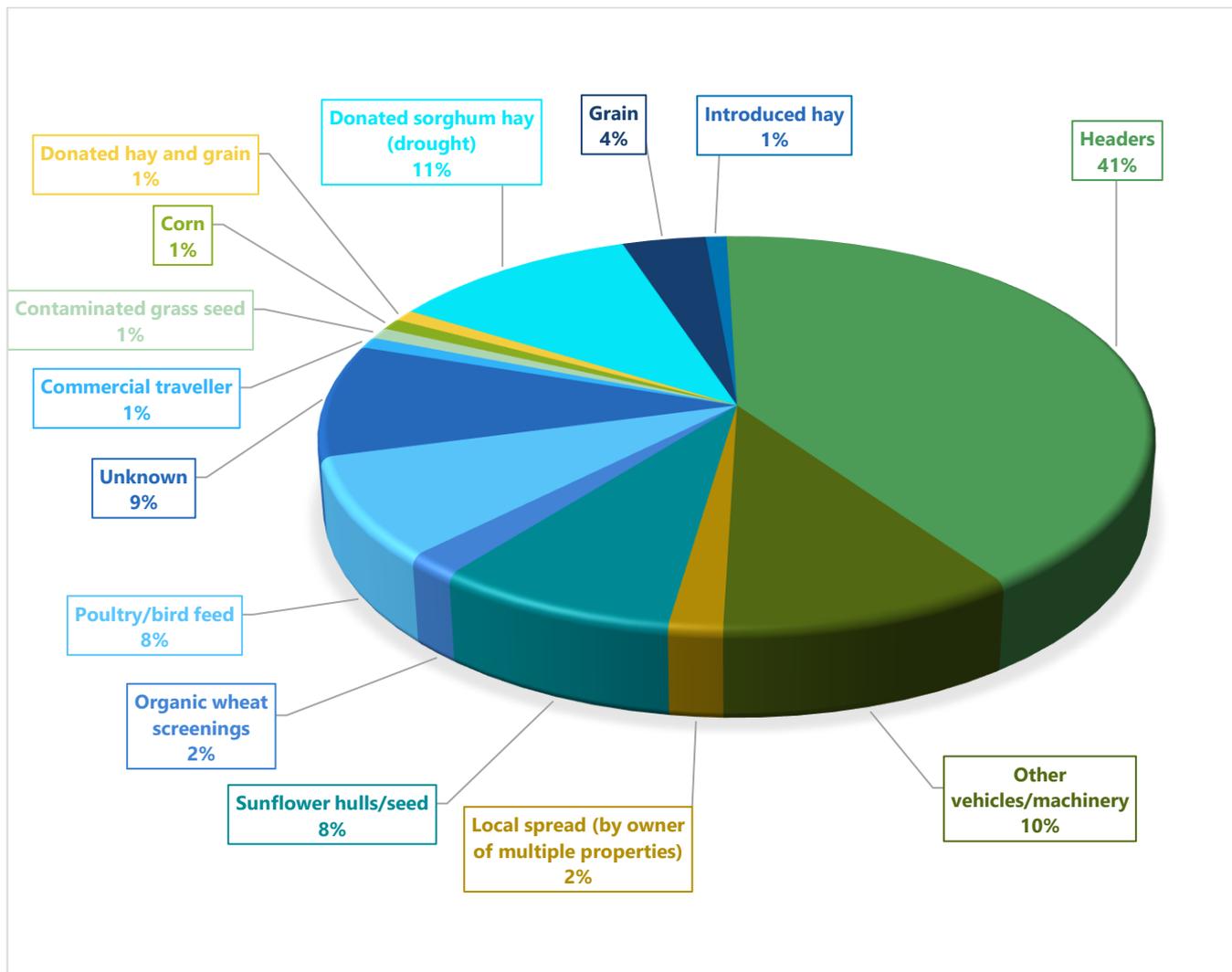


Figure 3: Sources of new parthenium weed (*Parthenium hysterophorus*) infestations on private properties from 1982-2023.

Clean down and maintenance sites

Cleaning vehicles and machinery before moving them to a different area helps prevent the spread of weeds to adjoining land, other parts of the property and along roads.

Choosing a mobile or field clean down site

When choosing a clean down site, consult the land manager about its location and select an area that will give the best possible results. You should:

- consider the site's run-off and ensure it is away from watercourses and drains to help prevent the spread of invasive plants and avoid grease and detergents polluting the water
- choose a relatively flat site to help prevent run-off and to ensure safety
- ensure the site can be easily identified for ongoing monitoring and notify the landholder of this location
- identify the site with a painted post, distinguishing landmark, or GPS record

- choose a well-grassed area (if possible) to reduce the amount of mud created during cleaning and so that the grass can compete with any weed seeds that may germinate
- choose a site close to the infested area to prevent further spread
- ensure that the clean down site does not cross the boundary of the infested property (unless the weed is also located on the adjoining property at similar or higher densities)
- ask the landholder/manger if you can conduct a small clean down at any existing sheds/washdown facilities before leaving the property.

Choosing a maintenance site

When maintaining, repairing, or disassembling vehicles and machinery for cleaning, select a hard surfaced area such as concrete or gravel (if possible). Selecting a firm surface will make it safer and easier to conduct work, remove parts, and monitor the site in the future. If similar work must be done in the paddock or on the roadside, mark the area for future monitoring and record its location.

It is important to remember that reproductive material from state and regional priority weeds may fall off vehicles and machinery when maintenance work is conducted.

General clean down procedures

This section refers to general clean down procedures that should be referred to when cleaning any vehicle, machinery, or equipment. Specific clean down checklists for high risk vehicles, machinery and equipment are also provided later in this document.

Safety

Ensure all safety precautions are taken when conducting a clean down on your vehicle, machinery, or equipment, and refer to relevant operating manuals for specific safety instructions before cleaning. It is also important to:

- place the vehicle, machinery or equipment in a safe position that is stable and immobile
- stop the engine, apply the park brake, chock the wheels, and lower all implements or secure/chock them if they need to be up for cleaning (e.g. the slasher)
- ensure the area is free of obstructions and objects that may cause injury (e.g. logs, power lines)
- have a qualified operator present if parts of the vehicle or machinery need to be moved during cleaning
- move the vehicle, machinery, or equipment with caution
- wear appropriate protective clothing like coverall clothing, a shock-proof hard hat, safety glasses or goggles and a fluorescent safety vest (if working near a roadway).

Suggested equipment

There are a range of things you can use to clean down your vehicle, machinery and equipment depending on what you have available to you and if the material is wet or dry matter. It is suggested to use a combination of the following equipment:

- leaf blowers
- brooms, brushes, cloths/rags, and a dustpan
- vacuum cleaner
- air compressor or cans of compressed air
- mobile water tanker, spray unit (ideally), or water pumped from a dam or cattle trough
- high-pressure water cleaner or pump
- garden hose (for small clean downs)
- washing machine
- flashlight
- endoscope or fiberscope
- step ladder
- general mechanic's tools.



Figure 4: Officer inspecting machinery.

General clean down guidelines

When cleaning any vehicles, machinery, or equipment, it is recommended to:

- examine the item to determine how much mud, soil and plant material has built up
- identify any areas that must be cleaned with compressed air (rather than water) and clean these first
- clean from the top down, starting with the upper body and cabin, then underneath the guards and body of vehicle/machinery, and finally any attachments or implements
- identify any areas that require special attention as outlined in the specific vehicle or machinery checklists (provided later in this document)
- clean all toolboxes and storage compartments
- check that all areas have been cleaned
- replace the guards and belly plates, if required
- move the clean vehicle or machinery carefully, avoiding re-contamination and if necessary, wash any remaining mud, soil or plant material from the tyres or tracks
- record the details of the cleaning on the appropriate forms or in the vehicle or machinery logbook
- present the vehicle or machinery to an inspector (if required)
- responsibly dispose of any plant material, seeds, dirt or mud by liaising with your local council Weed Officer.

Remember!

