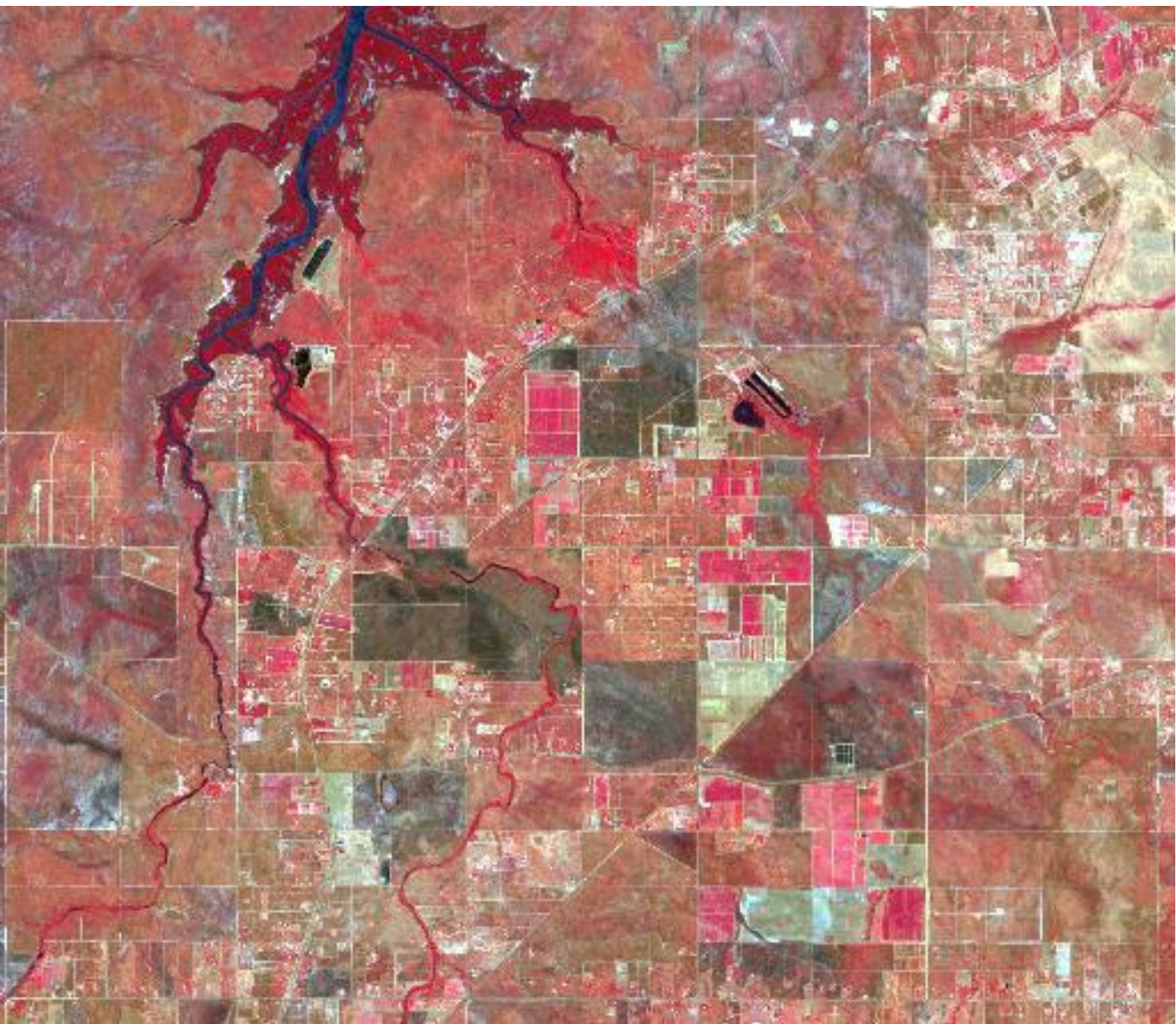


Land clearing guidelines

Northern Territory Planning Scheme



Document title	Land clearing guidelines
Contact details	Department of Environment, Parks and Water Security
TRM number	LRM2021/0077~0002

Acronyms	Full form
CPESC	Certified Professional in Erosion and Sediment Control
DEPWS	Department of Environment, Parks and Water Security
DIPL	Department of Infrastructure, Planning and Logistics
DTFHC	Department of Territory Families, Housing and Communities
ESCP	Erosion and Sediment Control Plan
GDE	Groundwater Dependent Ecosystems
NT	Northern Territory
NTPS	Northern Territory Planning Scheme
WAP	Water Allocation Plan
WCD	Water Control Districts
WMP	Weed Management Plan

Document control

The following table records the history of any significant changes made to this document. The version number of the document is incremented as follows:

- By 1.0 for significant changes
- By 0.1 for changes made for clarity and reading ease only

Version	Date	Changes made
1.3	24/09/2021	<ul style="list-style-type: none"> • Section 4.3.3 – Addition information added regarding boundary buffers • Section 3.1 – Addition information added regarding site inspections • Administration changes made throughout guidelines to address department name changes, contact details and hyperlink updates.

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How to read this document

Section 1 provides contextual information outlining how and when the guidelines should be used and important definitions pertaining to clearing controls.

Section 2 provides an overview of the regulatory framework, including a brief history of clearing controls in the Northern Territory, an overview of the application process and the relevance of various legislation.

Section 3 defines the environmental considerations that all clearing applications must address and provides recommended management parameters and mitigation measures.

Section 4 provides strategic guidance on how to approach preparation of a clearing application, including how to apply the guidelines in order to identify and exclude areas of native vegetation which are inappropriate for clearing and how best to design a clearing plan (i.e. a map of the proposed clearing area) which will both be practical and minimise potential negative impacts.

Important terms are defined within relevant sections of the document, and a Glossary is provided at the end of the document. Some words or phrases have been formatted as bold, underlined or italicised for the purposes of emphasis and to aid readability; and may or may not be defined in the Glossary (as appropriate).

Appendix A outlines the history of clearing controls in the Northern Territory.

Appendix B provides further information regarding determination of clearing applications.

Appendix C includes a list of key contacts, including coordinating agencies.

1 Overview

1.1 Purpose

The Land Clearing Guidelines play an important role in guiding good land development practice in the Northern Territory by establishing standards for the management (i.e. clearing and retention) of native vegetation. The application of these guidelines will assist in preventing environmental degradation associated with clearing and help to support the sustainable development of the Northern Territory's natural resource based economy.

The guidelines aim to ensure that native vegetation management:

- facilitates sustainable development and industry in the Northern Territory through broad-scale plans for retention and managed removal of native vegetation
- recognises and fosters the essential role played by native vegetation in sustaining every aspect of Northern Territory life
- maintains the essential character of Northern Territory landscapes and their resilience to climate change through retention of native vegetation.

The purpose of the guidelines is to provide:

- recommendations regarding best practice clearing of native vegetation that developers need to consider when designing and preparing a clearing application
- a standardised suite of environmental parameters which **service authorities** and **advisory agencies** responsible for assessing clearing applications should consider when providing advice to developers and the consent authority
- advice to guide decision making by consent authorities responsible for determining whether to approve a clearing application.

The guidelines aim to provide greater clarity and certainty around the acceptability of clearing applications to ensure consistent and transparent decision making by setting out matters for consideration in assessing applications and through applying the principles of natural justice to the process. They provide a basis for developers to demonstrate the level of risk associated with the proposed clearing and guidance on appropriate mitigation measures that are proportionate to the level of risk.

1.1.1 Application of the guidelines

The guidelines are formally recognised under the *Planning Act 1999* and are referenced in both the Northern Territory Planning Scheme (NTPS) and the Northern Territory Pastoral Land Clearing Guidelines. Accordingly the guidelines must be applied for 'development applications for the purpose of clearing of native vegetation' under the *Planning Act 1999* and 'applications to clear pastoral land' under the *Pastoral Land Act 1992* (collectively termed 'clearing applications'). The guidelines are focussed on minimising the impacts of environmental degradation as a result of clearing native vegetation and as such can also be used as guidance for other types of developments under the *Mining Management Act 2001*, *Mineral Titles Act 2010* and the *Petroleum Act 1984*.

2 Definitions

Terminology specific to this document and of particular relevance to clearing of native vegetation regulations is outlined in Table 1.

Table 1: Important terminology.

Term used in guidelines	Description	Other commonly used terms
Clearing application (application)	An application seeking consent to clear native vegetation made in accordance with either the <i>Planning Act 1999</i> or the <i>Pastoral Land Act 1992</i> .	Development application, development proposal, proposal
Clearing of native vegetation (clearing)	<p>NTPS definition: the removal or destruction, by any means, of native vegetation on an area of land other than:</p> <ul style="list-style-type: none"> (a) the removal or destruction of a declared weed within the meaning of the <i>Weeds Management Act 2001</i> or of a plant removed under the <i>Plant Health Act 2008</i> (b) the lopping of a tree (c) incidentally through the grazing of livestock (d) the harvesting of native vegetation planted for harvest (e) in the course of Aboriginal traditional use, including the gathering of food or the production of cultural artefacts (f) by fire (g) the removal or destruction of native vegetation occurring on a site previously cleared in accordance with a permit issued under the <i>Planning Act 1999</i> or (h) incidentally through mowing an area previously cleared of native vegetation <p>and includes the selective removal of a species of plant, a group of species of plants, a storey or group of storeys in whole or in part.</p> <p>Note: the definition excludes clearing of native vegetation which was cleared prior to the introduction of controls or subject to a permit.</p>	Land clearing, selective clearing, parkland clearing
Developer	The person or entity intending to instigate the clearing of native vegetation. The developer may be the land owner, the lessee, the developer, or a third party.	Proponent, developer, consultant or suitably qualified professional, land owner, land manager, contractor, lessee
Intact native vegetation	Native vegetation which has not previously been cleared (or disturbed) by human activity is referred to as being 'intact'.	Old growth, virgin, remnant
Native vegetation	NTPS definition: means terrestrial and inter-tidal flora indigenous to the Northern Territory, including grasses, shrubs and mangroves.	Trees, shrubs, grass, bush

