From: Steve O'Donoghue [redacted]
Date: Friday, 8 August 2025 at 10:40 am
To: Steve Barry [redacted]
Cc: Jack Turner [redacted]
Subject: Amended letter - correction on total GHG emissions

Steve – please see attached updated letter to correct an error in paragraph 3 of our previous letter. The total estimated annual GHG emissions are 38,415 t CO2-e/year rather than 20,642 t CO2-e/year as stated in the previous letter.

Regards

Steve

Stephen O'Donoghue
Director Resource Assessments
Energy, Resources and Industry | Planning and Systems| Department of Planning, Housing and Infrastructure
[redacted]
12 Darcy St | Locked Bag 5022 | PARRAMATTA NSW 2124
www.dpie.nsw.gov.au

NSW GOVERNMENT

I acknowledge the traditional custodians of the land and pay respects to Elders past and present. I also acknowledge all the Aboriginal and Torres Strait Islander staff working with NSW Government at this time.

Department of Planning, Housing and Infrastructure

Our ref: SSD-56284960

Stephen Barry

Planning Director – Independent Planning Commission

Via email: [redacted]

Subject: Restart of Redbank Power Station (SSD-56284960) – Response to Request for Information

Dear Mr Barry

I refer to your letter dated 1 August 2025, requesting additional information regarding the Department's assessment and recommendation of the state significant development (SSD) application for the Restart of Redbank Power Station (SSD-56284960). The Department's response to the matters outlined in the letter are provided below.

NSW Court of Appeal Judgement on Mount Pleasant Optimisation Project

In *Denman Aberdeen Muswellbrook Scone Healthy Environment Group Inc v MACH Energy Australia Pty Ltd [2025] NSWCA 163,* the NSW Court of Appeal found consideration had not been given to the impact of climate change, as contributed to by the emissions from the project, on the locality as required under s 4.15(1)(b) of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

The Restart of the Redbank Power Station project would result in the emission of an estimated annual 17,773 tonnes of carbon dioxide equivalent (t CO2-e/year) of direct (Scope 1) emissions and 20,642 t CO2-e/year of indirect (Scope 3) emissions, or a total of 38,415 t CO2-e/year for the project.

The United Nations Environment Programme's Emissions Gap Report 2023 estimates global emissions at between 52 to 56 gigatonnes of carbon dioxide equivalent by 2030 based on different policy scenarios. Conservatively assuming global emissions are at 52 gigatonnes in 2030, the project would represent a 0.00007% contribution to global emissions. The Department considers that the contribution of the project to any impact on the locality from climate change, would be immaterial.

The Department notes that the Applicant indicated it would mitigate emissions primarily through carbon offsetting, consistent with the NSW emission trajectory towards net zero by 2050. Scope 3 emissions from offsite handling and transport of biomass are a similar scale to direct emissions and would be subject to state emissions reductions targets for the transport, agricultural and stationary energy sectors.

Guiding Principles of the Climate Change (Net Zero Future) Act 2023

The Department has provided consideration of the guiding principles at section 8 of the *Climate Change (Net Zero Future) Act 2023* in **Attachment A**.

Regulation of the clearing of invasive native species

The clearing of invasive native species (INS) is regulated under the *Land Management (Native Vegetation) Code 2018* (the Code) under the *Local Land Services Act 2013* (the Act). There are two pathways for clearing under Part 2 - INS of the Code.

Division 1 provides for low impact clearing of INS (as defined in the Code) which can be undertaken after a notification is made to Local Land Services (LLS), or a voluntary code compliant certificate is obtained where LLS carries out additional assessment (including a property visit) to provide certainty that proposed clearing meets requirements of the Code.

Division 2 provides for moderate impact clearing of INS (as defined in the Code) which requires a mandatory code compliant certificate following assessment by LLS.

Depending on the division that applies, the Code includes specific requirements related to clearing methods, density thresholds for clearance and vegetation retention.

Further information is available in the attached LLS guide for assisting landowners in managing INS.

Objects of the EP&A Act

The reference to 'gas-fired power stations' in Table 13, Object (b) of the Departments Assessment Report is an error. The Department has corrected the error and made some additional revisions in the revised text below to replace the bullet point under the subheading of inter-generational equity:

The Department recognises that the NSW energy market is in a state of transition from one dominated by coal-fired power stations to a renewable energy mix. Whilst this transition is being fuelled by investment in variable renewable energy such as solar and wind supported by battery storage systems and pumped hydro, power stations like Redbank that provide a continuous source of energy are still required to play a crucial role in firming the State's electricity supply during the transition to achieve inter-generational equity regarding addressing climate change and its impacts on future generations.

Other matters

The Department notes the discussion at its briefing with the IPC regarding the intersection of the Golden Highway and Long Point Road. The Department notes there is an existing dedicated right turn lane from the Golden Highway for the intersection.

Should you have any enquiries regarding the above matter, please contact Jack Turner on [redacted] or via email on [redacted]

Yours sincerely,

[redacted] 8/08/2025

Steve O'Donoghue

Director, Resource Assessments

Encl:

Attachment A – Consideration of Guiding Principles of the Climate Change (Net Zero Future) Act 2023

Attachment B – Land Management – Invasive Native Species Landholder Guide

Attachment A – Consideration of Guiding Principles of the Climate Change (Net Zero Future) Act 2023