No clean down guidelines can detail all the parts to check because there are numerous different models and new models, different attachments (e.g. different types of blades on dozers), different modifications, either in the factory or by previous owners, varying conditions of the machinery (like rusted parts allowing entry of contaminants into sections that are usually sealed). Examine the item you are cleaning very carefully for any areas that could be contaminated, even if these areas are not listed in the guidelines and clean them thoroughly.

Training

Training is recommended for all people responsible for cleaning down vehicles or machinery.

Competency-based training is provided by registered training organisations through units such as AHC BIO203 – Inspect and clean machinery, tools, and equipment to preserve biosecurity. After completing this training, a person will be able to perform the tasks outlined in Table 2.

Table 2: Competencies required for satisfactory clean downs.

| Element | Performance criteria |
|--|---|
| 1. Prepare to inspect and clean machinery, tools and equipment | <p>1.1 Confirm the work activity to be undertaken with supervisor</p> <p>1.2 Identify health and safety hazards and risks and apply controls according to supervisor instructions and workplace procedures</p> <p>1.3 Identify and select tools and equipment required according to supervisor instructions</p> <p>1.4 Select, check, and use personal protective equipment and infection controls</p> |
| 2. Inspect machinery, tools, support vehicles and equipment | <p>2.1 Ensure machinery is safe before inspection and ensure free moving parts are immobilised according to workplace and operating procedures</p> <p>2.2 Check serviceability of tools and materials required for task</p> <p>2.3 Inspect machinery and equipment for contamination according to workplace biosecurity procedures</p> <p>2.4 Remove covers and guards safely</p> <p>2.5 Identify contamination and cleaning requirements according to workplace biosecurity procedures</p> <p>2.6 Report observed equipment faults to supervisor according to workplace procedures</p> |
| 3. Clean machinery, tools, equipment, and support vehicles | <p>3.1 Select correct equipment and location of site for cleaning</p> <p>3.2 Clean the machinery, support vehicles, tools, and equipment according to workplace biosecurity procedures</p> <p>3.3 Replace guards and covers safely</p> |
| 4. Complete cleaning work | <p>4.1 Dispose of waste materials according to workplace and environmental procedures</p> <p>4.2 Record cleaning history on appropriate forms according to workplace procedures</p> |
| 5. Report inspection results | <p>5.1 Document inspection results according to workplace procedures</p> <p>5.2 Deliver inspection reports according to workplace procedures</p> |

To find out more information about this course, contact: invasives.training@dpird.nsw.gov.au

Specific clean down checklists

Cars, trucks, four-wheel drives, and trailers

Vehicles, machinery, and equipment can transport weeds, their seeds, and other reproductive material. This checklist and other information gathered may be used to reduce the risk of carrying weeds interstate or to new areas within NSW. If an authorised weed officer approves the checklist, it may also be used to discharge your general biosecurity duty under the NSW *Biosecurity Act 2015*.

Inspection details

Inspector name:

Location of inspection:

Date:

Time:

Vehicle, machinery, and equipment details

Operator full name:

Owner full name (if different from above):

Type/make/model:

Registration number:

Odometer/hour meter reading:

Transport details

Coming from:

Going to:

Clean down checklist

Check and clean the following sections of the vehicle/plant to ensure that they are clean and free of vegetative and soil material. Partial dismantling may be required.

4WD VEHICLE WITH KEY SPOTS TO CHECK AND CLEAN

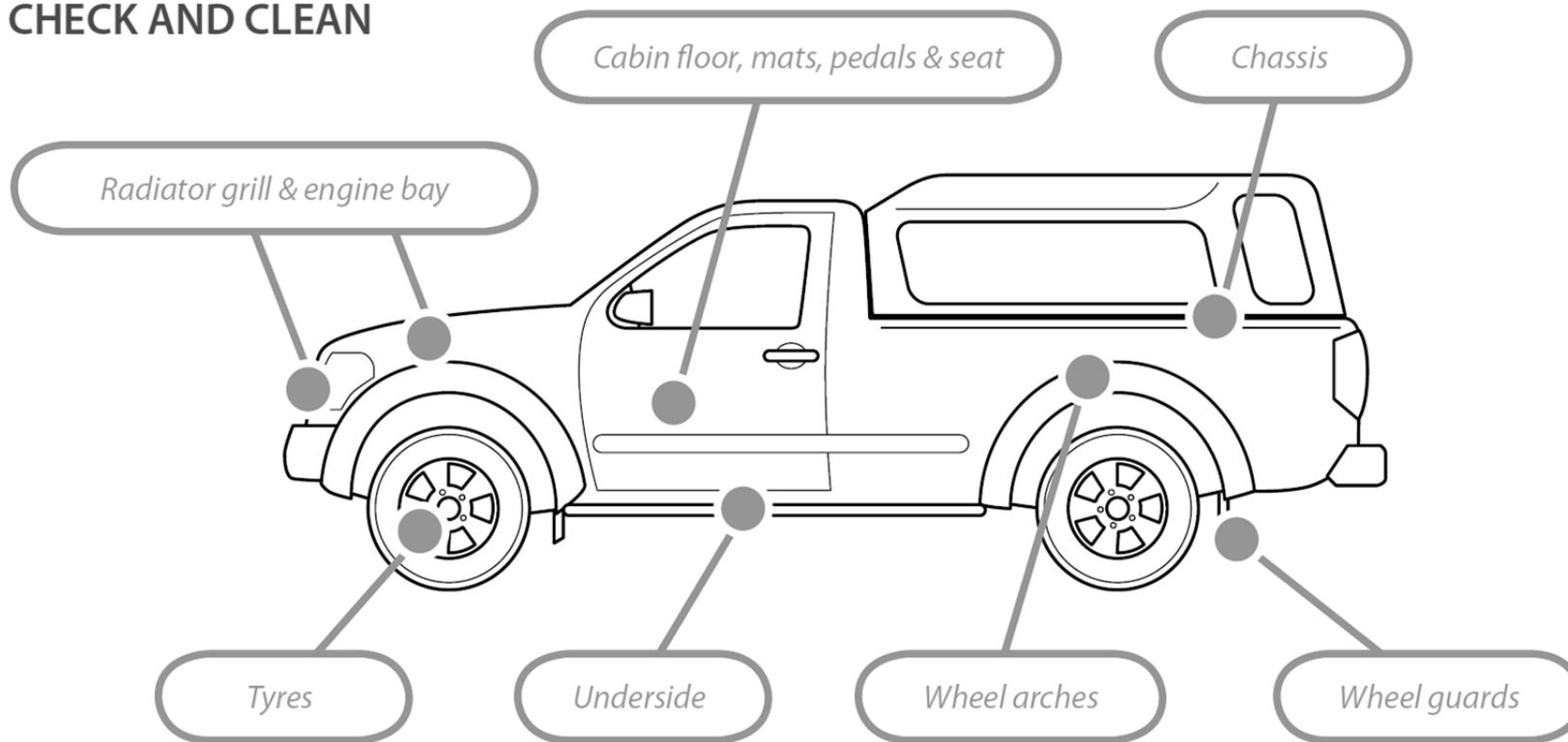


Figure 5: Four-wheel drive vehicle, check and clean spots (Source: Keeping it Clean, 2010).

CAUTION – Do not use high pressure water jets in compartments that house electronic components.