Term used in guidelines	Description	Other commonly used terms
Permit	If a clearing application is approved by a consent authority then a development permit for the purpose of clearing native vegetation is issued.	Development permit, development permit for the purpose of clearing native vegetation, land clearing permit
Previously cleared native vegetation	Native vegetation which has previously been cleared by human activity and has subsequently re-grown is sometimes referred to as 'regrowth' and may vary in age.	Regrowth, suckers, scrub

3 The regulatory assessment framework

3.1 Application process

In order to obtain consent to clear native vegetation, an application must be submitted to the relevant agency for assessment (i.e. the coordinating agency) (see Table 2). In the Northern Territory, the coordinating agency responsible for administering the clearing application assessment process, and the consent authority responsible for determining an application, depends on the zoning or tenure of the subject land (see Figure 1). Clearing of native vegetation on zoned and unzoned land is controlled under the *Planning Act 1999*, while clearing on a pastoral lease is controlled under the *Pastoral Land Act 1992*. The assessment process varies slightly for each Act, however it will generally include the following steps:

1. pre-lodgement consultation with coordinating agency (and other relevant advisory agencies and/or service authorities as required)
2. preparation of application by developer
3. application lodgement
4. public exhibition period (28 days)
5. assessment and provision of advice by advisory agencies and service authorities
6. technical assessment by coordinating officer
7. opportunity for developer to respond to findings and recommendations
8. consideration and determination by the consent authority.

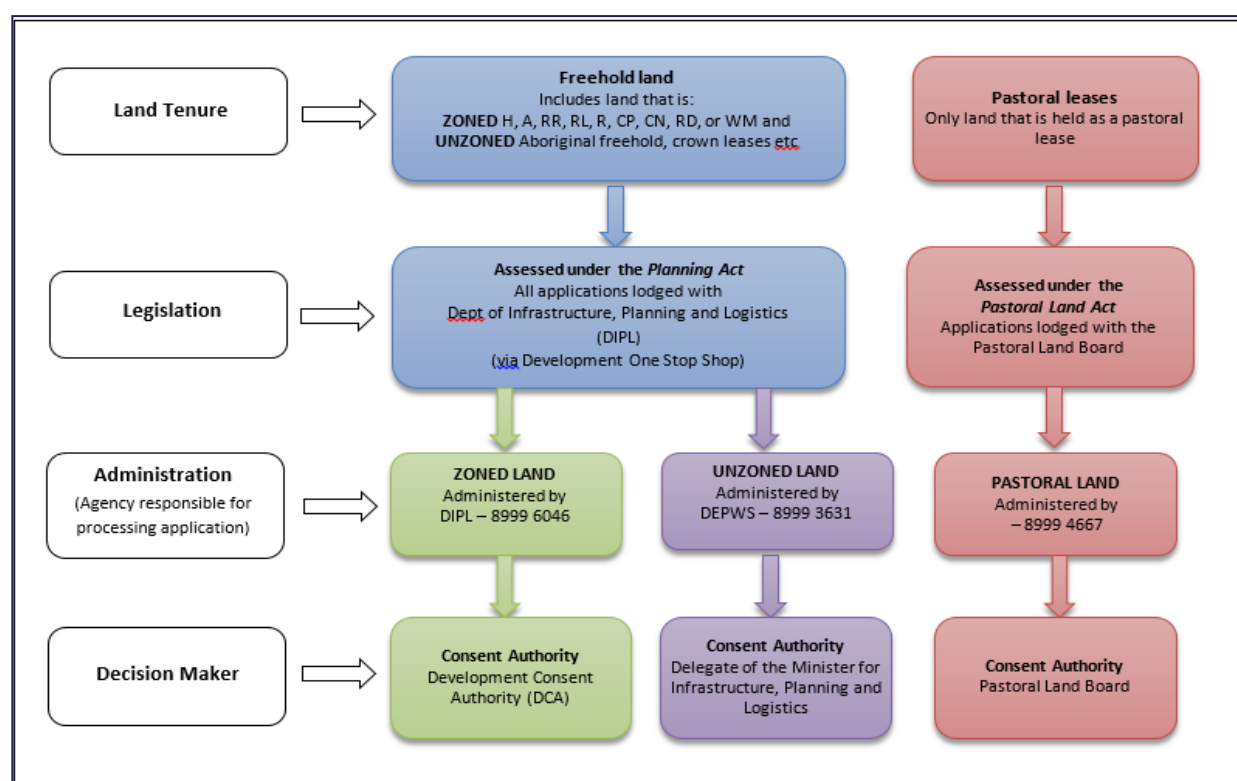
Applications which are not considered to be properly compiled, i.e. they do not contain sufficient detailed information to enable proper assessment or are missing compulsory information, will not be accepted for lodgement. Furthermore, applications which do not adequately demonstrate that the relevant matters have been considered and the prescribed requirements satisfactorily addressed (including the application of these guidelines) may not be approved.

For example: a clearing application on zoned and unzoned land is required to demonstrate consideration of the NT Planning Scheme (NTPS) and these guidelines; while a clearing application on pastoral land is required to demonstrate consideration of both the NT Pastoral Land Clearing Guidelines and these guidelines.

To enable an accurate assessment of an application, a site inspection is generally required. Where seasonal conditions limit an inspection from occurring, an application may need to be deferred until a site inspection can be conducted.

Table 2: Assessment process roles and functions.

Group	Description
Advisory agency	Any agency responsible for providing comment on the application.
Coordinating agency	The agency responsible for coordination of the assessment process: Zoned – Development Assessment Services (DIPL) Unzoned – Land Development Coordination Branch (DEPWS) Pastoral – Pastoral Lease Administration and Board Branch (DEPWS)
Consent authority	The authority responsible for determining the application: Zoned – Development Consent Authority or the Minister if outside DCA division areas Unzoned – Minister for Infrastructure, Planning and Logistics (or delegate) Pastoral – NT Pastoral Land Board
Coordinating officer	The officer within the coordinating agency responsible for administering the application assessment process.
Service authority	The <i>Planning Act 1999</i> defines service authority as: the Territory, a minister, a local authority, the Power and Water Corporation or a prescribed statutory corporation. In most instances clearing applications are forwarded to the local council for comment.



*To find out more about the One Stop Shop, go to the [Department of Infrastructure, Planning and Logistics website](https://nt.gov.au/property/land-planning-and-development/planning-applications-and-processes)¹.

Figure 1: Assessment pathways for clearing applications of varying land tenure.

¹ <https://nt.gov.au/property/land-planning-and-development/planning-applications-and-processes>

3.1.1 Public exhibition

Clearing applications and all supporting documentation will be published in a newspaper circulating in the Territory or in the area to which the proposal relates, and will be available for public inspection for 28 days on the Northern Territory Government's website.

Clearing applications are distributed to relevant NT Government advisory agencies and service authorities, including the relevant local council. Service authorities and advisory agencies provide their assessment responses to the consent authority to consider in determining the application.

Developers are provided with all public, advisory agency and service authority comments and are encouraged to respond to the comments to further support their application.

For more information on clearing applications and determinations, use the following websites:

- [Zoned land](#)²
- [Unzoned land](#)³
- [Pastoral land](#).⁴

3.2 The Planning Act 1999

Clearing controls (i.e. regulation) came into effect for different land tenures and localities at different times (see Appendix A). Prior to the introduction of controls, clearing of native vegetation did not require consent (i.e. a permit). Areas of land that were cleared prior to the introduction of controls and have continued an existing use are not considered to be in breach of controls subject to Section 34 of the *Planning Act 1999* (existing use protected). However, if the use of the previously cleared land has not been continued (i.e. maintained), consent to re-clear that area of land may be required.

Following the introduction of controls under the *Planning Act 1999*, a clearing permit is required when the proposed clearing will result in more than one hectare in aggregate of land (including any area already cleared of native vegetation) being cleared on a single property (i.e. parcel of land with single lot title). This applies to land zoned H (Horticulture), A (Agriculture), RR (Rural Residential), RL (Rural Living), R (Rural), CP (Community Purposes), CN (Conservation), RD (Restricted Development), WM (Water Management) and on Unzoned land. Clearing in Zone CN (Conservation) requires consent for any area of clearing, including areas less than one hectare.

A permit to clear native vegetation is not required in the following instances:

- The native vegetation was previously cleared in accordance with the terms and conditions of a development permit. In this instance, providing the clearing was undertaken prior to the expiry date of the permit, the permit is valid indefinitely and the land can be re-cleared for the purpose of maintaining regrowth.
- The proposed clearing works are subject to exceptions outlined in Schedule 3 of the NTPS; including for the purpose of a public road*.

* Notably the clearing of **internal private tracks** on zoned and unzoned land requires consent (where total clearing on the property will exceed one hectare).

² <https://www.ntlis.nt.gov.au/planning/lt.a.dar.list>

³ <https://nt.gov.au/property/land-clearing/freehold-land/current-applications-and-approvals-for-freehold-land-clearing>

⁴ <https://nt.gov.au/property/land-clearing/pastoral-land/pastoral-land-clearing-applications-and-permits>

The *Planning Act 1999* establishes the NTPS, which formally recognises policy, guidelines or assessment criteria to assist the consent authority to assess development applications. The Land Clearing Guidelines (this document) is a referenced document in the NTPS. Clause 3.2 of the NTPS relates to the clearing of native vegetation in specific zones (as outlined above) and unzoned land. The purpose of clause 3.2 is to ensure that the clearing of native vegetation does not unreasonably contribute to environmental degradation. Clause 3.2(5) identifies that a clearing application is required to avoid impacts on certain environmental criteria. Clause 3.2(6) states that an application is to demonstrate consideration of all matters outlined in Section 3 – Environmental Considerations, of this document.