Guiding Principle	Consideration
1) For this Act, the guiding principles are the principles set out in this section.	Noted
2) There is a critical need to act to address climate change, which is a serious threat to the social, economic and environmental wellbeing of New South Wales.	Noted
3) Action to address climate change should be taken as early as possible to minimise the cost and adverse impacts of climate change.	The project's GHG emissions would represent a small (0.1% by 2050) contribution to NSW emissions (total Scope 1 - 17,773 t CO_2 e per year and total Scope 3 - 20,642 t CO_2 e per year). The Life Cycle Assessment prepared by Verdant identified that as a continuous source of energy, the electricity generated from the project would most likely over time displace coal fired power, and identified the project would displace emissions compared to the alternative of landfilling biomass in the first five years of operation. Greenhouse gas emissions from the project would be offset consistent with the NSW emission trajectory towards net zero by 2050 and the Department has recommended conditions that require the implementation of reasonable and feasible greenhouse gas avoidance and mitigation measures.
4) Action to address climate change should be taken in a way that — a) is fiscally responsible, and b) promotes sustainable economic growth, and c) considers the economic risks of delaying action to address climate change, and d) considers the impact on rural, regional, and remote communities in New South Wales.	The project would utilise existing infrastructure that is currently in care and maintenance in a regional area. Environmental impacts from the project can be managed in accordance with the recommended conditions of consent and the project would deliver economic benefits to the region and support energy security. The project would offset emissions in accordance with the NSW emissions trajectory towards net zero by 2050.

Guiding Principle	Consideration
5) Action to address climate change should be consistent with the right to a clean, healthy and sustainable environment.	The Department's assessment concluded that emissions from the power station can generally meet the relevant air quality assessment criteria. As the project involves the conversion of the fuel type for an existing power station, other environmental impacts are generally minor and/or manageable under the proposed mitigation measures. The Department considers that the impacts associated with amenity including noise, vibration, dust, and visual have been integrated into the Department's overall assessment and can be managed through the proposed mitigation measures and recommended conditions.
6) Action to address climate change should be consistent with the principles of ecologically sustainable development described in the Protection of the Environment Administration Act 1991, section 6(2).	The Department's has considered the principles of ESD as described in the *Protection of the Environment Administration Act 1991* in Appendix D of its Assessment Report.
7) Action to address climate change should involve appropriate consultation with affected persons, communities and stakeholders.	The Department received advice from 12 government agencies including NSW Environment Protection Authority, which is the lead regulator of greenhouse gas emissions in NSW, and Singleton Council. During the exhibition period for the EIS, 377 unique submissions were received, of which 162 supported the project and 215 objected. The Department has considered the submissions in the assessment of the project.
8) Action to address climate change should take into account the following—	See below
a) the knowledge and perspectives of Aboriginal communities,	Verdant prepared an Aboriginal Cultural Heritage Assessment which included consultation with Aboriginal stakeholders
b) the best available science,	All technical assessments supporting the EIS including the Greenhouse Gas Assessment were prepared by suitably qualified persons in accordance with relevant guidelines. Relevant assessments were reviewed by government agencies and the Department's independent expert.

Guiding Principle	Consideration
c) the knowledge of rural, regional and remote communities in New South Wales,	The project included consultation with Singleton Council and the exhibition of the EIS. Advice from council and submissions community members have informed the Department's assessment.
d) the need to support local communities, including Aboriginal communities, who may be affected by the action, including by— (i) considering the impact on local employment and industries, and (ii) diversifying local economies, and (iii) encouraging local procurement, and (iv) optimising job creation and employment transition opportunities, and (v) considering the impact on the amenity of local communities,	The project would deliver economic benefits to the local and regional economy through procurement and employment, creating approximately 330 FTE jobs during construction and up to 60 during operation. The project is estimated to be able to provide approximately $901 million NPV to the NSW economy across the first 25 years of construction and operation. The Department considers that the impacts associated with amenity including noise, vibration, dust, and visual have been integrated into the Department's overall assessment and can be managed through the proposed mitigation measures and recommended conditions.
e) the need for education and skills diversification,	The Applicant indicated it would implement strategies to increase the level of local employment on the project, including providing traineeships, apprenticeships and scholarships which would provide the opportunity for education and skills diversification.
f) the need to ensure essential utilities and infrastructure are provided, including energy, water, telecommunications and transport, g) the impact of the action on consumer costs in New South Wales, including energy costs,	The project would contribute to energy security and reliability for NSW by providing up to 151 MW of dispatchable electricity supply whilst minimising environmental impacts as much as practicable by utilising land already used for energy generation.
h) the need to reduce the risk climate change poses to human health, i) equity and social justice impacts on socially disadvantaged groups and economically vulnerable regions, j) the need to reduce the risk climate change poses to the survival of all species.	Greenhouse gas emissions would be mitigated primarily through carbon offsetting, consistent with the NSW emission trajectory towards net zero by 2050. The project's greenhouse gas emissions would represent a small (0.1% by 2050) contribution to NSW GHG emissions which is below reporting requirements under the Safeguard Mechanism. The project would therefore be generally consistent with State and Commonwealth strategies to address climate

Guiding Principle	Consideration
	change, as assessed in further detail the Department's Assessment Report.
9) Action to address climate change should take into account the impact on animals.	The Department considers that the project has been designed to minimise environmental and biodiversity impacts as much as practicable by utilising land already used for energy generating facilities.
10) The Government of New South Wales is responsible for— a) urgently developing and implementing strategies, policies and programs to address climate change, and b) ensuring the Government of New South Wales pursues best practice in addressing climate change.	Noted

Land Management - Invasive Native Species Landholder Guide

Overview

Invasive native species are native woody plants, that either regenerate thickly following disturbance or encroach on vegetation communities where they previously did not occur.

NSW landholders may choose to manage these species by applying clearing options available through the Invasive Native Species (INS) part of the *Land Management (Native Vegetation) Code 2018* (the Code).

This guide is designed to assist landholders in applying Part 2 - INS of the Code under the *Local Land Services Act 2013* (The Act). Landholders may submit notification to Local Land Services of intended clearing or obtain certification from Local Land Services for clearing.