Table 3: Clean down checklist for cars, trucks, four-wheel drives, and trailers.

| Areas | Items | N/A | Not clean | Clean |
|----------|---|--------------------------|--------------------------|--------------------------|
| Interior | Lights (particularly if unsealed or broken) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Dashboard | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Air vents | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Windowsills | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | All panels and inside access panels | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Seatbelts | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Seat cushions | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Carpets and mats | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Foot wells | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Floor drain plugs | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Boot | Carpet (check for deposits of hay, weed seeds, burrs and/or soil) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Spare tyre area | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Recesses in the boot or rear of the vehicle | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Areas | Items | N/A | Not clean | Clean |
|------------|--|--------------------------|--------------------------|--------------------------|
| | Inside and outside box and tubular metal racks | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Bumpers and brush guards | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Bodywork (especially damaged areas or around body strips) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Step treads or step bars | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Back or tray of trucks, Utes, and four-wheel drives | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Canopy | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Canopy bows | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Mirror holders | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Reflectors and lights (particularly if unsealed or broken) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Rubber seals around windscreen, tailgates, and doors | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Grill | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Engine bay | Recess under the windscreen wipers | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Top of transmission gearbox | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Battery and battery box | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Radiator | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Air filters | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Areas | Items | N/A | Not clean | Clean |
|-----------------------------------|--|--------------------------|--------------------------|--------------------------|
| | Air tanks | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Underside | Tyres | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Tyre rims or wheel trims (covers) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Dual bogie wheels | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Wheel arches, fender wells and flares | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Mudflaps | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Spare tyres (often suspended underneath) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Support and cross members | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Chassis | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Axles and differentials | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Walls and sides | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Under tailgates | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Floor | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Wheels arches | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Tyres | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Tyre rims or wheel trims (covers) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

| Areas | Items | N/A | Not clean | Clean |
|-------|--|--------------------------|--------------------------|--------------------------|
| | Lights and reflectors | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Greece points | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Other | Toolboxes (inside and outside), ladders and storage compartments | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Tools, jacks, and other equipment | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Under and around fuel tanks strapped to vehicle | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Winch cable and drum | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Areas with electrical tape and/or insulation tape | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Ropes, straps, and Velcro | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

CHECK, CLEAN, RECHECK – Remember the key to successful cleaning is more than just ticking off a checklist. You should be thorough, systematic, and consistent.

General comments and photos

[Add general comments and photos here]

Declaration

I declare that:

1. the inspection details; vehicle, machinery, plant, and equipment details; and transport details provided on this document are true and correct
2. I have systematically and thoroughly checked and cleaned the vehicle, machinery, plant, and equipment identified on this document, in accordance with the hygiene checklist above
3. the information recorded on the checklist above and in the general comments section of this document are true and correct
4. to the best of my knowledge, the vehicle, machinery, plant, and equipment cleaned in accordance with this checklist do not pose a significant weed biosecurity risk
5. I agree to this checklist content being retained, stored, or managed by the Department or an authorised officer, whether in hard copy or digitally
6. I release the Department, authorised officers and the State of NSW from any liability they may have to me in connection with this clean down checklist.

Signature

[To be signed by the person cleaning the vehicle, machinery, plant, and equipment]

Name:

Signature:

Date:

Address:

Phone:

Email:

Witness

Witness name:

Signature of witness:

[If witness is an authorised (weed) officer under the NSW Biosecurity Act 2015 add the following information]

Position title:

Organisation:

Contact details:

Compactors, dump trucks, and wheeled loaders

Vehicles, machinery, and equipment can transport weeds, their seeds, and other reproductive material. This checklist and other information gathered may be used to reduce the risk of carrying weeds interstate or to new areas within NSW. If an authorised weed officer approves the checklist, it may also be used to discharge your general biosecurity duty under the NSW *Biosecurity Act 2015*.

Inspection details

Inspector name:

Location of inspection:

Date:

Time:

Vehicle, machinery, and equipment details

Operator full name:

Owner full name (if different from above):

Type/make/model:

Registration number:

Odometer/hour meter reading:

Transport details

Coming from:

Going to:

Clean down checklist

Check and clean the following sections of the vehicle/plant to ensure that they are clean and free of vegetative and soil material. Partial dismantling may be required.

CAUTION – Do not use high pressure water jets in compartments that house electronic components.

Table 4: Clean down checklist for compactors, dump trucks and wheeled loaders.

| Areas | Items | N/A | Not clean | Clean |
|-------|--|--------------------------|--------------------------|--------------------------|
| Cabin | Cabin roof and walls (inside and out) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Inside light covers (particularly if unsealed or broken) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Dashboard | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Air vents and air conditioning filter | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Door rubbers and behind internal door panelling | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Windowsills | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | All panels, inside access panels and behind wall lining | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Inside the joystick control housing | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Seatbelts | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Seat cushions | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Under the seat, including the rubber seat shroud | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Areas | Items | N/A | Not clean | Clean |
|------------|--|--------------------------|--------------------------|--------------------------|
| | Carpets and mats | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Rubber pedal covers (remove and clean/check) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Foot wells | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Under any false floor/non-affixed floor panels | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Floor drain plugs (flush if possible) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Exterior | Ladder to the cabin | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Inside and outside box and tubular metal racks | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Bumpers and brush guards | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Bodywork (especially damaged areas or around body strips) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Step treads or step bars | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Mirror holders | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Reflectors and lights (particularly if unsealed or broken) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Rubber seals around windscreen | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Grill (outside and inside) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Engine bay | Radiator and oil cooler (ensure fin/core is clean) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Under non-affixed engine covers | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Areas | Items | N/A | Not clean | Clean |
|-----------|--|--------------------------|--------------------------|--------------------------|
| | Inside hollow support frameworks | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Engine cover and rubbers | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Engine block and between tappet covers | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Engine mounts, sump, and engine block | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Batteries and battery boxes | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Recess under the windscreen wipers | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Air filter pre-cleaner | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Air filter | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Air tanks | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Inside fan belt flywheels (harmonic balancer) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Underside | Tyres (especially in cracks and splits) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Inside each cleat/boot | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Wheel rims (inside) and brake drums | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Dual bogie wheels | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Wheel arches, fender wells and hollow support frameworks | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Mudflaps | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Areas | Items | N/A | Not clean | Clean |
|--|--|--------------------------|--------------------------|--------------------------|
| | Spare tyres | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Belly plates | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Support and cross members | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Universal joints | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Chassis rails | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Axles and differentials | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Inside all wiring harnesses | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Under hydraulic looming | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | All surfaces of the oil and fuel tanks/cells | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Front end and bucket/blade (Compactors and wheeled loaders) | Behind housing cover plate and around hydraulics | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Cutting teeth (remove from bucket) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Behind non-affixed and spot-welded wear plates | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | In any cracks, splits, or repaired areas on bucket | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Bucket push arms especially hollow areas and drainage points | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Dump tray (Dump trucks only) | All surfaces | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | In any cracks, splits, or repaired areas | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Areas | Items | N/A | Not clean | Clean |
|-------|---|--------------------------|--------------------------|--------------------------|
| | Rubber mounts under the tray | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Other | Toolboxes (inside and outside), ladders, and storage compartments | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Tools, jacks, and other equipment | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Under and around fuel tanks strapped to vehicle | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | All surfaces of oil tank (often near ladder to cabin) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Under non-slip checker-plate surfaces | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Hollow drawbars | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Areas with electrical tape and/or insulation tape | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Ropes, straps, and Velcro | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Areas contaminated with grease and around pivot points | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

CHECK, CLEAN, RECHECK – Remember the key to successful cleaning is more than just ticking off a checklist. You should be thorough, systematic, and consistent.

General comments and photos

[Add general comments and photos here]

Declaration

I declare that:

1. the inspection details; vehicle, machinery, plant, and equipment details; and transport details provided on this document are true and correct
2. I have systematically and thoroughly checked and cleaned the vehicle, machinery, plant, and equipment identified on this document, in accordance with the hygiene checklist above
3. the information recorded on the checklist above and in the general comments section of this document are true and correct
4. to the best of my knowledge, the vehicle, machinery, plant, and equipment cleaned in accordance with this checklist do not pose a significant weed biosecurity risk
5. I agree to this checklist content being retained, stored, or managed by the Department or an authorised officer, whether in hard copy or digitally
6. I release the Department, authorised officers and the State of NSW from any liability they may have to me in connection with this clean down checklist.

Signature

[To be signed by the person cleaning the vehicle, machinery, plant, and equipment]

Name:

Signature:

Date:

Address:

Phone:

Email:

Witness

Witness name:

Signature of witness:

[If witness is an authorised (weed) officer under the NSW Biosecurity Act 2015 add the following information]

Position title:

Organisation:

Contact details:

Cotton pickers

Vehicles, machinery, and equipment can transport weeds, their seeds, and other reproductive material. This checklist and other information gathered may be used to reduce the risk of carrying weeds interstate or to new areas within NSW. If an authorised weed officer approves the checklist, it may also be used to discharge your general biosecurity duty under the NSW *Biosecurity Act 2015*.