Clearing applications lodged in accordance with the *Planning Act 1999* are technically referred to as “development applications for the purpose of clearing native vegetation” and undergo an “Impact” based assessment and takes approximately 12 weeks for a determination (assuming that an application is not deferred subject to a request for additional information). When an application is determined by the consent authority, a decision is made to either consent, alter the proposed development in the manner it thinks fit and consent, or to refuse the application (see section 53 of the Act). If the application is approved, a “development permit for the purpose of clearing native vegetation” is issued for a base period (see section 58 of the Act).

More information on how an application is determined can be found in **Error! Reference source not found..**

A permit will remain in force during the base period of the permit. However, if at the end of the base period works have not been completed but have substantially commenced, the permit will be automatically extended for a period of two years in accordance with section 58 of the Act. If a further extension is required, the developer may apply in writing to the consent authority at any time before the permit lapses; and the consent authority may extend the period of the permit as it thinks fit or refuse the extension, in accordance with section 59 of the Act. If an extension is not secured, a new application will be required.

For large or complex developments, it may be necessary to stage the development. For example: to better manage the risk of erosion or regrowth associated with clearing a large area, a developer might plan to undertake the clearing works in stages whereby clearing is undertaken in smaller sections and subsequent sections are not cleared until the previous section has been stabilised (e.g. by effective pasture establishment). Stages may be undertaken over a number of years and this will have implications for the base period of a permit. As such, an application should clearly identify proposed staging (i.e. the year in which specific areas will be cleared). Under section 56 of the Act, development permit conditions may relate to staging and may specify conditions to be satisfied at the conclusion of each stage. Generally however, clearing permits are issued for a base period of two years. Further information about staging is provided in section 4.3.2– **Erosion risk**.

3.2.1 Zoned land

For zoned land, clearing applications are coordinated by Development Assessment Services and determined by a divisional Development Consent Authority or the Minister for Infrastructure, Planning and Logistics (or their delegate). A planning officer, taking into account advice from relevant advisory agencies and service authorities, prepares a report with a recommendation. This report assists the Development Consent Authority in making a determination on the application.

Note: With regard to **borrow pits**, Development Applications for the purpose of **excavation and fill** on zoned land are required to demonstrate consideration of NTPS clause 5.8.9. If the proposed excavation and fill would include the clearing of native vegetation of more than one hectare in aggregate of land zoned H, A, RR, R, CP, RD or WM then clause 3.2 also applies. If a proposed excavation and fill triggers the need to consider clause 3.2 then the consideration of these guidelines would be necessary (unless located within a road reserve).

3.2.2 Unzoned land

For unzoned land, clearing applications are coordinated by the Department of Environment, Parks and Water Security (DEPWS) and are reviewed by the Native Vegetation Assessment Panel (NVAP) which consists of senior staff with expertise in natural resources (land, water and biodiversity), primary industries (agronomy pasture) and planning. NVAP considers all unzoned applications and makes recommendations to the consent authority based on advice from advisory agencies and service authorities. The consent authority for unzoned land is the delegate of the Minister for Infrastructure, Planning and Logistics (i.e. the Chief Executive and the Executive Director, Rangelands Division, DEPWS).

Find out more about the [clearing of native vegetation on zoned and unzoned land](#).⁵

Note: Although consent is not required for the purpose of **excavation and fill** (NTPS clause 5.8.9) on unzoned land, any associated clearing of native vegetation is subject to NTPS clause 3.2 if the proposed excavation and fill would include the clearing of native vegetation of more than one hectare in aggregate of land. If a proposed excavation and fill triggers the need to consider clause 3.2 then the consideration of these guidelines would be necessary. This includes in relation to borrow pits (unless located within a road reserve).

3.3 The Pastoral Land Act 1992

The *Pastoral Land Act 1992* controls clearing on pastoral leases (i.e. PL – Pastoral Lease and PPL – Perpetual Pastoral Lease). The Act provides a form of tenure of Crown land that facilitates sustainable use of land for pastoral purposes and the economic viability of the pastoral industry. It also provides for the prevention or minimisation of degradation or other damage to the land and its indigenous plant and animal life. The Pastoral Land Board (PLB) is the consent authority for clearing applications on pastoral land. The Pastoral Lease Administration and Board Branch, DEPWS, coordinate assessment of the applications. Pastoral clearing applications and their advice is considered by the PLB in their determination.

The NT Pastoral Land Clearing Guidelines outline exemptions for which clearing of native vegetation does not require consent and includes but is not limited to infrastructure, baling of native vegetation for hay and maintenance of regrowth for which a permit has previously been issued.

The *Pastoral Land Act 1992* also outlines general conditions relating to land management that apply to all pastoral leases in addition to the conditions of a clearing permit. These include but are not limited to conserving and protecting features of environmental, cultural, heritage or ecological significance; preparing and implementing remedial plans as required by the Pastoral Land Board; and maintaining all improvements (including areas of permitted clearing – see section 4 of the Valuation of Land Act 1963) necessary for sustainable pastoral production on the land.

Find out about the [clearing native vegetation on pastoral land](#).⁶

Read the NT Pastoral Land Clearing Guidelines

⁵ <https://nt.gov.au/property/land-clearing>

⁶ <https://nt.gov.au/property/land-clearing/pastoral-land/clearing-native-vegetation-on-pastoral-land>

3.4 The Environment Protection Act 2019

The purpose of the *Environment Protection Act 2019* is to enable and promote development in the Northern Territory that is ecologically sustainable. The *Environment Protection Act 2019* and Environment Protection Regulations 2020 sets out the process for environmental impact assessment, to ensure that matters that may have a significant impact on the environment are fully examined and taken into account in decisions made about a proposed action. Clearing applications made in accordance with the *Planning Act 1999* or the *Pastoral Land Act 1992* may also trigger assessment under the *Environment Protection Act 2019*.

Prior to lodgement of a clearing application, developers should refer to the following documents to self-assess whether their proposal may have a significant impact on the environment and therefore require referral to the Northern Territory Environment Protection Authority (NT EPA) for consideration under the *Environment Protection Act 2019*.

To determine whether your proposal will trigger referral, under the *Environment Protection Act 2019*, refer to the following documents:

- [Guide to environmental impact assessment and approvals in the NT](#)⁷
- [Referring a proposed action to the NT EPA – Environmental impact assessment guidance for proponents](#)⁸
- [NT EPA Environmental Factors and Objectives](#)⁹

3.4.1 Requirement for referral

A developer has a duty to refer a proposal to the NT EPA if it may have a significant impact on the environment. The consent authority or the NT EPA may also refer any application for assessment at any stage of the application if it considers that the proposal may have a significant impact on the environment, taking into account the potential environmental impacts of the clearing itself, the sensitivity of the environmental impacts, and any proposed measures to manage or mitigate potential impacts. Once referred, if the NT EPA determines that a proposal requires assessment under the *Environment Protection Act 2019*, the NT EPA will determine the level of assessment required.

Note: the department or consent authority will automatically refer a proposal that is 5,000ha or greater in size.

For further information, on NT EPA referrals, go to the [NT EPA website](#).¹⁰

⁷ https://depws.nt.gov.au/_data/assets/pdf_file/0003/816906/Guide-to-the-NT-environmental-impact-assessment-and-approval-process.pdf

⁸ https://ntepa.nt.gov.au/_data/assets/pdf_file/0009/805167/referring-proposed-action-to-ntepa-guideline.pdf

⁹ https://ntepa.nt.gov.au/_data/assets/pdf_file/0020/804602/guide-ntepa-environmental-factors-objectives.pdf

¹⁰ <https://ntepa.nt.gov.au/>

3.5 Other relevant legislation

Developers who intend to clear native vegetation are also responsible for ensuring they are aware of their obligations under other Northern Territory and Commonwealth legislation including:

3.5.1 NT legislation

- *Aboriginal Land Act 1978*
- *Bushfires Management Act 2016*
- *Crown Lands Act 1992*
- *Energy Pipelines Act 1981*
- *Fisheries Act 1998*
- *Heritage Act 2011*
- *Mineral Titles Act 2010*
- *Mining Management Act 2001*
- *Northern Territory Aboriginal Sacred Sites Act 1989*
- *Petroleum Act 1984*
- *Soil Conservation and Land Utilisation Act 1969*
- *Territory Parks and Wildlife Conservation Act 1976*
- *Waste Management and Pollution Control Act 1998*
- *Water Act 1992*
- *Weeds Management Act 2001*

3.5.2 Commonwealth legislation

- *Native Title Act 1993*
- *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*

Under the EPBC Act, actions that have, or are likely to have a significant impact on matters of national environmental significance may require approval from the Australian Government Minister for the Environment. To find out if an application will trigger a matter of national environmental significance, go to the Australian Government's [Department of Agriculture, Water and the Environment website](http://www.environment.gov.au/epbc/what-is-protected).¹¹

3.6 Assessment approach

In order to avoid environmental degradation through the clearing of inappropriate areas of land, an application to clear native vegetation is required to identify:

- the environmental characteristics of the proposed clearing footprint
- the values associated with the environmental characteristics (as applicable)
- the potential environmental impacts associated with the proposed clearing

¹¹ <http://www.environment.gov.au/epbc/what-is-protected>

- the likelihood the potential impacts will occur
- any proposed mitigation measures.

Equally importantly, an application must also identify these factors for the wider area. Specifically, every clearing application must consider the proposed clearing within the following context:

Site > clearing footprint > property > adjoining properties > wider landscape > region > Territory

From a biodiversity perspective, it may also be necessary to consider the national and international contexts. Furthermore, clearing has the potential to impact not only the natural environment, but also the built, social and cultural environments; and these aspects must also be considered. Refer to Figure 2 and Table 3.