Clearing is not permitted if native vegetation forms part of a critically endangered ecological community (CEEC) or is mapped as sensitive regulated land. Contact Local Land Services for advice on CEEC and sensitive regulated land management.

This guide accompanies the factsheet 'Land Management Code - invasive native species' and INS Case Studies, which outline specific examples of managing INS using best practice methods through the Code. Definitions of key concepts are listed at the end of this guide.

Further information is available at www.lls.nsw.gov.au/help-and-advice/land-management-innsw/resources.

Invasive Native Species

Schedule 1 of the Code lists species identified as INS for each Local Land Services region. A native species must be listed as INS for the region in which the clearing is proposed. The invasive native species list is reproduced in Appendix 1 of this guide.

In addition to being listed INS, the plants to be cleared need to be regenerating densely or invading plant communities (refer to photo 1 & 2). This will usually lead to, or may have already caused, a change in the structure and composition of the plant community. This could result in the vegetation being dominated by a particular species where structure has changed; for example, open grassy woodland may become a shrubby forest with poor grass cover.

Historical records along with personal knowledge of a property can help to determine if plant species are invading plant communities.

Factors to consider when determining if species are acting invasively include:

- Absence of mature trees in the area;
- Predominance of a single species or limited range of ages and/or sizes;
- Records (historical information or photographs), or anecdotal information from a reliable source.

Local Land Services can assist in identification of species and help to determine whether plants are regenerating densely or are invading plant communities.

Photo 1: Black wattle regenerating densely

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Land Management Code - Invasive Native Species Landholder Guide

Photo 2: White cypress pine acting invasively.

Invasive Native Species Clearing Options

Part 2 of the Code permits the management and clearing of native vegetation that has been identified as INS. It also permits certain agricultural activities in "treatment areas" (part of the property identified for INS management), under certain circumstances.

Where INS is managed in a balanced way, a mosaic of native vegetation across the landscape may result, with scattered tree or shrub patches amongst native groundcover pastures. To achieve this, clearing is limited to INS with a diameter at breast height over bark of less than 20 centimeters (photo 4) or 30 centimeters diameter at breast height over bark if listed in Table 1 of this guide.

Photo 3: Measuring the diameter at breast height over bark (1.3 metres above ground).

There are two pathways for clearing under Part 2 - INS of the Code:

- Division 1 – Low impact clearing of invasive native species – Notification or Voluntary Certificate applies
- Division 2 – Moderate impact clearing of invasive native species – Mandatory Certification applies

Division 1 enables low impact clearing of INS. Methods allow for clearing with minimal disturbance to soil and groundcover. Clearing on vulnerable regulated land requires no more than nil disturbance to soil and groundcover. Disturbance and vulnerable land definitions are listed at the end of this guide.

Low impact clearing may be done by notification under the Land Management Code. A voluntary certificate is also available

through Local Land Services where additional assessment provides certainty that proposed clearing meets requirements of the Code.

Division 2 enables moderate impact clearing where INS comprise at least 50% of the trees and shrubs in an area or where INS is invading a plant community not previously known to occur (refer to photo 1& 2). This division enables INS clearing for improved native vegetation condition and agricultural capacity. Higher impact clearing methods allow for annual or non-persistent perennial species to be sown up to 5 times in 15-years and in no more than 3 consecutive years.

Does invasive native species clearing options apply to my situation?

Figure 1 provides a general summary of ways to identify if Part 2 - INS of the Code applies.