Inspection details

Inspector name:

Location of inspection:

Date:

Time:

Vehicle, machinery, and equipment details

Operator full name:

Owner full name (if different from above):

Type/make/model:

Registration number:

Odometer/hour meter reading:

Transport details

Coming from:

Going to:

Clean down checklist

Check and clean the following sections of the vehicle/plant to ensure that they are clean and free of vegetative and soil material. Partial dismantling may be required.

CAUTION – Do not use high pressure water jets in compartments that house electronic components.

DO NOT – Climb underneath picking heads or basket unless they are safely secured in a raised position.

DO NOT – Walk on the meshed surface area of the basket. Only walk on the perforated metal walkways that run from the back to the front of the machine.

Table 5: Clean down checklist for cotton pickers.

| Areas | Items | N/A | Not clean | Clean |
|-----------|--|--------------------------|--------------------------|--------------------------|
| Row units | Outside picking heads | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Inside picking head doors (moisture racks, doffers, spindle bars and rotor assemblies) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Behind and under the picking heads (via the rear inspection doors on the air ducts) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Cabin | Outside the cabin (under and around) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Lights (particularly if unsealed or broken) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Dashboard | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Air-conditioning dusts and filters | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Areas | Items | N/A | Not clean | Clean |
|-----------|--|--------------------------|--------------------------|--------------------------|
| | All panels and inside access panels | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Seatbelts | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Seat cushions | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Carpets and mats | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Foot wells | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Floor drain plugs | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Air ducts | Behind all cover/inspection panels | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Air ducts | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Basket roof | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Parts inside the basket (accessed via the roof door with a ladder) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Underside of the basket (tip or elevate basket to check) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Drive shaft assemblies | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Blower fan | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Hollow basket support frames | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Exterior | Inside and outside box and tubular metal racks | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Bumpers and brush guards | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Areas | Items | N/A | Not clean | Clean |
|-----------|--|--------------------------|--------------------------|--------------------------|
| | Bodywork (especially damaged areas or around body strips) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Bodywork (especially damaged areas or around body strips) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Step treads or step bars | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Mirror holders | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Reflectors and lights (particularly if unsealed or broken) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Rubber seals around windscreen and doors | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Grill | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | All screens on the engine, radiator, and fuel bays | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Top of transmission gearbox | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Battery and battery box | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Radiator | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Air filters | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Air tanks | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Underside | Tyres | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Tyre rims or wheel trims (covers) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Dual bogie wheels | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Areas | Items | N/A | Not clean | Clean |
|-------|--|--------------------------|--------------------------|--------------------------|
| | Wheel arches, fender wells and flares | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Mudflaps | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Spare tyres (often suspended underneath) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Support and cross members | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Chassis rails | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Telescopic rear axle | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Other | Toolboxes (inside and outside), ladders and storage compartments | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Tools, jacks, and other equipment | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Under and around fuel tanks strapped to vehicle | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Areas with electrical tape and/or insulation tape | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Ropes, straps, and Velcro | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

CHECK, CLEAN, RECHECK – Remember the key to successful cleaning is more than just ticking off a checklist. You should be thorough, systematic, and consistent.

General comments and photos

[Add general comments and photos here]

Declaration

I declare that:

1. the inspection details; vehicle, machinery, plant, and equipment details; and transport details provided on this document are true and correct
2. I have systematically and thoroughly checked and cleaned the vehicle, machinery, plant, and equipment identified on this document, in accordance with the hygiene checklist above
3. the information recorded on the checklist above and in the general comments section of this document are true and correct
4. to the best of my knowledge, the vehicle, machinery, plant, and equipment cleaned in accordance with this checklist do not pose a significant weed biosecurity risk
5. I agree to this checklist content being retained, stored, or managed by the Department or an authorised officer, whether in hard copy or digitally
6. I release the Department, authorised officers and the State of NSW from any liability they may have to me in connection with this clean down checklist.

Signature

[To be signed by the person cleaning the vehicle, machinery, plant, and equipment]

Name:

Signature:

Date:

Address:

Phone:

Email:

Witness

Witness name:

Signature of witness:

[If witness is an authorised (weed) officer under the NSW Biosecurity Act 2015 add the following information]

Position title:

Organisation:

Contact details:

Excavators and track type dozers

Vehicles, machinery, and equipment can transport weeds, their seeds, and other reproductive material. This checklist and other information gathered may be used to reduce the risk of carrying weeds interstate or to new areas within NSW. If an authorised weed officer approves the checklist, it may also be used to discharge your general biosecurity duty under the NSW *Biosecurity Act 2015*.

Inspection details

Inspector name:

Location of inspection:

Date:

Time:

Vehicle, machinery, and equipment details

Operator full name:

Owner full name (if different from above):

Type/make/model:

Registration number:

Odometer/hour meter reading:

Transport details

Coming from:

Going to:

Clean down checklist

Check and clean the following sections of the vehicle/plant to ensure that they are clean and free of vegetative and soil material. Partial dismantling may be required.

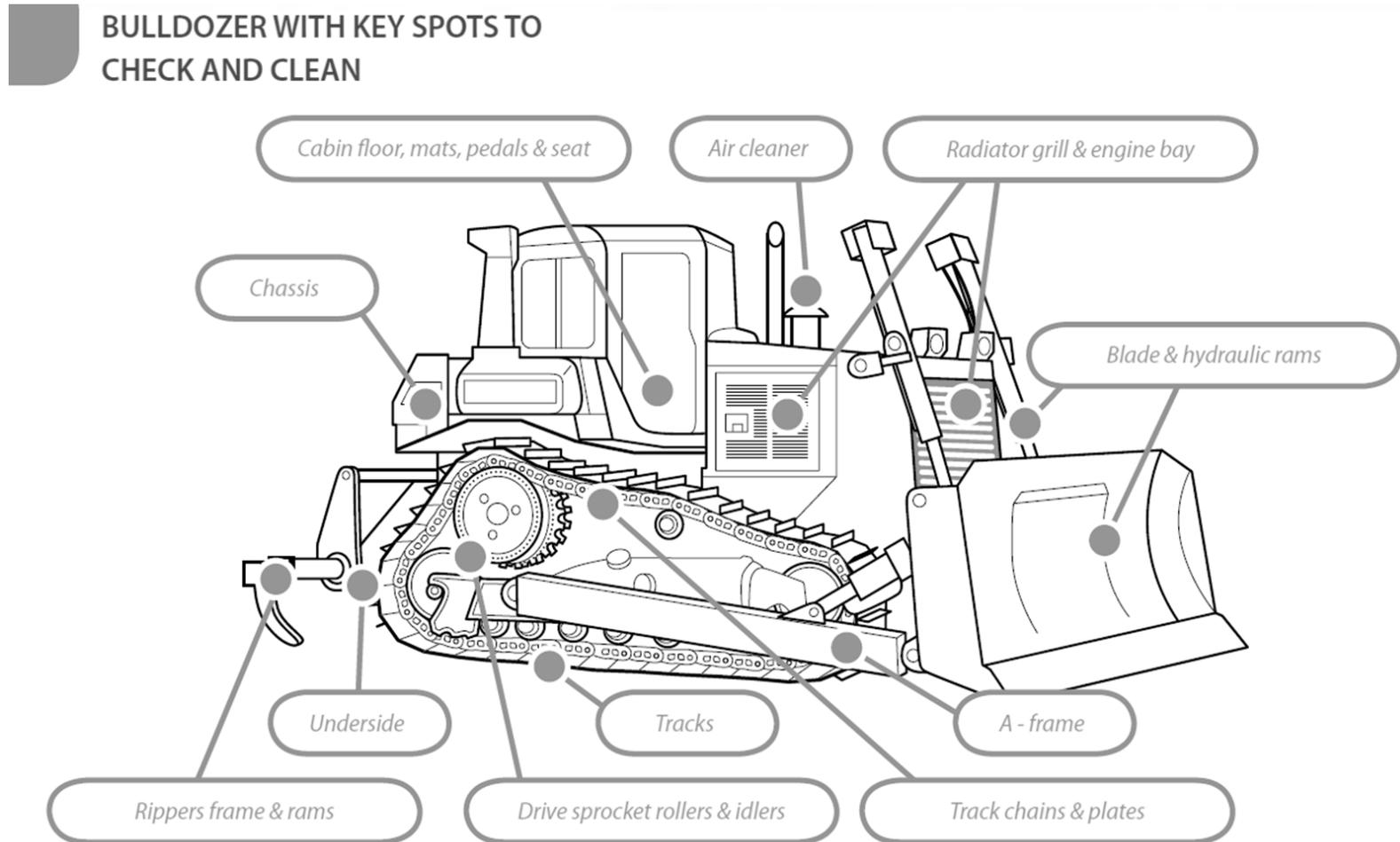


Figure 6: Dozer, check and clean spots (Source: Keeping it Clean, 2010).