The amount of detail required in an application is not dependent on the size of the proposed clearing area, but rather the complexity of the clearing footprint and surrounding area and the risk of environmental degradation associated with the proposed clearing in the immediate and longer-term. Although every application must address set requirements (e.g. NTPS clause 3.2(5) and (6)), different criteria will have more bearing on some applications than others, and the amount of information required to address each will be case specific. For example, an application proposing to clear land with an associated high degree of complexity and/or likelihood of causing environmental degradation will require a greater amount of, and more detailed, information. Applications must provide sufficient information to enable full consideration of the proposed clearing by the consent authority and this document provides guidance on how to address the requirements. Applications may be rejected if there is insufficient information provided to enable a complete assessment of the proposed clearing and its potential impacts.

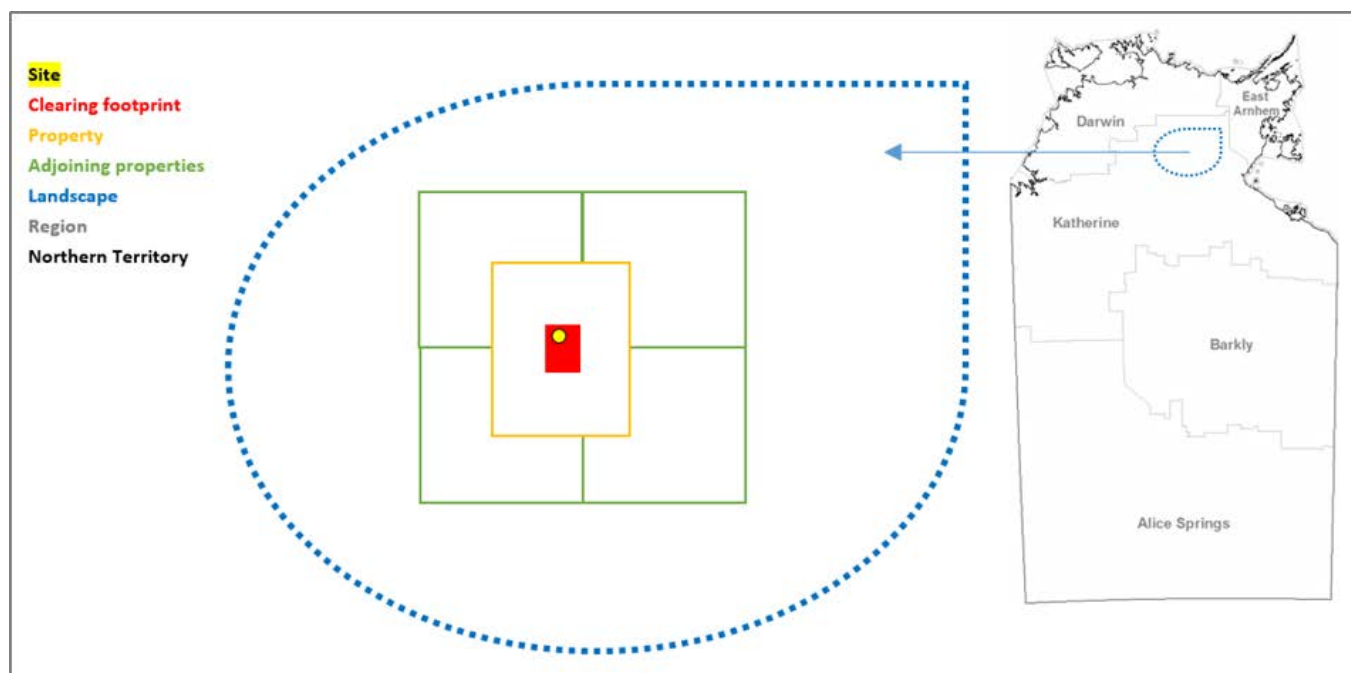


Figure 2: Representation of spatial context (not to scale). Diagram demonstrates how a single site within a proposed clearing footprint is situated within larger spatial contexts.

Table 3: Description of spatial scales.

Spatial scale	Description
Site	Site refers to a specific location or point where data is collected as part of a field survey (e.g. a slope reading is taken, a soil core is described or a vegetation description is recorded). A site has a relatively small spatial extent and a single survey will include multiple sites. Note: the specific extent of an individual site and the number/frequency of sites required in a survey will depend on the type of survey being undertaken.
Clearing footprint	The clearing footprint refers to the extent of the proposed clearing area and may comprise multiple discrete areas. For example, an application to clear 100ha (the clearing footprint) may consist of four separate 25ha areas (sometimes referred to as polygons).
Property	This refers to the parcel of land in which a clearing footprint is located, usually a single Lot or NT Portion. Property is also used to refer to a pastoral station/lease, noting that some larger stations are comprised of more than one parcel of land.
Adjoining property	This refers to the parcels of land immediately surrounding the property on which clearing is proposed, i.e. neighbouring properties. Applications must demonstrate consideration regarding how the proposed clearing may affect, or be affected by, characteristics of neighbouring land. For example: if erosion occurs within the clearing footprint, it may result in sediment washing downslope into an adjoining property.
Wider landscape	This refers to the general wider area beyond immediate adjoining properties. This level of scale focusses less on cadastral boundaries and more on the location (of a site or clearing footprint) within the broader landscape or catchment. Position in the landscape has important implications for environmental processes such as the movement of water, the formation of soil, the distribution of flora and fauna and the proximity of significant natural or cultural features.
Region	The delineation of regions can be based on many things (e.g. bioregions, climatic zones, tourism, electoral boundaries, locality, pastoral districts, council areas, etc.). In this context the term is used in a general sense with the intention of considering how the proposed clearing may impact on or be impacted by the surrounding community and land uses; and in particular landscape connectivity for biodiversity purposes.
Territory	The Northern Territory

4 Environmental considerations

The following section outlines environmental matters that must be considered in order to avoid environmental degradation through the clearing of inappropriate areas of land.

Developers must demonstrate how these environmental considerations have been addressed in an application either through:

- i. direct adoption of the guidelines (e.g. the recommended buffer width is applied), or
- ii. appropriate alternative mitigation proportionate to the level of risk.

Should direct adoption of the guidelines not be feasible, an application must request that the consent authority apply discretion and provide reasons to support the proposed mitigation measure or strategy.

When assessing an application, advisory agencies and service authorities will consider the extent to which an application has addressed the applicable environmental matters and provide an indication in their

advice to the consent authority as to whether the guidelines have been applied correctly and/or whether any proposed mitigation measures are likely to be effective.

In determining an application, a consent authority must consider whether the proposed clearing will satisfactorily avoid environmental degradation based on the information provided in the application and advice from advisory agencies and service authorities. Having regard to the guidelines, the consent authority must be satisfied that the applicable environmental matters have been effectively considered and that the risks posed by the clearing will be effectively mitigated.

Where different environmental matters overlap, the **precautionary principle** should be adopted by default and the most conservative recommendation applied. For example: where a 25m riparian buffer intersects with a 100m property boundary buffer, the widest buffer should be retained.

It is also important to recognise the difference between avoidance and mitigation. The recommendations provided for each environmental matter are aimed at avoiding environmental degradation by retaining native vegetation on land which is inappropriate or unsuitable for clearing due to its inherent environmental and/or cultural value. Where implementing the guidelines (e.g. recommended buffer widths) is not feasible and an inappropriate or unsuitable area of land is proposed to be cleared, the impact/s of the clearing must be reduced through alternative mitigation. In order for mitigation to be effective (and therefore acceptable) it must be appropriate – i.e. proportionate to the associated risk of not applying the guidelines and clearing native vegetation which should otherwise have been retained.

4.1 Using the guidelines to address environmental considerations

There are seven interlinked environmental considerations associated with clearing native vegetation which are addressed in the guidelines, including: soil, vegetation, biodiversity, water, weeds, cultural heritage and land management. Due to the interconnected nature and function of natural resources, overlap between recommended treatment (including assessment and management) of each resource is unavoidable. Accordingly, the guidelines have been framed around clearing application assessment criteria (outlined in the NTPS) and recommended best practice for native vegetation management (i.e. clearing and retention) to aid clearing application preparation, assessment and determination. Table 4 outlines the relevant sections of the guidelines relating to each environmental consideration.

Table 4: Environmental considerations and corresponding section of the guidelines.

Environmental consideration	Relevant sections
Biodiversity	4.4 Biodiversity
Cultural heritage	4.7 Cultural Heritage
Land management	4.3 Land resource management
Soil	4.2 Land and vegetation resource assessment
Vegetation	4.2 Land and vegetation resource assessment 4.4 Biodiversity
Water	4.5 Water
Weeds	4.6 Weeds

Section 5 – Footprint design provides a strategic approach for developing a clearing application, outlining the following conceptual steps:

1. Determine water requirements and availability.
2. Prepare land type map identifying landscape, soil and vegetation attributes (including landscape features such as riparian areas and attributes such as slope).
3. Complete a land suitability or capability assessment.
4. Identify land unconstrained by natural resources (e.g. exclude unsuitable soils, excessive slope, etc.).
5. Complete biodiversity assessment to determine presence of threatened species habitat, for exclusion.
6. Apply recommended buffers in accordance with the guidelines (including buffers to natural and cultural features).
7. Design proposed clearing areas taking into account land management considerations and the need for wildlife corridors.
8. Prepare written application identifying matters to be addressed, including weeds.

4.2 Land and vegetation resource assessment

4.2.1 NTPS requirements

- Clause 3.2.5(b) – the clearing of native vegetation is to be based on land capability and suitability for the intended use.
- Clause 3.2.6(h) – an application for the clearing of native vegetation is to demonstrate consideration of whether the soils are suitable for the intended use.