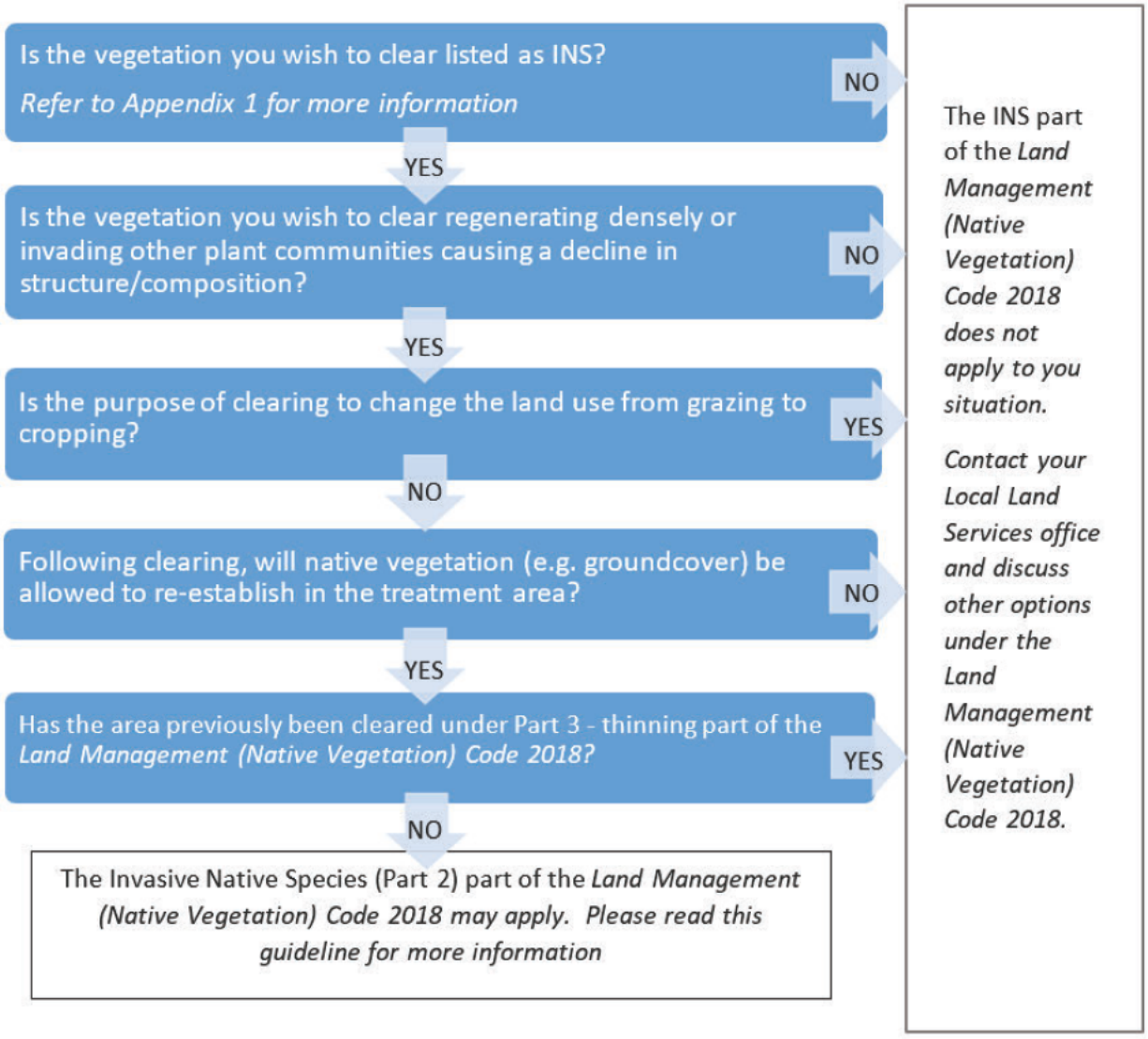


Figure 1: Does INS clearing apply?

To help decide if the Code applies, Table 1 provides further detail on each division of the INS part of the Code. If your situation does not fit within the INS part of the Code, other options may be available. Contact your local Local Land Services office for further information.

Land Management Code - Invasive Native Species Landholder Guide

Table 1: Summary of requirements and conditions for Part 2 – Invasive Native Species of the Land Management Code

Specifications	Division 1 – Low Impact Clearing (notification or certification)	Division 2 – Moderate Impact Clearing (certification)
Requirements prior to clearing	Notification to Local Land Services or Voluntary Certificate issued by Local Land Services	Mandatory Certificate issued by Local Land Services
Permitted on Small Holding	Yes	No (Small Holding is <40ha in Western Zone; <10ha elsewhere)
Invasive Native Species (INS) authorised to be cleared	Species listed in Schedule 1 of the Land Management Code, for the region of NSW where clearing is proposed.	Species listed in Schedule 1 of the Land Management Code, for the region of NSW where clearing is proposed.
INS density and invasiveness		INS must comprise a minimum of 50% of trees and shrubs as a proportion of total number of trees and shrubs, or INS must be invading a plant community where the INS is not previously known to occur (refer to photo 1 & 2).
Land where clearing is not permitted (refer to photo 4 and 5). Also refer to the section 'Other useful information - fact sheets'.	• Critically Endangered Ecological Communities. • Category 2 – Sensitive Regulated Land.	• Critically Endangered Ecological Communities. • Category 2 – Sensitive Regulated Land. • Category 2 – Vulnerable Regulated Land. • Within the buffer distance from a stream or wetlands, as defined in clause 15 of the Code. • Soils with clay content less than 5%. • Run-on areas where erosion is evident. Apart from Sensitive Regulated Land, these conditions may be varied if Local Land Services is satisfied it is for a legitimate purpose, is reasonable and would have no significant adverse environmental impacts.
Clearing methods	Limited to methods likely to result in minimal disturbance to soil and groundcover, including but not limited to: • Burning • Clearing of individual plants • Herbicides (chemical treatment)	Limited to clearing that does not result in land use change from grazing to cropping and all other conditions are met.
Soil and groundcover disturbance	• Category 2 – Regulated Land: Limited to minimal disturbance – maximum of 30% of soil surface and existing groundcover is disturbed. • Category 2 – Vulnerable Regulated Land: Nil disturbance – maximum of 5% of the soil surface and existing groundcover is disturbed.	Category 2 – Regulated Land – Not limited. Category 2 – Vulnerable Regulated land – Not permitted.

Annual and non-persistent perennial species		May be sown up to 5 times in a 15-year period* but in no more than 3 consecutive years. (*commencing on date the clearing certificate is issued).
Clearing of non-invasive native species	Permitted only to the minimum extent necessary. Maximum number of non-INS cleared is 10% of total number of trees and shrubs cleared, where clearing is not of individual plants. Maximum number of non-INS cleared is 2% of total number of trees and shrubs cleared, where clearing is of individual plants.	Permitted only to the minimum extent necessary. Maximum number of non-INS cleared is 20% of total number of trees and shrubs cleared. Maximum diameter at breast height over bark of non-INS cleared is 20cm (refer to photo 3).
Retention size	Retain trees and shrubs greater than 20cm diameter at breast height over bark, unless of a species listed below. Retain trees and shrubs greater than 30cm diameter at breast height over bark for the following species: 1. *Acacia aneura* (Mulga) 2. *Acacia excelsa* (Ironwood) 3. *Callitris endlicheri* (Black Cypress Pine) 4. *Callitris glaucophylla* (White Cypress Pine) 5. *Casuarina cristata* (Belah) 6. *Eucalyptus camaldulensis* (River Red Gum) 7. *Eucalyptus coolabah* (Coolibah) 8. *Eucalyptus intertexta* (Red Box) 9. *Eucalyptus largiflorens* (Black Box) 10. *Eucalyptus populnea subsp. bimbil* (Bimble Box, Poplar Box) 11. *Geijera parviflora* (Wilga)	Retain trees and shrubs greater than 20cm diameter at breast height over bark, unless of a species listed below. Retain trees and shrubs greater than 30cm diameter at breast height over bark for the following species: 1. *Acacia aneura* (Mulga) 2. *Acacia excelsa* (Ironwood) 3. *Callitris endlicheri* (Black Cypress Pine) 4. *Callitris glaucophylla* (White Cypress Pine) 5. *Casuarina cristata* (Belah) 6. *Eucalyptus camaldulensis* (River Red Gum) 7. *Eucalyptus coolabah* (Coolibah) 8. *Eucalyptus intertexta* (Red Box) 9. *Eucalyptus largiflorens* (Black Box) 10. *Eucalyptus populnea subsp. bimbil* (Bimble Box, Poplar Box) 11. *Geijera parviflora* (Wilga)
Retention number	Retain at least 20 invasive native species per hectare of the species listed above (refer to figure 2).	Retain at least 20 invasive native species per hectare of the species listed above (refer to figure 2).
Retention height and composition	Retained trees must be at least 2m high and be consistent with the proportion of each invasive native species present prior to clearing.	Retained trees must be at least 2m high and be consistent with the proportion of each invasive native species present prior to clearing.
Treatment Area retention	Maximum 90% of each 1000 ha of the treatment area may be cleared	Maximum 90% of each 1000 ha of the treatment area may be cleared