EXCAVATOR WITH KEY SPOTS TO CHECK AND CLEAN

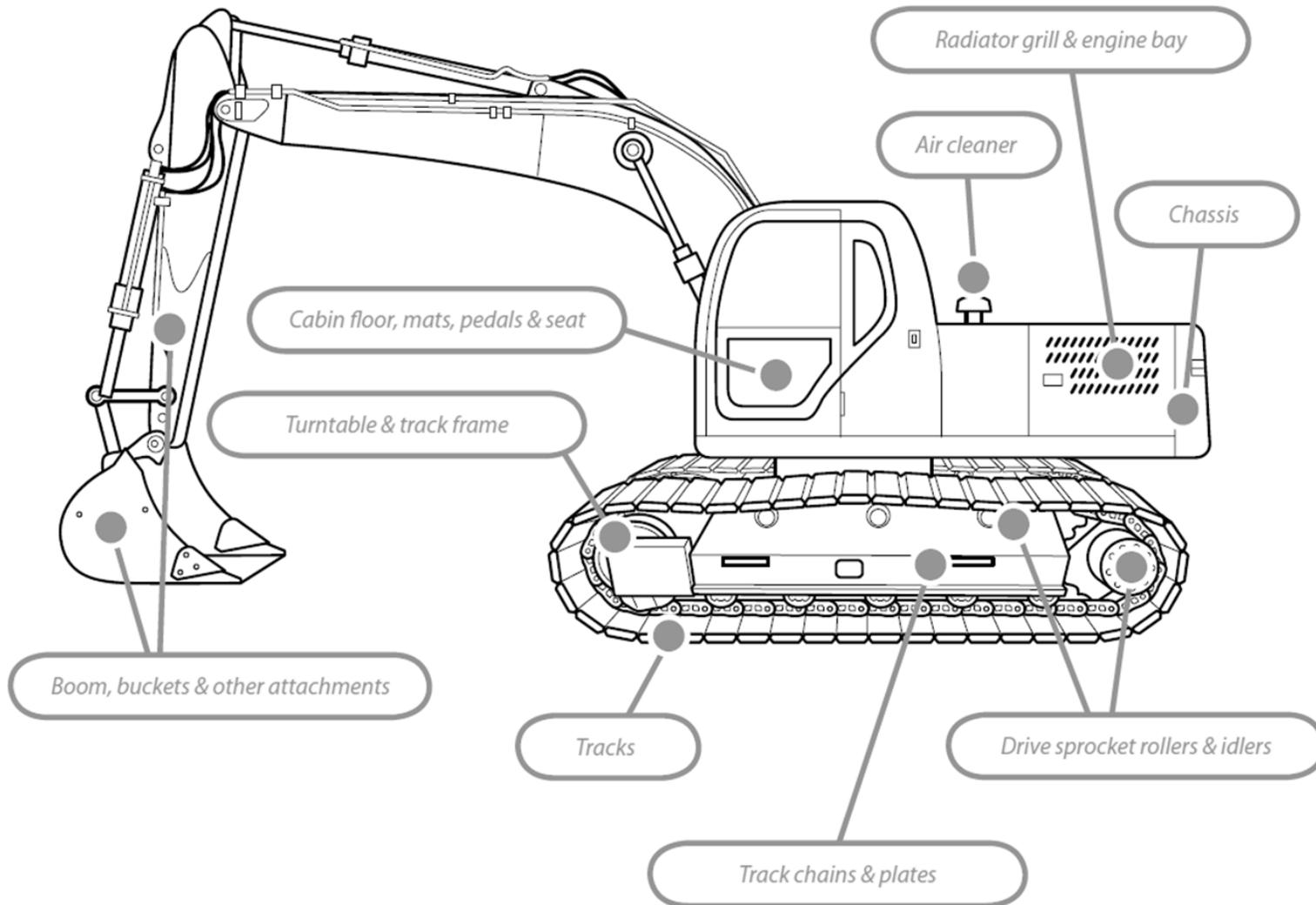


Figure 7: Excavator, check and clean spots (Source: Keeping it Clean, 2010).

CAUTION – Do not use high pressure water jets in compartments that house electronic components.

Table 6: Clean down checklist for excavators and track type dozers.

| Areas | Items | N/A | Not clean | Clean |
|-------|--|--------------------------|--------------------------|--------------------------|
| Cabin | Cabin roof and walls (inside and out) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Inside light covers (particularly if unsealed or broken) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Dashboard | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Air vents and air conditioning filter | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Door rubbers and behind internal door panelling | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Windowsills | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | All panels, inside access panels and behind wall lining | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Inside the joystick control housing | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Seatbelts | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Seat cushions | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Under the seat, including the rubber seat shroud | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Areas | Items | N/A | Not clean | Clean |
|----------|--|--------------------------|--------------------------|--------------------------|
| | Under any false floor/non-affixed floor panels | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Top of the transmission (under seat and floor panels) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Carpets and mats | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Rubber pedal covers (remove and clean/check) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Floor surface | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Floor drain plugs (flush if possible) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Exterior | Ladder to the cabin | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Inside and outside box and tubular metal racks | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Under cabin | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Bumpers and brush guards | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Bodywork (especially damaged areas or around body strips) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Step treads or step bars | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Mirror holders | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Reflectors and lights (particularly if unsealed or broken) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Rubber seals around windscreen | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Grill (outside and inside) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Areas | Items | N/A | Not clean | Clean |
|----------------------------|---|--------------------------|--------------------------|--------------------------|
| Engine bay | Radiator and oil cooler (ensure fin/core is clean) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Under non-affixed engine covers | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Inside hollow support frameworks | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Engine cover and rubbers | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Engine block and between tappet covers | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Engine mounts, sump, and engine block | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Batteries and battery boxes | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Recess under the windscreen wipers | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Air filter pre-cleaner | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Air filter | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Tracks, rollers, and frame | Inside fan belt flywheels (harmonic balancer) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Inside track frames behind track rock guards or inspection/cover plates | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Idler wheels | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Inside the frame where rock gauds attach (flush if hollow) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Individual rubber track pads (remove) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Motor cover plates | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

| Areas | Items | N/A | Not clean | Clean |
|-------|---|--------------------------|--------------------------|--------------------------|
| | Inside drive motor | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Bolt holes on rollers | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Hollow track frame ends (flush) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Behind all non-affixed covers and plates | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Roll tracks on each track pad (turn one revolution) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Countersunk bolts on rollers and idler wheels | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Behind sprockets | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Spring adjuster inside track frame | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Carrier roller support structure (above tracks) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Inside telescopic tracks | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Internal ledges and hollow sections inside the track frames | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Support and cross members | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Universal joints | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Chassis rails | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Axles and differentials | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Inside all wiring harnesses | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Areas | Items | N/A | Not clean | Clean |
|---|--|--------------------------|--------------------------|--------------------------|
| | Under hydraulic looming | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | All surfaces of the oil and fuel tanks/cells | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Boom stick and bucket (for excavators) | Behind non-affixed plates on hollow boom arms | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Behind non-affixed and spot-welded wear plates on bucket | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Cutting teeth (remove from bucket or blade) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | In any cracks, splits, or repaired areas on bucket | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Around knuckles | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | All surfaces | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | In any cracks, splits, or repaired areas | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Rubber mounts under the tray | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Other | Toolboxes (inside and outside), ladders and storage compartments | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Tools, jacks, and other equipment | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Under and around fuel tanks strapped to vehicle | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | All surfaces of oil tank (often near ladder to cabin) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Under non-slip checker-plate surfaces | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Hollow drawbars | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Areas | Items | N/A | Not clean | Clean |
|-------|--|--------------------------|--------------------------|--------------------------|
| | Areas with electrical tape and/or insulation tape | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Ropes, straps, and Velcro | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Areas contaminated with grease and around pivot points | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

CHECK, CLEAN, RECHECK – Remember the key to successful cleaning is more than just ticking off a checklist. You should be thorough, systematic, and consistent.