4.2.2 Land capability and land suitability classifications

Applications to clear native vegetation in the Northern Territory cover a broad range of intended land uses, including agricultural and non-agricultural. Where clearing for agricultural development is proposed, either a land capability assessment (e.g. for dryland agriculture and grazing) or a more detailed land suitability assessment (e.g. for irrigated agriculture) is required to ensure the subject land is appropriate for the intended use.

Definitions of land capability and land suitability vary significantly. For the purposes of these guidelines, land capability evaluates a common set of broad land-based development constraints and determines the appropriateness of the land in general for a broad range of land uses. In contrast, **land suitability** assesses the potential of a soil or land resource for a specific irrigated agricultural land use.

Developers proposing to clear native vegetation will be required to undertake either a land capability or land suitability assessment. For small to medium scale irrigated agricultural developments (such as those in the Darwin rural area), a land capability assessment may be sufficient; however larger scale, potentially complex agricultural developments requiring a significant water allocation will require a land suitability assessment. The type of assessment required will be at the discretion of the Land Assessment Branch, DEPWS, subject to pre-lodgement consultation (see contact list in [Appendix C – Key contacts](#)).

Irrespective of the approach taken (i.e. whether a land capability or land suitability methodology is applied), a land type map and supporting data are required (outlined in sections 4.2.2 - [Land capability and land suitability classifications](#) and 4.2.3 - [Soil, vegetation and land resource assessment](#)) to guide

and inform the land evaluation process. The successful completion of either land evaluation methodology will enable inappropriate land to be identified and excised from the proposed clearing footprint prior to lodgement and review by the relevant consent authority. A land capability or land suitability assessment will also be critical for managing identified risks, considered in Section **Error! Reference source not found.** – **Land resource management.**

Land capability and land suitability assessments are processes that determine whether the soil and land resource being considered is appropriate for the intended use. They consider the post-clearing potential of the land to support the proposed use based on inherent soil and landscape attributes. Where agricultural development is proposed, land needs to be able to support sustainable agricultural development using current technology, with minimal degradation to the land resource and receiving environment in the short, medium and long-term. An assessment should not simply be a statement of the land's ability to be cleared. Land that is considered either capable or suitable for the intended use still requires that appropriate management be put in place to ensure the sustainable use of the land resource in the long-term. Clearing should not be approved where land degradation or erosion caused by clearing works cannot be managed or mitigated. This aspect is considered more closely in Section 4.3 – **Land resource management.**

4.2.3 Soil, vegetation and land resource assessment

All clearing applications need to be accompanied by an appropriate soil, vegetation and land resource assessment. As such, investigation of the extent and distribution of soil, vegetation and land resources, captured at a scale of 1:5,000 to 1:20,000 within a clearing footprint, needs to be one of the primary considerations when planning an application. The assessment needs to provide both of the following:

- i. a specific land type map with accompanying land type descriptions for the proposed clearing footprint and
- ii. either a land capability or land suitability assessment, depending on the proposed use, scale and complexity of development.

Consideration of an application cannot proceed without the collection and orderly presentation of field-verified site-specific data and mapping. The assessment and accompanying map needs to divide and map the landscape into practical land types based on unique combinations of contributing lithology, soil and landscape characteristics and associated vegetation. For the purposes of these guidelines, a land type is defined as a simplified land unit that incorporates “a reasonably homogenous part of a land surface, distinct from surrounding terrain with consistent properties in landform, soils or vegetation” (Hooper 1970).

4.2.4 Soil and landform data

The soil and land information presented needs to comply with Australian technical standards (Isbell & NCST 2016, McKenzie et al. 2002, McKenzie et al. 2008, NCST 2009, Rayment and Lyons 2011) and be presented clearly and concisely to ensure the consent authority has confidence in the data and is able to make a determination as to the appropriateness of the proposed site for the intended use. The land type map and subsequent land capability or land suitability assessment should be carried out by a suitably qualified professional with local soil landscape experience. To find a Certified Professional Soil Scientist (CPSS) with Soil Science Australia, go to [Soil Science Australia website](https://www.soilscienceaustralia.com.au/cpss/).¹²

¹² <https://www.soilscienceaustralia.com.au/cpss/>

4.2.5 Vegetation data

The documentation of native vegetation (including previously cleared/disturbed vegetation) in each land type is required and should comply with the [Northern Territory Guidelines and Field Methodology for Vegetation Survey and Mapping](#)¹³ (Brocklehurst et al. 2007).

The level of vegetation classification required to support a land type map for a proposed clearing footprint will require a minimum of NVIS Level 5 attribution, to enable an adequate assessment of potential impacts. This is regardless of the spatial scale of the land type mapping. Importantly, vegetation species are also a useful indicator of, and a guide to, the soil properties of the land types. Description and extent of all vegetation communities is also required for biodiversity assessments, in accordance with section 4.4 - **Biodiversity**.

All data generated from land type field investigations, including site locations (GPS), contributing lithology and parent material, soil and landform descriptions, vegetation data, slope measurements and digital site and soil profile photographs needs to be provided electronically and where appropriate in a spatial format with an application.

4.2.6 Land type map

Existing land unit mapping in many parts of the Northern Territory is useful for planning and development at a regional scale but is inadequate and should not be presented or enlarged as part of a site-specific development proposal. The broad scale mapping can however provide useful background information and guidance with respect to planning a more detailed site-specific resource assessment. The scale and accuracy of the mapping presented with an application needs to match the extent and intensity of development proposed (e.g. grazing native pasture vs. intensive irrigated row crops). As such, the developer needs to ensure that the site-specific land type map presented as part of the application has sufficient resolution, accuracy and supporting field data to address potential issues associated with or caused by the proposed clearing and disturbance.

A **land type** map identifying the location and extent of the different land types within the proposed clearing footprint is the first step in:

- assessing the capability or suitability of a soil and land resource for a proposed land use
- establishing the extents and types of all vegetation to be potentially impacted
- assessing the potential impact on biodiversity values at various assessment scales
- ultimately delineating the proposed clearing area.

The level of information required by the consent authority to adequately assess an application can only be generated through a detailed field investigation that documents key soil, vegetation and land resource attributes (in accordance with the national and Northern Territory standards outlined above) at field sites that are representative of the mapped land types.

Field data collection should reflect proposed land use, spatial extent of the proposed development, map scale and requirements for either a land capability or land suitability assessment. Whilst the minimum level of landform, slope and vegetation data required for a land type map will be consistent irrespective of the proposed use, the level of soil profile data required will vary according to the degree of landscape

¹³

https://www.territorystories.nt.gov.au/jspui/bitstream/10070/237908/1/NT_Guidelines_and_Field_Methodology_for_Vegetation_Survey_and_Mapping.pdf

complexity and the intensity of proposed development. For example, in some situations soil analytical data may be necessary to confirm the presence or absence of saline/sodic soil properties and likely erosion hazard.

Similarly, the level of information required for the vegetation resource as part of the land type map should be of sufficient detail and resolution to accurately recognise/describe and delineate the presence of all vegetation types present, and in particular those considered sensitive/significant for the purposes of these guidelines (see section 4.2.3 - **Soil, vegetation and land resource assessment**).

Once collected, field data should be analysed in combination with high resolution remote sensing products such as aerial or satellite imagery and digital elevation models (for broad-scale applications) or topographic mapping (for small-scale applications) to generate an appropriate land type map with accompanying descriptions.

An example of a land type map showing mapped units with an aerial imagery background is presented in Figure 3. Summarised land type descriptions are presented in Table 5. More detailed land type documentation including photographs and all supporting field and analytical data should also be clearly presented.

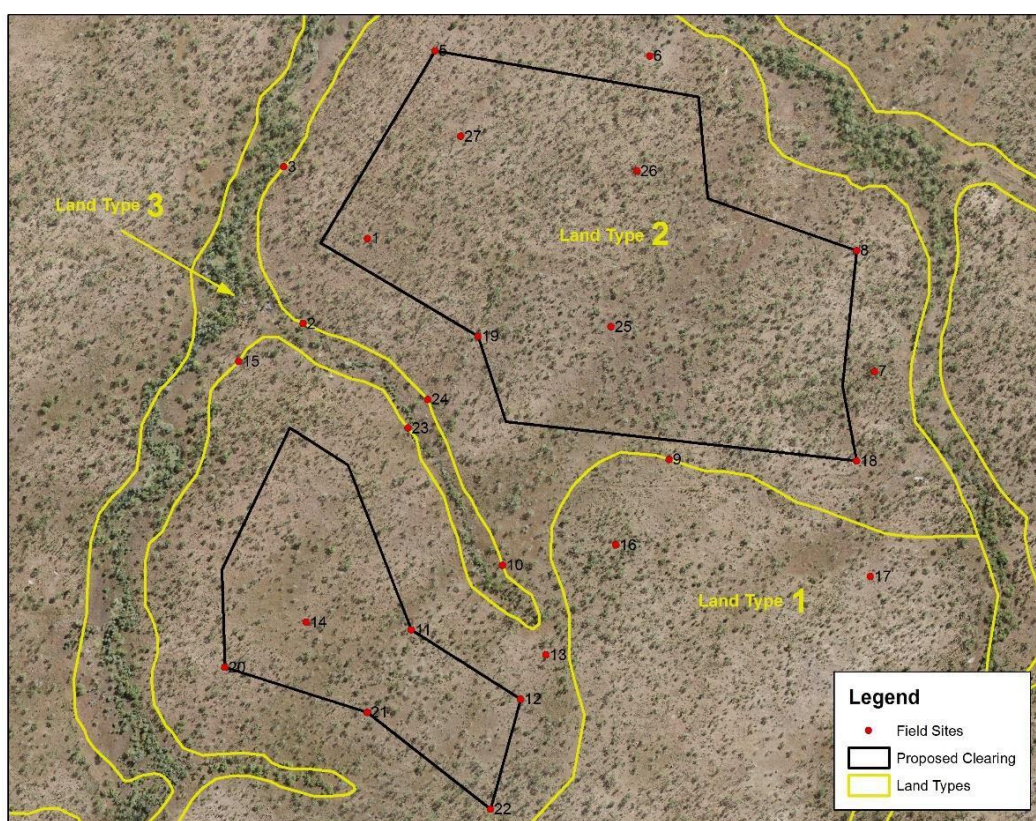


Figure 3: Example of appropriate land type mapping within a proposed clearing footprint.