Photo 4: Run-on area where erosion is evident.

Photo 5: Retained INS Buffer on 1st order stream.

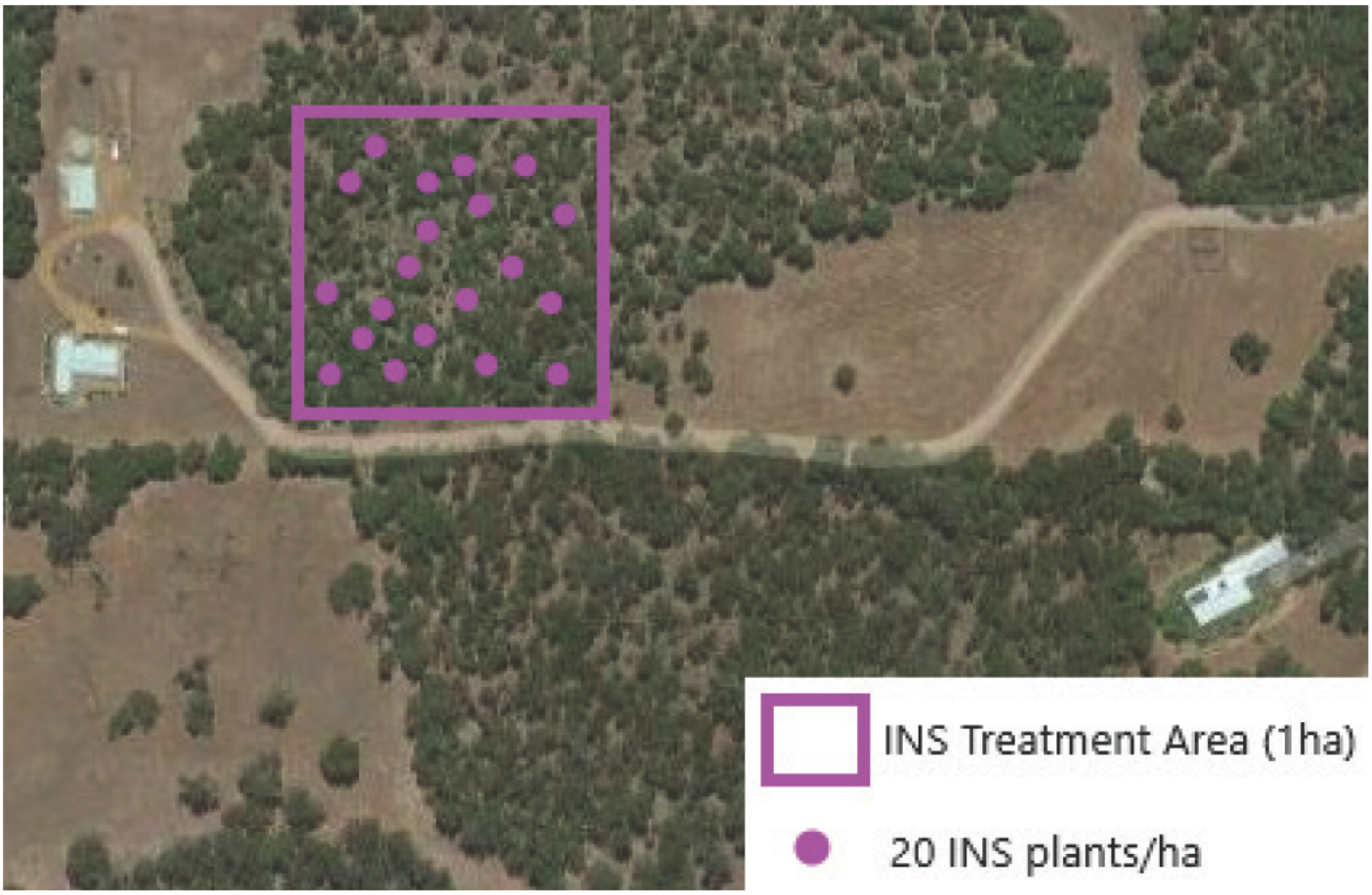


Figure 2: Twenty plants of invasive native species retained per each hectare cleared.

Land Management Code - Invasive Native Species Landholder Guide

Notification and Certification

Notification under Division 1 of Part 2 of the Code involves submitting a notification to Local Land Services with intention to clear, at least 14 days before that clearing is carried out.

You can notify by:

- using the notification form available at www.lls.nsw.gov.au/help-and-advice/land-management-in-nsw/landholder-forms and
- contacting your nearest Local Land Services office where they will explain and assist with the notification process.

Certification under Division 1 or 2 of Part 2 of the Code involves contacting your nearest Local Land Services office where they will explain the certification process and arrange a property visit to commence assessment of proposed clearing.