General comments and photos

[Add general comments and photos here]

Declaration

I declare that:

1. the inspection details; vehicle, machinery, plant, and equipment details; and transport details provided on this document are true and correct
2. I have systematically and thoroughly checked and cleaned the vehicle, machinery, plant, and equipment identified on this document, in accordance with the hygiene checklist above
3. the information recorded on the checklist above and in the general comments section of this document are true and correct
4. to the best of my knowledge, the vehicle, machinery, plant, and equipment cleaned in accordance with this checklist do not pose a significant weed biosecurity risk

5. I agree to this checklist content being retained, stored, or managed by the Department or an authorised officer, whether in hard copy or digitally
6. I release the Department, authorised officers and the State of NSW from any liability they may have to me in connection with this clean down checklist.

Signature

[To be signed by the person cleaning the vehicle, machinery, plant, and equipment]

Name:

Signature:

Date:

Address:

Phone:

Email:

Witness

Witness name:

Signature of witness:

[If witness is an authorised (weed) officer under the NSW Biosecurity Act 2015 add the following information]

Position title:

Organisation:

Contact details:

Headers, harvesters, and comb trailers

Vehicles, machinery, and equipment can transport weeds, their seeds, and other reproductive material. This checklist and other information gathered may be used to reduce the risk of carrying weeds interstate or to new areas within NSW. If an authorised weed officer approves the checklist, it may also be used to discharge your general biosecurity duty under the NSW *Biosecurity Act 2015*.

Inspection details

Inspector name:

Location of inspection:

Date:

Time:

Vehicle, machinery, and equipment details

Operator full name:

Owner full name (if different from above):

Type/make/model:

Registration number:

Odometer/hour meter reading:

Transport details

Coming from:

Going to:

Clean down checklist

Check and clean the following sections of the vehicle/plant to ensure that they are clean and free of vegetative and soil material. Partial dismantling may be required.

CAUTION – Do not use high pressure water jets in compartments that house electronic components.

Table 7: Clean down checklist for headers, harvesters, and comb trailers.

| Areas | Items | N/A | Not clean | Clean |
|----------|---|--------------------------|--------------------------|--------------------------|
| Interior | Lights (particularly if unsealed or broken) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | All panels and inside access panels | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Seatbelts | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Seat cushions | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Carpets and mats | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Floor | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Floor drain plugs | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Exterior | Inside and outside box and tubular metal racks | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Bodywork (especially damaged areas or around body strips) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Step treads or step bars | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Areas | Items | N/A | Not clean | Clean |
|--------------------------------------|---|--------------------------|--------------------------|--------------------------|
| | Mirror holders | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Reflectors and lights (particularly if unsealed or broken) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Rubber seals around windscreen and doors | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Grill | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| All harvesters | Each header knife and finger | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Auger (located horizontally across the header) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Behind any cover on the header | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Area within any belts on any draper front | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Feeder house | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Cleaning fan | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Area between the bottom of the fan housing and any shield under the fan housing | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Tailing auger | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Rear axle assembly including all pinch-points (steering pivots, power-steering ram, and tie rod assembly) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Sieve area (including the full length and width of the grain pan) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Grain bin area (including any auger) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |

| Areas | Items | N/A | Not clean | Clean |
|-------------------------|--|--------------------------|--------------------------|--------------------------|
| | Grain or repeat elevator (including any cups and rubber flights) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Straw spreader or chopper | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Conventional harvesters | Threshing or separating area | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Drum and concaves behind the rasp bars and lead-in plates | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Around the concave wires | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Beater drum | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Between drum and walkers | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Straw walkers | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Beater and chaff pan underneath the straw walker | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Concealed areas under rubber air flaps | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Rotary harvesters | External top and sides of the conical section of the rotor cage | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Inside the top of the conical section | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Threshing or separating area (including along the rotor cage) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Engine | Engine compartment | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Top of transmission gearbox | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Battery and battery box | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Areas | Items | N/A | Not clean | Clean |
|-----------|--|--------------------------|--------------------------|--------------------------|
| | Radiator core | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Air filters | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Air tanks | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Underside | Tyres | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Tyre rims | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Spare tyres (often suspended underneath) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Underneath the skid plate | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Support and cross members | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Chassis (including inside of any rail ledges) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Axles and differentials | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Other | Toolboxes (inside and outside), ladders and storage compartments | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Tools, jacks, and other equipment | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Under and around fuel tanks strapped to vehicle | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Areas with electrical tape and/or insulation tape | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Ropes, straps, and Velcro | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

CHECK, CLEAN, RECHECK – Remember the key to successful cleaning is more than just ticking off a checklist. You should be thorough, systematic, and consistent.

General comments and photos

[Add general comments and photos here]

Declaration

I declare that:

1. the inspection details; vehicle, machinery, plant, and equipment details; and transport details provided on this document are true and correct
2. I have systematically and thoroughly checked and cleaned the vehicle, machinery, plant, and equipment identified on this document, in accordance with the hygiene checklist above
3. the information recorded on the checklist above and in the general comments section of this document are true and correct
4. to the best of my knowledge, the vehicle, machinery, plant, and equipment cleaned in accordance with this checklist do not pose a significant weed biosecurity risk
5. I agree to this checklist content being retained, stored, or managed by the Department or an authorised officer, whether in hard copy or digitally
6. I release the Department, authorised officers and the State of NSW from any liability they may have to me in connection with this clean down checklist.

Signature

[To be signed by the person cleaning the vehicle, machinery, plant, and equipment]

Name:

Signature:

Date:

Address:

Phone:

Email:

Witness

Witness name:

Signature of witness:

[If witness is an authorised (weed) officer under the NSW Biosecurity Act 2015 add the following information]

Position title:

Organisation:

Contact details:

Tractors and backhoes

Vehicles, machinery, and equipment can transport weeds, their seeds, and other reproductive material. This checklist and other information gathered may be used to reduce the risk of carrying weeds interstate or to new areas within NSW. If an authorised weed officer approves the checklist, it may also be used to discharge your general biosecurity duty under the NSW *Biosecurity Act 2015*.

Inspection details

Inspector name:

Location of inspection:

Date:

Time:

Vehicle, machinery, and equipment details

Operator full name:

Owner full name (if different from above):

Type/make/model:

Registration number:

Odometer/hour meter reading:

Transport details

Coming from:

Going to:

Clean down checklist

Check and clean the following sections of the vehicle/plant to ensure that they are clean and free of vegetative and soil material. Partial dismantling may be required.