Table 5: Example of summarised land type descriptions to be provided by the proponent.

Land type	Description
Land type 1	Rises, slopes 4 to 6% with a woodland of <i>Corymbia bleeseri</i> (glossy leaved Bloodwood); well drained shallow rocky, gravelly (Rudosol) soils. Sandy surfaced. Hard rock at 40cm.

Land type	Description
Land type 2	Plains, slopes 0 to 2%, nil rock with <i>Eucalyptus miniata</i> (Woolybutt); <i>Eucalyptus tetrodonta</i> (Stringy Bark) with deep well-drained red (Kandosol) soils. Sandy surfaced to sandy clay loam at 1.0m. Significant gravel from 1.0m.
Land type 3	Stream channel with <i>Lophostemon lactifluus</i> (Swamp mahogany) and monsoon vine thickets; poorly drained (Hydrosol) soils.

4.2.7 Land capability assessment

Generally, clearing for either pasture improvement or for small to medium scale irrigated agricultural developments (such as those in the Darwin rural area), require only a land capability assessment. Whether a land capability (as opposed to a land suitability assessment) is required will however be at the discretion of the Land Assessment Branch, DEPWS, subject to pre-lodgement consultation (see contact list in [Appendix C – Key contacts](#)). A land capability assessment evaluates the key soil and land resource attributes recorded in a land type map against a defined set of criteria to determine an overall land capability class. Four land capability classes are defined and presented in Table 6. Class 1 criteria generally define the most versatile soil and land resources, while Class 4 criteria identify the most constrained scenarios. Increasing class values indicate an escalating degree of limiting constraints and these will be used by the consent authority to assess the appropriateness of each land type for the proposed use.

Table 6: Land capability classes.

Class	Land capability	Description
1	High	Land with negligible constraints and requires only simple management practices.
2	Moderate	Land with minor to moderate constraints but requires more than the simple management practices of Class 1.
3	Marginal	Land with severe constraints and requires considerable management practices.
4	Not recommended	Land with extreme constraints too severe to develop. Can only be overcome with major management and/or engineered solutions.

4.2.7.1 Soil and land resource attributes

Ten soil and land resource attributes have been identified for consideration in any land capability assessment undertaken for the purposes of these guidelines. These are listed with associated land management implications in Table 7.

Table 7: Soil and land resource attributes requiring consideration in a land capability assessment.

Soil and land resource attributes	Land management implications
Acid sulfate soils	The effects of not managing acid sulfate soils (defined by Dear <i>et al</i> , 2014) can result in serious long term economic, environmental, cultural and social impacts. These include adverse changes to soils and water quality, deterioration of ecosystems, and local and regional loss of biodiversity. Economic impacts can result in substantial costs to replace public and private infrastructure, especially concrete structures. The environmental impacts are long term, costly and very difficult to remediate.

Soil and land resource attributes	Land management implications
Flooding	Damage to infrastructure from flooding can include physical damage from fast flowing waters (crop and infrastructure damage, topsoil stripping and root exposure), submersion effects from standing water (anaerobic conditions or elevated water temperatures) and damage from deposition of sediment and debris.
Microrelief (Gilgai)	Microrelief (defined by NCST, 2009) refers to local relief of up to a few metres of the land surface, caused by deformation and "buckling" of the upper regolith, in landscapes dominated by reactive, shrink-swell clay soils (NCST 2009). Gilgai can significantly impact infrastructure cause problems with uneven cultivation, reduced trafficability, seasonal ponding and detrimental conditions for crop growth (i.e. where salinity or sodicity are present within subsoil layers). The degree of constraint associated with gilgai microrelief depends primarily upon the average amplitude (vertical interval), though consideration of the spatial extent (%) of the land surface affected, and the relative proportion of mounds, depressions and flat shelf areas.
Salinity	Soil salinity (defined in the Salinity Management Handbook; DERM, 2011) can be exacerbated by changes to the water balance (i.e. through the removal of native vegetation and intensification of land uses such as infrastructure development and increased irrigation). The effects of not identifying and managing this risk are economic, environmental and social. Public and private infrastructure can be severely degraded or destroyed over time. The environmental effects may include the impact of increased salt concentrations on aquatic ecosystems and water quality.
Slope	Slope is a critical determinant of runoff and erosion risk, especially combined with land use changes. (Discussed further in section 4.3 - Land resource management).
Soil depth	Soil depth (defined by Isbell and the NCST, 2016) is an important consideration for engineering activities because the underlying substrate materials can act as a physical barrier for some infrastructure. The financial costs of constructing infrastructure can dramatically increase where soil is shallow and underlain by hard-unweathered rock. Such conditions also restrict root penetration and reduce the effective volume of soil and water available to the plant.
Soil drainage	Soil drainage (defined by NCST, 2009) is critical for a wide range of land uses across the Northern Territory, especially in the Top End. Poorer soil drainage reduces oxygen supply to plant roots, increases disease risk and interferes with agricultural operations such as planting, weed control and harvesting during wetter periods.
Surface rock	Surface rock or rock outcrop (rock connected to the underlying parent material) (defined by NCST, 2009) inhibits many forms of land use. Rock reduces soil volume for a range of agricultural land uses and is a potential physical barrier for some infrastructure. It can also damage machinery.
Wind erosion	Wind erosion is associated with arid zone landscapes or coastal sand masses, and can result in long-term land degradation due to the loss of finer topsoil materials (particularly organic matter and nutrients), the exposure of hostile subsoil materials, and the re-deposition of mobilised aeolian (wind-blown) sediment.
Soil sodicity	Soil sodicity (as defined by Isbell and the NCST, 2016) is a natural feature in the clay fraction of dispersive soils. Exposure of sodic soils can rapidly accelerate sheet, gully and tunnel erosion.

In some circumstances, there may be a requirement to consider additional soil and land resource attributes not included in Table 8. These may, for example, include field assessments of gravel and textures (in accordance with NCST, 2009) throughout the soil profile. In situations where ASS, salinity or sodicity constraints are likely, laboratory generated soil analytical data will be required to quantify soil physical and chemical properties and determine soil permeability, water availability and inherent soil erodibility parameters such as 'K' factors (Rosewell and Loch 2002) (refer to section 4.3.2 - **Erosion risk** for further information regarding soil loss factors). If required, this testing should be undertaken by an Australian Soil and Plant Analysis Council (ASPAC) accredited laboratory and where applicable following procedures outlined in Rayment and Lyons (2011).

Table 8: Land capability classes and associated assessment criteria.

Class	Land capability	Description	Acid sulfate soils*	Flooding	Microrelief	Salinity (0 to 1m)	Sodicity (0 to 0.6m)	Slope	Soil depth	Drainage	Surface rock	Wind erosion
1	High	Land with negligible constraints and requires only simple management practices.	Not present	Never	None	<2 ECe (dS/m) or no potential to be >2dS/m	ESP <6%	0-1%	>1m	Rapid to well drained	0%	Low hazard
2	Moderate	Land with minor to moderate constraints but requires more than the simple management practices of Class 1.	Not present	Extremely rare (<1 in 30 years)	Vertical interval <0.3m	2 to 4 ECe dS/m or no potential to be >4dS/m	ESP 6 to 15%	1-2%	0.5 to 1m	Moderately well drained	0 to 2%	Moderate hazard
3	Marginal	Land with severe constraints and requires considerable management practices.	Not present	Rare (1 in 10 to 30 years)	Vertical interval 0.3 to 0.6m	4 to 8 ECe (dS/m) or potential to be >8dS/m	ESP 15 to 20%	2 to 3%	0.25 to 0.5m	Imperfectly drained	2 to 10%	High hazard
4	Not recommended	Land with extreme constraints too severe to develop. Can only be overcome with major management and/or engineered solutions.	Present	Regular (>1 in 10 years)	Vertical interval >0.6 m	>8 ECe (dS/m) potential to be >8dS/m	ESP >20%	>3%	<0.25m	Poor to Very Poorly drained	>10%	Very high to extreme hazard

*0.02% oxidisable sulfur based on the Queensland Acid Sulfate Soil Technical Manual: Soil Management Guidelines.

Table 9: An example of a land capability assessment for a land type. The most limiting factor determines the final class.

Land type	Land capability	Acid sulfate soils	Flooding	Microrelief	Salinity	Sodicity	Slope	Soil depth	Drainage	Surface rock	Wind erosion	Overall land capability class
Land Type X	Initial assessment of land capability using Table 7	Not present	Never	None	Not assessed (see evidence provided)	Not assessed (see evidence provided)	0-1%	>1m	Imperfectly drained	0%	Low	-
	Initial land capability sub-class	1	1	1	-	-	1	1	3	1	1	3
	Amended land capability sub-class (based on the soil landscape requirements of the specific pasture proposed)	1	1	1	-	-	1	1	1 (for specific proposed pasture)	1	1	1

The Land Type X example for a proposed pasture development in the Darwin region presented in Table 9 is initially rated as Land Capability Class 3 (Marginal), despite being evaluated as Class 1 in seven of the ten sub-classes. In this example, the developer did not assess salinity or sodicity because they provided a reference to published soil mapping near the proposed development identifying extremely low soil salinity and sodicity. The developer also supplied a Department of Industry, Tourism and Trade factsheet indicating that the proposed pasture species is suited to imperfectly to poorly drained soils.

Therefore, the amended land type is considered Land Capability Class 1 (High) for the pasture species proposed when assessed using the relevant soil landscapes attributes and the land capability assessment criteria.