Key Principles for Managing Invasive Native Species

1. Management of INS must be integrated, ongoing and part of normal property management.
    - This involves control of total grazing pressure through fencing and control of water points, tactical grazing to maintain perennial native grasses under varying seasonal conditions, and treatment of regrowth.
    - The nature and timing of these activities will vary from property to property and even paddock to paddock. Planning should form part of both short and medium-long term management.
2. Give first priority to maintaining open areas.
    - Open areas provide the highest economic return and shrub cover does not need to increase greatly before economic return is seriously impacted.
    - The cost of maintaining open areas is much lower than the cost of returning encroached areas to an open state, so ensuring open areas are maintained should always be the first priority in INS management.
    - This will require monitoring of open areas, particularly following seasonal conditions likely to lead to INS re-establishment.
    - Focus on treating newly established plants while they are still small (<10cm).
3. Prioritise remaining areas based on expected costs and benefits to overall property management.
    - Decide whether areas prone to INS encroachment, should be managed for grazing or another purpose such as carbon sequestration or biodiversity stewardship.
    - Prioritise areas to be retained for grazing, with the highest priority being the maintenance of currently open areas, including treatment of isolated individual plants and small scattered INS clumps.
    - Give moderate priority to treatment of the perimeter of current infestations to prevent spread into open areas, with lowest priority given to moderate-dense infestations and large areas of dense INS.
4. Develop an INS Management Plan.
    - Use a satellite image base map (available from LLS) to overlay farm infrastructure (fences, tracks, water) and map INS density, dominant species and age structure, to inform appropriate treatments and identify priority areas.
5. Develop a post-treatment strategy for ongoing management.
    - Ongoing management will need to involve both grazing management and maintenance of treated areas.
    - Grazing management is best conceived within a tactical grazing framework, which capitalises on opportunities and manages seasonal (or economic) conditions.

Example Invasive Native Species Treatment Methods

Successful INS management requires integrated and ongoing treatment with consideration of ground disturbance. It's important to consider the impact of clearing, to ensure methods are consistent with treatment authorised through the Code.

Division 1 requires minimal disturbance to soil and groundcover. Minimal disturbance is where no greater than 30% of the soil surface and existing groundcover is disturbed. INS treatment methods may involve burning, mulching or individual plant removal.

Where areas are mapped as vulnerable regulated land, within waterway buffers or in areas containing erosion, nil disturbance is required. This means no greater than 5% of the soil surface and existing groundcover is disturbed. To avoid erosion and land degradation, INS treatment may be non-mechanical, with the exception of handheld machinery focusing on selective removal.

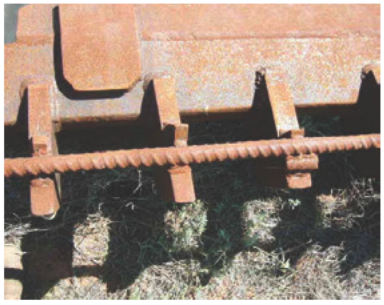
For INS management under Division 2, a greater level of soil disturbance may occur. INS treatment methods may involve ploughing with temporary cultivation or use of machinery such as a blade plough in a single clearing pass. Care should be taken to ensure clearing does not expose highly erodible subsoils prone to deep or extensive gullying.

Table 2 contains example treatment methods aligned with conditions of the Code. Refer to Division 1 for low impact clearing and Division 2 for moderate impact clearing.

Table 2. Example invasive native species treatment methods

Method	Nil/Min Disturbance	Advantage	Disadvantage	Low impact Div 1	Mod impact Div 2
Management burning  Always seek professional advice from Rural Fire Service and source burn permits.	Yes	All species are susceptible when young. Kills some mature shrubs. Native pasture response may be rapid.	Infrequent opportunities because of seasonal/fuel condition requirements. Fire may stimulate INS or non-native 'weed' germination and require follow-up. Response depends on shrub species and size. Potential risk of erosion if fire intensity is not managed. Risk of non-target species being impacted.	Yes	Yes
Selective pushing  Linear or meandering pushing of trees using heavy machinery.	No	Selectively removes whole plant. Useful in areas with scattered INS patches.	Difficult in dense stands. Disturbance to soil where roots are lifted. Ineffective on mature trees with large root systems.	No	Yes
Chainsaw Felling  May also include herbicide application to cut stumps.	Yes	Selective removal. Minimal erosion risk.	Time-consuming. Labour intensive. Will not kill sprouting species. Stumps remain.	Yes	Yes

Blade ploughing  Flat blade set below soil surface pushed or dragged by a tractor or dozer.	No	Plants are removed. Pasture response may be rapid. Annual or non-persistent perennial species can be sown at the same time.	Erosion risk. Soil disturbance can stimulate INS seedling germination. Requires follow-up treatment. Inadequate blade depth will make the problem worse.	No	Yes
Chaining  Involves dragging a thick heavy chain between two tractors or bulldozers to pull down thick INS.	No	Large plants are removed. Pasture response may be rapid. Improved chance for follow-up management burn. Logs and stems on ground may aid pasture growth.	Soil disturbance and risk of erosion. Non-selective. Logs and stems on ground may reduce pasture access. Ineffective on mature trees with large root systems.	No	Yes
Mulching  Involves the use of a rotary drum equipped with steel teeth or blades to shred or chip the vegetation.	Yes	Nil ground disturbance. Low erosion risk. Pasture response may be rapid. Knocks down small trees & mature bushes. May stimulate sufficient fuel growth for fire.	Time consuming. In dense stands, large litter layer can restrict water infiltration and native seed germination. Ineffective on mature trees with large root systems.	Yes	Yes