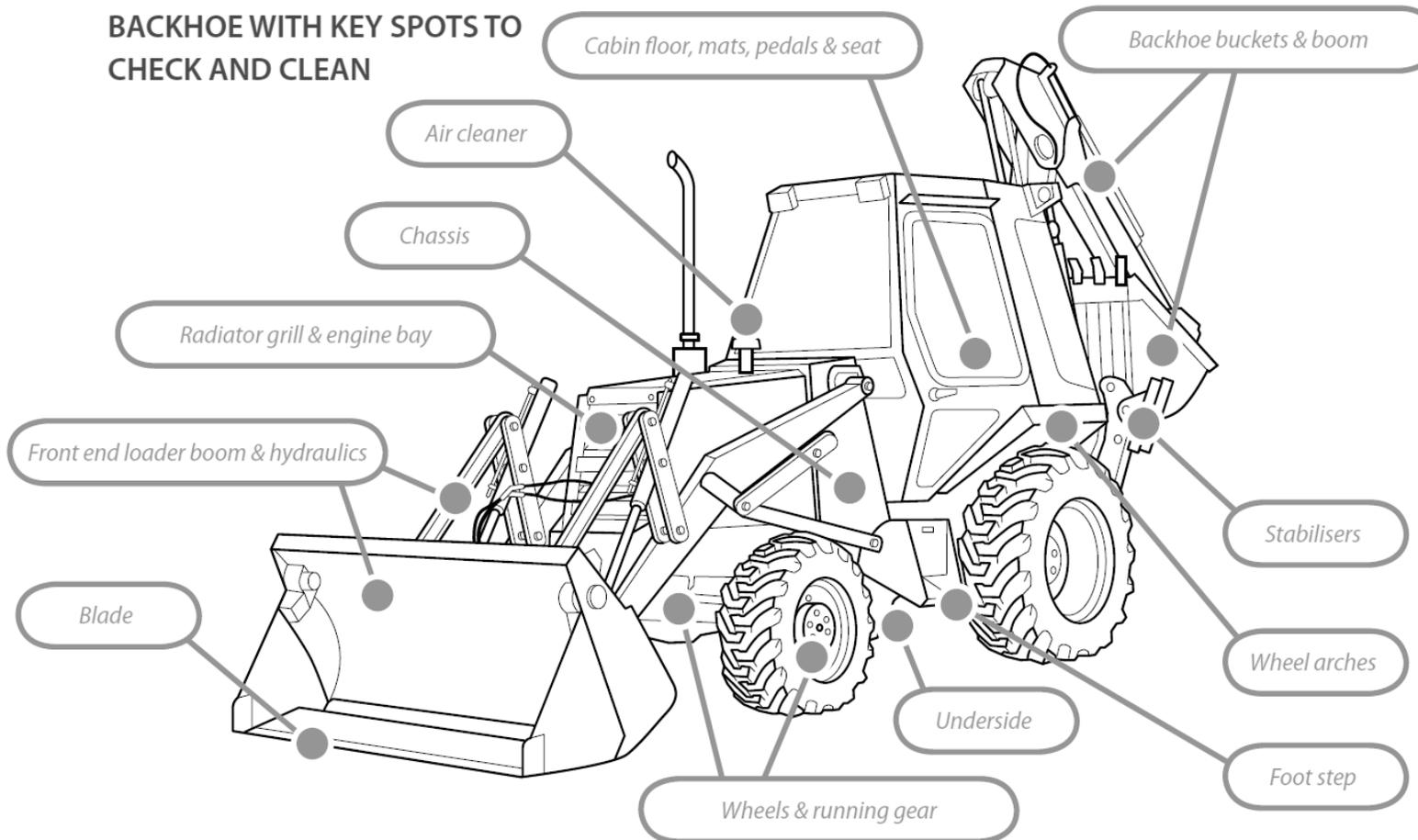


Figure 6: Backhoe, check and clean spots (Source: Keeping it Clean, 2010).

CAUTION – Do not use high pressure water jets in compartments that house electronic components.

Table 8: Clean down checklist for tractors and Power Take Off (PTO) rotary hoes.

| Areas | Items | N/A | Not clean | Clean |
|----------|--|--------------------------|--------------------------|--------------------------|
| Interior | Lights (particularly if unsealed or broken) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Dashboard | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Behind dashboard and consoles | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Air vents | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Air conditioning filters (inside false cabin roof) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | All panels and inside access panels | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Seatbelts | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Seat cushions | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Voids or skirts under suspended seats | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Carpets and mats | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Foot wells | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Floor drain plugs | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Exterior | Inside and outside box and tubular metal racks | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Areas | Items | N/A | Not clean | Clean |
|------------|--|--------------------------|--------------------------|--------------------------|
| | Bodywork (especially damaged areas or around body strips) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Step treads, step bars, or foot plates | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Roll cages and roll bars | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Mirror holders | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Reflectors and lights (particularly if unsealed or broken) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Rubber seals around windscreen, tailgates, and doors | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Grill | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Rear brake assemblies | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Common shaft for brake and clutch pedals | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Draw bar and mounting | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Three-point linkages and operating levers | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Engine bay | Recess under the windscreen wipers | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Top of transmission gearbox | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Battery and battery box (may be under the cabin) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Radiator core | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Radiator mesh screen | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Areas | Items | N/A | Not clean | Clean |
|-----------|---|--------------------------|--------------------------|--------------------------|
| | Fan shroud at the rear of the radiator | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Between oil cooler and radiator | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Air filter, pre-cleaners, and cyclone-style dust separators (replace if necessary) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Air filter cover | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Around fuel tank and brackets | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Hollow areas in the bonnet and engine bay | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Sound-deadening foams and heat shields | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Underside | Tyres (including in any cuts and gashes) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Tyre rims / wheel flares (including inner sides and in any gaps in split-type rims) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Wheel mounted counterweights | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Dual bogie wheels | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Wheel arches, fender wells and flares | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Mudflaps / guards | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Joints between the mudflaps and guards | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Wiring looms under mudguards | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Areas | Items | N/A | Not clean | Clean |
|-------------------------------------|--|--------------------------|--------------------------|--------------------------|
| | Support and cross members | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Axles and track width adjustment pinholes | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Chassis rail ledges | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Hollow areas and cover plates | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Voids between gearbox and engine | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Counterweights | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Hollow sections of sub-frame under the motor | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Torque tube (front drive shaft guard in 4WD's) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | PTO area, shaft, universal joints, shaft covers/PTO tubes | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Wiring looms | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Power Take Off (PTO) rotary hoes | Tyres and mounting bolts (may need to remove for cleaning) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Skid / wear plate (remove or loosen bolts securing the plate - only) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Any double skins or voids resulting from incomplete weld joints | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Mudflaps | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Between overlapping plates | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Inside hollow reinforcing ribs | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Areas | Items | N/A | Not clean | Clean |
|-----------------------------|---|--------------------------|--------------------------|--------------------------|
| | Three-point linkage attachment points | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | PTO knuckles and tube | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Universal joints and shafts | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Ground engaging areas (particularly if worn or damaged) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Bearing housing at ends (or middle) of the rotary shaft and probe | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Trailing wheel frame, supports, and mounts (often hollow) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Trailing wheels (usually hollow) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Buckets, blades, and scoops | All areas of blade | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Inside holes or double skins | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Cutting teeth | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Adaptors | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Wear plates | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Hydraulic arms and supports | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Other | Toolboxes (inside and outside), ladders and storage compartments | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Tools, jacks, and other equipment | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Under and around fuel tanks strapped to vehicle | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Areas | Items | N/A | Not clean | Clean |
|-------|---|--------------------------|--------------------------|--------------------------|
| | Areas with electrical tape and/or insulation tape | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Ropes, straps, and Velcro | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Rear carryalls mounted on three-point linkages | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Forward mounted forklift | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

CHECK, CLEAN, RECHECK – Remember the key to successful cleaning is more than just ticking off a checklist. You should be thorough, systematic, and consistent.

General comments and photos

[Add general comments and photos here]

Declaration

I declare that:

1. the inspection details; vehicle, machinery, plant, and equipment details; and transport details provided on this document are true and correct
2. I have systematically and thoroughly checked and cleaned the vehicle, machinery, plant, and equipment identified on this document, in accordance with the hygiene checklist above
3. the information recorded on the checklist above and in the general comments section of this document are true and correct

4. to the best of my knowledge, the vehicle, machinery, plant, and equipment cleaned in accordance with this checklist do not pose a significant weed biosecurity risk
5. I agree to this checklist content being retained, stored, or managed by the Department or an authorised officer, whether in hard copy or digitally
6. I release the Department, authorised officers and the State of NSW from any liability they may have to me in connection with this clean down checklist.