The final outcome of a land capability assessment needs to be the assigning of a land capability class to each land type within the proposed clearing footprint. An example for the land type map presented earlier is presented in Table 10.

Table 10: Overall land capability classes presented for each land type mapped within the proposed clearing footprint.

Land type	Description	Overall land capability
Land type 1	Rises, slopes 4 to 6% with a woodland of <i>Corymbia bleeseri</i> (glossy leaved Bloodwood); well drained shallow rocky, gravelly (Rudosol) soils.	Class 4
Land type 2	Plains, slopes 0 to 2%, nil rock with <i>Eucalyptus miniata</i> (Woolybutt); <i>Eucalyptus tetradonta</i> (Stringy Bark) with deep well-drained red (Kandosol) soils.	Class 2
Land type 3	Stream channel with <i>Lophostemon lactifluus</i> (Swamp mahogany) and monsoon vine thickets; poorly drained (Hydrosol) soils.	Class 4

4.2.7.2 Land capability class outcomes

Class 1 land generally requires only simple management practices to ensure sustainable use. Class 2 lands are generally capable of development, but may require additional inputs such as land preparation, increased ongoing management and maintenance or continued land conservation measures to mitigate some risks and/or achieve sustainable production.

Class 3 lands, whilst physically capable of development, will require significant initial inputs and/or major ongoing management practices to ensure sustainability in the long term. Development approval will be dependent on the scale, complexity and potential environmental consequences of the proposed project.

Development of Class 4 land is not recommended due to the severity of one or more constraining factor/s, but it is recognised that development of these land capability classes may be necessary for essential infrastructure and is unavoidable in some circumstances. Implicit with the development of Class 3 and Class 4 land is the premise that major and sometimes costly management inputs such as engineering solutions may be required. If approved by the consent authority, permit conditions are likely to be significant. In these situations, the developer may be required (in accordance with permit conditions) to provide the necessary management solutions that clearly demonstrate to the consent authority that the relevant land capability issues can be adequately addressed and mitigated. For example, if clearing was proposed in a coastal area and the risk of exposing acid sulfate soils was recognised but unavoidable, then an acid sulfate soil management plan developed in accordance with the *Queensland Acid Sulfate Soil Technical Manual: Soil Management Guidelines* (Dear et.al, 2014) would be required as a condition on a development permit.

4.2.8 Land suitability assessment

Larger scale, potentially complex agricultural development requiring a significant water allocation require a land suitability assessment. Whether a land suitability (as opposed to a land capability assessment) is required will be at the discretion of the Land Assessment Branch, DEPWS, subject to pre-lodgement consultation (see list of key contacts in [Appendix C – Key contacts](#)).

The Department of Environment, Parks and Water Security, in consultation with representatives from the Department of Industry, Tourism and Trade and the Northern Territory Farmers Association, has published a series of regional crop frameworks. These frameworks use an established methodology from the Queensland Government (DNRM/DSITI, 2015) that has been adapted for Northern Territory conditions. The frameworks describe the limitations, attribute values and decision rules required to assess the suitability of soil and land resources within a region for a range of specific irrigated agricultural land uses. The geographic locality of an application to clear native vegetation will determine which crop suitability framework is most relevant, and should be used for the assessment.

Since 2014, frameworks have been developed for a number of key regions in the Northern Territory (for example Darwin – Tiwi and Katherine – Daly Waters). Over time additional frameworks will be developed as required. The frameworks are publically available but are subject to regular review in line with changing land use trends and new agronomic knowledge. Developers should contact the Land Assessment Branch, DEPWS directly to access the most relevant framework. Details regarding how to apply the methodology are outlined in each of these documents.

The frameworks use a standard five class land suitability classification, based on a common set of soil landscape attribute limitations, but with separate decision rules for each specific crop group. Each suitability class describes a differing level of potential irrigated agricultural outcome, for a particular land use and specific set of crop requirements. Land suitability outcomes decrease progressively from Class 1 to Class 5. These classes describe the suitability of an area of land to support an optimum level of sustainable production for a specific land use, based on the type and severity of land use limitations present. The classification assumes production uses current technology and appropriate agronomic and land management practice, and causes minimal degradation to the land resource in the short, medium and longer-term. Definitions for each land suitability class are presented in Table 11 below.

Table 11: Land suitability class definitions (DNRM/DSITI, 2015).

Class	Definition	Description
1	Suitable land with negligible limitations	Highly productive land requiring only simple management practices to maintain sustainable production.
2	Suitable land with minor limitations	Land with minor limitations that either constrain production or require more than the simple management practices of Class 1 land to maintain sustainable production.
3	Suitable land with moderate limitations	Land with moderate limitations that further constrain production or require more than the management practices of Class 2 land to maintain sustainable production.
4	Unsuitable land with severe limitations	Currently unsuitable land with severe limitations that preclude successful or sustained use under existing conditions. Future changes in knowledge, economics or technology may alter this.
5	Unsuitable land with extreme limitations	Land with extreme limitations that preclude any possibility of successful or sustained use, either now or in the future.

4.2.8.1 Assessing soil and land resource attributes against land suitability criteria

Land suitability evaluation involves the assessment of the requirements for a particular land use against soil and landscape attributes that may impact or otherwise affect sustainable production. Typically, assessments are crop specific and use a defined set of standard land use requirements to evaluate plant growth limitations, machinery use restrictions, land preparation factors, irrigation efficiency and susceptibility to land degradation (DNRM/DSITI, 2015). Soil and landscape attributes are known as limitations when they:

- contribute to less than optimal conditions for agricultural production for a specified land use or
- will result in negative environmental impacts from on-site degradation and/or undesirable downstream effects.

Land use limitations typically assessed within the Northern Territory include:

- **landscape limitations** – wind erosion (A), frost (Cf), wind (Cw), water erosion (E), flooding (F), inherent salinity (Sa), microrelief (Tm), wetness (W), soil complexity (Xs)
- **soil profile limitations** – infiltration/soil profile recharge (Ir), soil water availability (M), soil depth (Pd), excessive permeability (Pp), rockiness (R)
- **soil physical limitations** – soil adhesiveness (Pa), soil compaction (Pc), soil workability (Pm), soil surface condition (Ps), vertic properties (Pv)
- **soil nutrient limitations** – nutrient deficiency (Nd).

The identified limitations provide an inventory of potential impediments to successful irrigated agricultural production. A final land suitability class for each land type by crop scenario is determined following the application of crop specific suitability decision rules that identify and rank the severity of likely limitations, whether production based or environmental. Final land suitability outcomes are based on the most limiting factor. The results of the land suitability assessment including the methodology used and supporting data need to be clearly presented.

4.3 Land resource management

4.3.1 NTPS requirements

- Clause 3.2(5)(e) – the clearing of native vegetation is to avoid impacts on highly erodible soils
- Clause 3.2(6) – an application for the clearing of native vegetation is to demonstrate consideration of the following:
 - i. whether the slope is suitable for the intended use
 - ii. the retention of native vegetation buffers along boundaries.

Land degradation (similar to environmental degradation) is defined as: the decline in quality of natural land resources, commonly caused through improper use of the land by humans. Land degradation encompasses soil degradation and the deterioration of natural landscapes and vegetation. It includes the adverse effects of over-clearing, overgrazing, excessive tillage, erosion, sediment deposition, extractive industries, urbanisation, disposal of industrial wastes, road construction, decline of plant communities and the effects of noxious plants and animals (Houghton & Charman, 1986).

In the interests of sustaining a healthy environment and promoting sustainable development, land degradation can be avoided through:

- responsible clearing practices (i.e. not clearing inappropriate areas of land)
- effective land management (i.e. before, during and after clearing works)
- appropriate land use (i.e. ensuring land use is consistent with land capability).

Land management is defined as: the application to land of cultural, structural, vegetative or any other types of measures, either singly or in combination, in order to achieve a desired land use. In a soil conservation context, land management includes provision for the control and/or prevention of soil erosion (Houghton & Charman, 1986).

Effective land management is necessary in order to prevent (minimise) erosion occurring at site, soil loss from site, and sediment deposition offsite. The environmental, economic and social consequences and the associated potential impacts include (adapted from IECA, 2008):

- health and biodiversity issues for aquatic life (in receiving waters)
- ecological damage resulting from de-silting/dredging operations (in receiving waters)
- loss of aquatic habitats (in receiving waters)
- potential for significant change in plant species (in terrestrial and aquatic environments)
- turbid water retained in pools (in receiving waters)
- reduced light penetration into water column (in receiving waters)
- smothering of sessile biota i.e. non-mobile plants and animals (in receiving waters)
- water quality and water supply issues associated with nutrients and metals attached to settled and suspended clay-sized particles (in receiving waters)
- increased potential for streambank erosion
- loss of high value agricultural soils and decreased productivity
- reduction in effective dam storage capacity
- economic cost of de-silting/dredging and rehabilitation (of terrestrial and aquatic environments)
- economic impacts on community stakeholders reliant on healthy waterways (e.g. recreational and commercial fisheries, ecotourism)
- social stigma associated with turbid water flows
- social cost of increased drainage and flooding problems.

4.3.2 Erosion risk

4.3.2.1 Soil erosion

Soil erosion is defined as: the detachment and transportation of soil and its deposition at another site by wind, water or gravitational effects. Although a component of natural erosion, it becomes the dominant component of accelerated erosion resulting from human activities, and includes the removal of chemical materials (Houghton & Charman, 1986). All earth disturbing activities (including clearing of native vegetation) have the potential to cause erosion.