Crocodile seeding  Involves pulling an offset drum with shovel-like teeth over INS. It knocks down plants while introducing seed.	No	Low erosion risk. Seedbed created in pits. Pasture response may be rapid. Knocks down mature bushes. May stimulate sufficient fuel growth for fire.	Temporary knock down. Stimulates regrowth. Very low kill rate of shrubs and trees. Risk of non-target species being impacted.	No	Yes
Stick raking  Stick raking uses a clawed instrument attached to a tractor or bulldozer to break off young shrubs and 'rake' them into piles	No	Shrubs and trees are removed. Pasture response may be rapid.	Stimulates regrowth. Will not kill sprouting species.	No	Yes
Grubbing  Woody species are uprooted using 'grubber' on tractor. Best after rain.	No	Selective. Removes whole plant. Useful for areas of scattered INS.	Time consuming. Difficult in dense stands. Disturbance to soil where roots are lifted. Ineffective on mature trees with large root systems.	No	Yes

Cultivation / cropping  Involves INS clearing to promote regeneration and regrowth of native vegetation that is not INS. Cultivation can occur up to 5 times in 15-years and in no more than 3 consecutive years. Crop type must be annual or non-persistent perennial species.	No	Removes shrubs and destroys INS roots. Pasture response is rapid. Increased agricultural production. Stubble retention for native pasture establishment.	Can only cultivate up to 5 times in a 15-year period and in no more than 3 consecutive years. Soil disturbance may stimulate weed germination. Erosion risk. Decline in soil structure. Risk of crop failure. Soil fertility may drop rapidly without fertiliser. Over use of fertiliser may limit recruitment of native perennial grasses.	No	Yes
Grazing management  Grazing can control emerging INS seedlings and regrowth, as well as browse to control established INS.	Yes, if in accordance with the sustainable grazing definition.	Minimal soil/ wind erosion risk. Increased animal production. Reduces INS seedling survival.	Ineffective in mature INS establishment. If grazing is removed INS may return.	Yes	Yes
Herbicide  Always follow herbicide label instructions. Apply to plants in active growth for best results.	Yes	Minimal erosion risk. Effective on all species. Chemicals very specific. Does not require specialised equipment. Dead standing plants may protect pasture regeneration	Loss of some pasture. Loss of non-target species. Dependant on plants actively growing. Response depends on shrub species and size.	Yes	Yes

Land Management Code - Invasive Native Species Landholder Guide

Ongoing Invasive Native Species Management

Management of INS is an ongoing process. Generally, a single treatment is not adequate to keep INS under control. Ongoing management involves:

- Re-establishment of native perennial grasses;
- Total grazing pressure management (including preparation of alternative grazing for domestic stock and determination of a suitable grazing regime for the treated area);
- Appropriate follow-up treatment; and
- Practical monitoring of the treatment area.

Other Useful Information

Advice

Local Land Services has specialist land management staff available to answer questions related to this guide. Local Land Services can also provide advice on agricultural production, biosecurity, environmental management, travelling stock routes, veterinary assistance and emergencies.

Fact sheets

A series of fact sheets are available that will help apply aspects of the Code.

The most relevant fact sheets for INS are:

1. Land categories and the Land Management Framework
2. Land Management Code (invasive native species)
3. Notifying to manage vegetation
4. How to measure stem diameter
5. Determining slope and soil texture
6. Determining buffer distances from water bodies
7. What other approvals may be required?

These fact sheets are available at your Local Land Services office. They are also available at www.lls.nsw.gov.au/help-and-advice/land-management-in-nsw/resources

Other publications

The publication "Managing invasive native scrub to rehabilitate native pastures and open woodlands" provides detailed best practice guidelines. Download at www.lls.nsw.gov.au/__data/assets/pdf_file/0007/685222/managing-invasive-native-scrub.pdf

"Guidelines for applying the Clearing of Invasive Native Species Ministerial Order (INS self-assessable code)" also contains useful information. Download at www.environment.nsw.gov.au/research-and-publications/publications-search/guidelines-for-applying-the-clearing-of-invasive-native-species-ministerial-order

It is recommended you refer to these documents when planning for INS management.

Definitions

Allowable activities - activities required for the general, day-to-day management of rural land, as defined by Schedule 5A of the Act at www.legislation.nsw.gov.au/view/html/inforce/current/act-2013-051

Annual or non-persistent perennial species – fast growing short-lived ground cover plants used to manage soil erosion, improve soil fertility, control weed species or provide pasture while native pasture plants establish.

Biodiversity stewardship - a program where landowners may enter an agreement to protect and manage land for biodiversity. Programs recognise landowners as custodians of biodiversity on their land and may provide funding for environmental management costs.

Buffer distances for water bodies - defined by clause 15 of the Code at www.legislation.nsw.gov.au/view/whole/html/inforce/current/sl-2018-0083

Carbon sequestration - describes the long-term storage of carbon dioxide or other forms of carbon in plants to either mitigate or defer global warming and avoid dangerous climate change.

Category 2 regulated land – land where authorisation may be required from LLS for native vegetation clearing. This includes clearing under the Code.

Critically Endangered Ecological Community (CEEC) - an ecological community identified in Part 1 of Schedule 2 to the *Biodiversity Conservation Act 2016* at www.legislation.nsw.gov.au/view/whole/html/inforce/current/act-2016-063, which is protected due to its declining extent.

Diameter at breast height over bark - the diameter over the bark of a tree stem measured at 1.3 metres above the ground. If there are multiple stems on a tree, the diameter is measured on the largest stem. Refer to the factsheet "How to measure stem diameter" at www.lls.nsw.gov.au/help-and-advice/land-management-in-nsw/resources.

Grazing management – refers to management of the frequency (how often) and the intensity (how heavily) of livestock grazing on pastures.

Invasive Native Species (INS) - plant identified in Schedule 1 of the Code, either regenerating densely or encroaching on vegetation communities where they previously did not occur.