Signature

[To be signed by the person cleaning the vehicle, machinery, plant, and equipment]

Name:

Signature:

Date:

Address:

Phone:

Email:

Witness

Witness name:

Signature of witness:

[If witness is an authorised (weed) officer under the NSW Biosecurity Act 2015 add the following information]

Position title:

Organisation:

Contact details:

Recreational boats, personal watercraft, and trailers

Vehicles, machinery, and equipment can transport weeds, their seeds, and other reproductive material. This checklist and other information gathered may be used to reduce the risk of carrying weeds interstate or to new areas within NSW. If an authorised weed officer approves the checklist, it may also be used to discharge your general biosecurity duty under the NSW *Biosecurity Act 2015*.

Inspection details

Inspector name:

Location of inspection:

Date:

Time:

Vehicle, machinery, and equipment details

Operator full name:

Owner full name (if different from above):

Type/make/model:

Registration number:

Odometer/hour meter reading:

Transport details

Coming from:

Going to:

Clean down checklist

Check and clean the following sections of the vehicle/plant to ensure that they are clean and free of vegetative and soil material. Partial dismantling may be required.

EXAMPLES OF BOAT EQUIPMENT THAT REQUIRE CLEANING PROTOCOLS

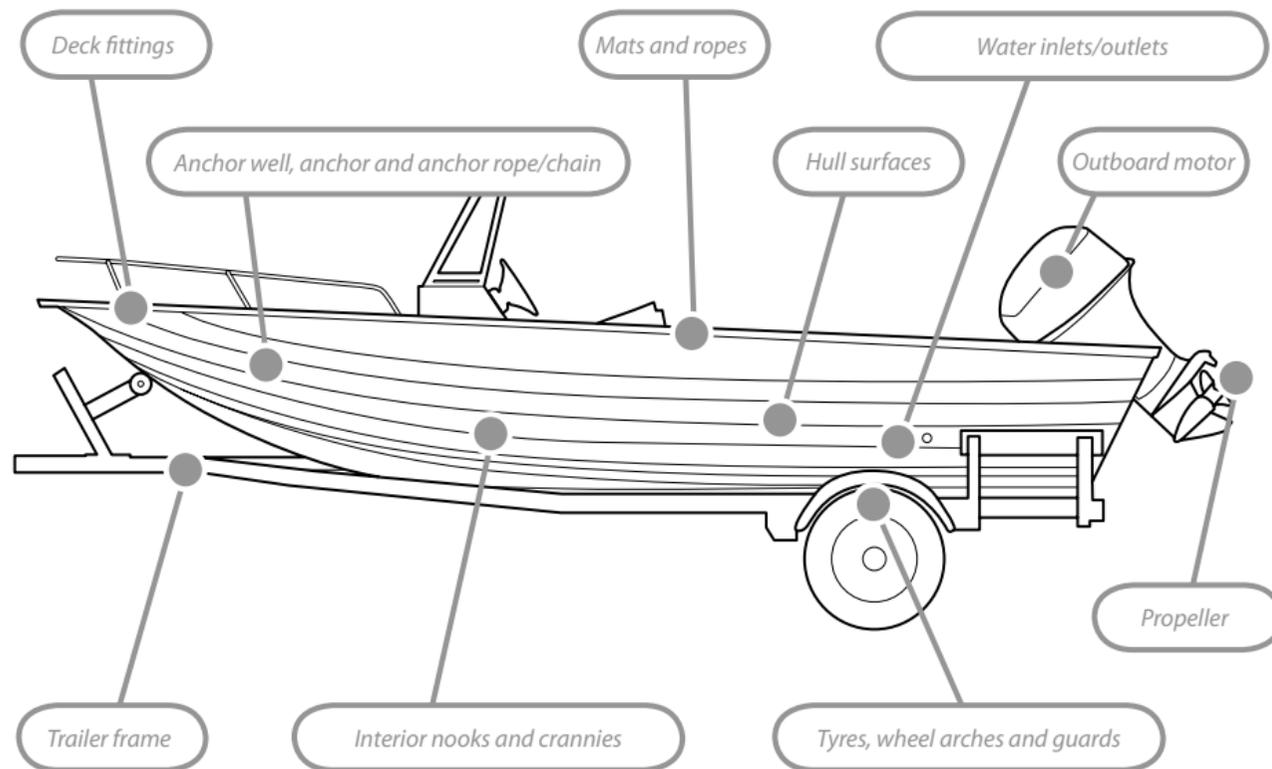


Figure 7: Recreational boat, clean and check spots (Source: Keeping it Clean, 2010).

CAUTION – Do not use high pressure water jets in compartments that house electronic components.

Table 9: Clean down checklist for recreational boats, personal watercraft, and trailers.

| Areas | Items | N/A | Not clean | Clean |
|----------|---|--------------------------|--------------------------|--------------------------|
| Interior | Dashboard | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Seats | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Floors and footwells | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Carpets and mats | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Panels and inside access panels | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Anchor well and anchor | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Anchor rope/chain | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Motor and motor head | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Motor well | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Battery and battery box | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Exterior | Around windscreen | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Inside and outside box and tubular metal bars | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Bodywork (especially damaged areas or around body strips) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Areas | Items | N/A | Not clean | Clean |
|-----------|--|--------------------------|--------------------------|--------------------------|
| | Canopy | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Canopy bows | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Deck fittings | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Mirror holders | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Reflectors and lights (particularly if unsealed or broken) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Underside | Hull surface | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Water inlets/outlets | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Sonar tubes/echosounder booths and transducers | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Propellor | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Bung plugs | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Trailers | Inside and outside box and tubular metal frame | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Around rollers | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Winch cable and drum | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Wheels arches | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Tyres | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Tyre rims or wheel trims (covers) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

| Areas | Items | N/A | Not clean | Clean |
|-------|--|--------------------------|--------------------------|--------------------------|
| | Mud flaps | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Lights and reflectors | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Greece points | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Other | Toolboxes (inside and outside), ladders and storage compartments | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Tools, fishing gear, and other equipment | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Burley bucket | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Under and around fuel tanks strapped to vehicle | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Areas with electrical tape and/or insulation tape | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | Ropes, straps, and Velcro | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

CHECK, CLEAN, RECHECK – Remember the key to successful cleaning is more than just ticking off a checklist. You should be thorough, systematic, and consistent.

General comments and photos

[Add general comments and photos here]

Declaration

I declare that:

1. the inspection details; vehicle, machinery, plant, and equipment details; and transport details provided on this document are true and correct
2. I have systematically and thoroughly checked and cleaned the vehicle, machinery, plant, and equipment identified on this document, in accordance with the hygiene checklist above
3. the information recorded on the checklist above and in the general comments section of this document are true and correct
4. to the best of my knowledge, the vehicle, machinery, plant, and equipment cleaned in accordance with this checklist do not pose a significant weed biosecurity risk
5. I agree to this checklist content being retained, stored, or managed by the Department or an authorised officer, whether in hard copy or digitally
6. I release the Department, authorised officers and the State of NSW from any liability they may have to me in connection with this clean down checklist.

Signature

[To be signed by the person cleaning the vehicle, machinery, plant, and equipment]

Name:

Signature:

Date:

Address:

Phone:

Email:

Witness

Witness name:

Signature of witness:

[If witness is an authorised (weed) officer under the NSW Biosecurity Act 2015 add the following information]

Position title:

Organisation:

Contact details:

References

- Laffan, J., and Honeywood, S. (2013). *Machinery hygiene: Inspecting and cleaning machinery to prevent the spread of weeds*. NSW Department of Primary Industries, Tocal College, Paterson.
- Biosecurity Queensland (2019). *Vehicle and machinery cleandown procedures*. QLD Department of Agriculture and Fisheries.
- Main Roads (2024, June). *Vehicle and Plant Hygiene Checklist*. Document No. D17#859669, Main Roads Western Australia.
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