Minimal disturbance - means no greater than 30% of the soil surface and existing groundcover is disturbed (total area) as a result of the clearing.

Minimum extent necessary – clearing of native vegetation authorized through the Code to the minimum required extent necessary for that purpose.

Nil disturbance - means no greater than 5% of the soil surface and existing groundcover is disturbed (total area) as a

result of the clearing.

Sensitive regulated land – environmentally sensitive land where clearing is not permitted under the Code, and a limited range of allowable activities are permitted. Mapped on the Native Vegetation Regulatory Map at www.lmbc.nsw.gov.au/Maps/index.html?viewer=NVRMap.

Small holding - means a single landholding in the same ownership that has an area of less than:

- 10 hectares in the case of Central and Coastal Zones of NSW, and
- 40 hectares in the case of the Western Zone.

Sustainable grazing – grazing by livestock, and the management of grasslands used for grazing, that is not likely to result in the substantial long-term decline in the structure and composition of native vegetation.

Total grazing pressure (TGP) - the ratio of demand for pasture and the supply of pasture available. Demand can come from both livestock and native or feral animals.

Treatment area - an area of Category 2 regulated land subject to a current notification made under the Code or a parcel of land subject to a current voluntary or mandatory code compliant certificate issued under the Code. A treatment area constitutes the entire contiguous area of land within which clearing under a Division is to occur, as specified in the relevant notification or certificate.

Vulnerable land - steep or highly erodible land, protected riparian areas or land that is otherwise environmentally sensitive. Mapped on the Native Vegetation Regulatory Map at www.lmbc.nsw.gov.au/Maps/index.html?viewer=NVRMap.

Land Management Code - Invasive Native Species Landholder Guide

Appendix 1

Invasive Native Species List

Current at 28/10/2020. Refer to Schedule 1 of the Code www.legislation.nsw.gov.au/view/whole/html/inforce/current/sl-2018-0083

Invasive native species	Central Tablelands	Central West	Greater Sydney	Hunter	Murray	North Coast	North West	Northern Tablelands	Riverina	South East	Western
Acacia aneura (mulga)		■					■		■		■
Acacia deanei (Deane's wattle)[1]	■	■					■	■			
Acacia excelsa (ironwood)											■
Acacia homalophylla (yarran)	■	■					■				■
Acacia mearnsii (black wattle)	■	■								■	
Acacia paradoxa (kangaroo thorn)	■	■									
Acacia salicina (cooba or native willow)	■	■					■				
Acacia stenophylla (black wattle or river cooba)	■	■			■		■	■	■		■
Bursaria spinosa (blackthorn)[2]		■					■				
Callitris endlicheri (black cypress)	■	■	■	■			■	■			■
Callitris glaucophylla (white cypress)	■	■			■		■	■	■		■
Cassinia arcuata (sifton bush)	■	■	■				■	■	■		
Cassinia laevis (cough bush)	■	■					■	■	■		
Cassinia quinquefaria	■	■					■	■			
Casuarina cristata (belah)		■					■				■
Dodonaea viscosa subsp angustissima (narrow-leaf hopbush)	■	■					■	■	■		■
Dodonaea viscosa subsp. mucronata	■	■					■				
Dodonaea viscosa subsp. spatulata (broad-leaf hopbush)	■	■					■	■	■		■
Eremophila bignoniiflora (eurah)	■	■					■				■
Eremophila bowmanii subsp. bowmanii (silver turkey bush)	■	■									■
Eremophila duttonii (harlequin fuchsia bush)		■									■
Eremophila gilesii (green turkey-bush)											■
Eremophila longifolia (emu bush)	■	■					■	■	■		■
Eremophila maculata (spotted fuchsia)		■					■	■			
Eremophila mitchellii (budda, false sandalwood)	■	■					■		■		■
Eremophila sturtii (turpentine)		■					■		■		■
Eucalyptus camaldulensis (river red gum)	■	■			■		■		■		
Eucalyptus coolabah (coolibah)		■					■				■
Eucalyptus intertexta (red box)		■									■
Eucalyptus largiflorens (black box)		■			■		■				■
Eucalyptus populnea subsp. bimbil (bimble box, poplar box)		■					■				■
Geijera parviflora (wilga)		■					■				■
Kunzea ericoides (burgan)		■	■							■	

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Invasive native species	Central Tablelands	Central West	Greater Sydney	Hunter	Murray	North Coast	North West	Northern Tablelands	Riverina	South East	Western
Kunzea parvifolia (violet kunzea)		■	■							■	
Leptospermum brevipes (grey tea-tree, tea-tree)		■					■	■			
Maireana microphylla (eastern cotton bush)	■	■									
Duma florulenta (syns.: Muehlenbeckia cunninghamii & Muehlenbeckia florulenta (lignum))		■					■				■
Nitraria billardierei (Dillon bush)		■			■						
Olearia elliptica subsp. elliptica (sticky daisy bush, peach bush)		■					■	■			
Sclerolaena birchii (galvanized burr)		■			■		■		■		■
Sclerolaena muricata (black roly-poly)[3]		■			■		■	■	■		■
Senna artemisioides subsp. X artemisioides (syn.: Senna form taxon 'artemisioides' (silver cassia))	■	■					■		■		■
Senna artemisioides subsp. filifolia (syn.: Senna form taxon 'filifolia' (punty bush))	■	■					■		■		■
Senna barclayana (pepper-leaf senna)											■
Vachellia farnesiana (mimosa)	■	■					■	■			■

Notes:

1. Acacia deanei (deane's wattle) includes both subsp.deanei and paucijuga.
2. Bursaria spinosa (blackthorn) includes both subsp. spinosa and lasiophylla.
3. Sclerolaena muricata (black roly-poly) includes all subsp. muricata, semiglabra and villosa.