Strictly speaking, erosion risk refers to the intrinsic susceptibility of a site to the prevailing agents of erosion and is dependent on a combination of climate, landform and soil factors; whereas erosion hazard refers to the susceptibility of a site to the prevailing agents of erosion and is dependent on a combination of climate, landform, soil, land use and land management factors (Houghton & Charman, 1986). For the purposes of this document, “erosion risk” will be applied in reference not to the potential for erosion to occur at a site naturally prior to clearing, or to the potential for erosion to occur at a site as a result of a continued subsequent land use; rather it will be applied in reference to the potential for erosion to occur at a site as a result of the clearing of native vegetation (i.e. the active removal and subsequent absence of native vegetation from a site).

Erosion risk associated with clearing works is influenced by the soil loss factors (adapted from Rosewell, 1993) outlined in Table 12.

Table 12: Soil loss factors

Soil loss factor	Consideration
R factor (rainfall erosivity)	Climatic zone and timing of works
K factor (soil erodibility)	Soil type, soil texture
L factor (slope length)	The distance between the top (crest) and bottom (depression) of a slope
S factor (slope steepness)	Slope gradient (%)
C factor (cover)	Type and density of groundcover; bare soil due to removal of native vegetation
P factor (practice)	Method of clearing and level of disturbance; soil conservation measures implemented; type of land management practice/s implemented

4.3.2.2 Minimising risk

In terms of minimising the erosion risk associated with clearing works, slope gradient will generally have the greatest influence. This is demonstrated by the following. Land capability/suitability necessitates that the soil type be suitable for the intended use, while best practice requires that clearing works be undertaken at an appropriate time of year (i.e. when soil moisture conditions are optimal, which will depend on the climatic zone). Clearing practices are relatively standard (e.g. involving heavy machinery and significant soil disturbance), cover will be negligible by default (i.e. removed), and length of slope can vary throughout a single clearing area (i.e. increasing complexity). Therefore, the simplest and most effective way for a clearing application to demonstrate that the risk of erosion has been satisfactorily addressed is to exclude areas of land with slope exceeding 2% (see Table 13). Not clearing slopes in excess of 2% will also assist in preventing erosion from occurring as a result of on-going land use. Spatial data available on [NR Maps](https://nrmaps.nt.gov.au/nrmaps.html)¹⁴ provides an indication of areas with slope potentially exceeding 2% and use should be subject to field validation.

¹⁴ <https://nrmaps.nt.gov.au/nrmaps.html>

Table 13: Acceptability of erosion risk associated with clearing works based on slope gradient

Slope (%)	Erosion risk	Recommendation
0 to 1%	Low	Risk is acceptable; management required.
1 to 2%	Moderate	
2 to 3%	High	Required management is prohibitive; clearing not recommended.
>3%	Very High	

Notably, slope alone does not prohibit clearing in high and very high erosion risk areas but highlights that these areas would require very careful and detailed planning, and intensive and often costly on-going management to prevent erosion and land degradation. Clearing areas characterised by slope greater than 2% is generally not recommended, particularly in broad-acre contexts, but may be unavoidable for the purposes of essential infrastructure (for example).

Furthermore some soil types are more susceptible to erosion than others (e.g. soils which have high K factors i.e. soil erodibility ratings – refer to section 4.3.2 - **Erosion risk**). In these circumstances, clearing slopes as great as 2% may not be feasible.

In instances where exclusion of land with slope greater than 2% is deemed to be unfeasible, the application will be required to demonstrate (i) the reasons why exclusion is not feasible and (ii) how the risk will be mitigated.

Mitigation measures might include (but are not limited to):

- reducing the length of slope by retaining native vegetation buffers (of suitable width and natural groundcover density) which are additional to buffers retained for other purposes
- implementing appropriate erosion and sediment control measures (e.g. staged works)
- installing appropriate soil conservation structures (e.g. graded banks)
- preparing and implementing an Erosion and Sediment Control Plan (ESCP).

However, it should be noted that implementation of standard best practice is required for clearing on any slope and is not considered to be an additional mitigation measure.

4.3.2.3 Best practice

Every application should demonstrate that best practice will be adopted and every clearing operation should comply with best practice. Best practice clearing methods (at a minimum) include:

- clearing when soil moisture conditions are optimal (i.e. field capacity)
- working machinery across the slope
- timing and staging works to minimise exposure of bare soil
- removing windrows and machinery tracks.

Find out about [erosion sediment control best practice](#).¹⁵

¹⁵ <https://nt.gov.au/environment/soil-land-vegetation>

4.3.2.4 Timing and staging of works

Appropriate timing and staging of works is an essential aspect of reducing the risk of erosion associated with clearing of native vegetation.

Timing of works refers to the time of year that works will be undertaken. Clearing of native vegetation should only be undertaken when soil moisture conditions are optimal (i.e. field capacity), particularly for agricultural and broad-acre contexts. In the Northern Territory, clearing is usually undertaken either: at the start of the Wet season after the first intense storms have ceased and before the monsoon arrives; or at the end of the Wet season, after the monsoon has passed. The time which soil is exposed should be minimised by retaining felled vegetation in situ (i.e. without windrowing, stick-raking or burning) until conditions are suitable for cultivation and effective cover establishment. Cleared areas should not be left bare for the duration of either the Wet or Dry seasons. Clearing soils which are too dry will generate dust and result in vegetation snapping off at the base (leaving roots in the soil) which will result in increased costs associated with dust suppression/management and regrowth control. In situations where clearing during the Dry season is unavoidable, such as for essential infrastructure, appropriate alternative clearing methods will be required.

Staging of works refers to spacing works over a number of years. The need to stage works will depend on the size of the permitted clearing and operational resources (including time available). Ideally, works should be progressive and additional areas should not be cleared until new/existing clearing has been developed and stabilised. Applications which propose to stage clearing works should be accompanied by a staging plan.

4.3.2.5 Erosion and Sediment Control Plans

For large or complex clearing areas, preparation and implementation of an Erosion and Sediment Control Plan (ESCP) can be an effective way of managing erosion risk. The purpose of an ESCP is to identify the temporary erosion, sediment and drainage control measures associated with a development activity. An ESCP should also identify how site stabilisation post-clearing will be achieved (e.g. via pasture or crop establishment). The intent of an ESCP is to prevent sediment from leaving the site (and consequences such as outlined in section 4.3.2 - **Erosion risk**); not to be an alternative to retaining native vegetation which should otherwise be retained in accordance with these guidelines, or to be used as a “catch all” means of mitigating other risks the clearing may pose.

An ESCP should be prepared for use in the field by operators undertaking clearing works and will usually comprise four main elements: an overview map showing the location of the clearing footprint within the wider catchment or property; a diagrammatical site plan (of the clearing footprint) showing the location of all proposed and annotated controls; standard drawings outlining the design parameters of the prescribed controls; and construction notes outlining operational instructions. Complex developments may require additional supporting information such as design calculations and justification, however an ESCP for broad acre clearing is not typically a lengthy report. Find out about [ESCPs](#).¹⁶

Depending on the complexity of a site and the proposed controls, an ESCP should be prepared by a **suitably qualified professional** with experience in soil conservation and/or erosion and sediment control design and implementation. In exceptional circumstances (such as clearing for major projects or very large, complex or high risk areas) it may be necessary to engage a qualified Certified Professional in Erosion and Sediment Control (CPESC). For more information about CPESC accreditation, go to the [Australasia International Erosion Control Association website](#).¹⁷

¹⁶ <https://nt.gov.au/environment/soil-land-vegetation>

¹⁷ <https://www.austieca.com.au/cpesc>

While submission of a draft ESCP with a clearing application is optional, in practice an ESCP should not be formalised until after a permit has been issued and all other necessary design or management plans have been finalised. This will avoid pre-empting a decision by the consent authority to alter or refuse an application and reduce costs associated with revising the ESCP due to design changes.

Whether the requirement for a formal ESCP is conditioned on the permit will depend on the legislation that triggered the application and the decision will be made by the consent authority based on application assessment advice provided by the Land Management Unit, DEPWS.

4.3.3 Property boundary buffers

As required by NTPS clause 3.2(6)(l) clearing applications are required to demonstrate consideration of the retention of native vegetation buffers along property boundaries. It is strongly recommended that property boundary buffers are retained in accordance with Table 14. The benefits of retaining native vegetation along property boundaries are multiple, interconnected and complementary, with different functions being served to varying degrees in different circumstances. Benefits may include (but are not limited to):

- **Erosion and sediment control** – retention of buffers assists in reducing the velocity of runoff entering a property and its potential to cause erosion, as well as reducing the velocity of runoff exiting a property and promoting the capture of sediment. Although erosion risk will be influenced by factors such as the gradient, direction and length of slope, retention of property boundary buffers is an important final defence against erosion, soil loss and the impacts of sedimentation associated with clearing in the short term; and land use (or changes in land use e.g. from dryland improved pasture to irrigated row crops) in the long term.
- **Dust management** – retention of native vegetation along property boundaries can act as a windbreak and assist in reducing the risk of soil loss through wind erosion and transportation of dust offsite. Dust is an air pollutant and can affect neighbouring properties and landholders; and can trigger fines under the *Waste Management and Pollution Control Act 1998*.
- **Management of chemical spray drift** – similarly, retention of native vegetation along property boundaries can assist in the prevention of spray drift associated with the use of agricultural chemicals (e.g. herbicides, pesticides, insecticides, fungicides). An effective spray drift buffer works by allowing air to pass through the foliage while filtering out chemical particles and reducing possible damage to human health, the environment, crops and livestock. Notably different chemicals stipulate different buffer requirements and the effectiveness of a spray drift buffer will depend on vegetation density – therefore the distance of separation (e.g. between a permitted clearing area and a residence) is also an important consideration. (See section 4.3.4 - [Land management buffers](#)).
- **Amenity** – retention of native vegetation buffers will assist in maintaining and/or enhancing aesthetic amenity, privacy, noise reduction and reduced complaints from concerned neighbours. Section 51(n) of the *Planning Act 1999* stipulates that a consent authority must consider the potential impact on the existing and future amenity of the area in which the subject land is situated.
- **Shade** – retaining native buffers will assist in combatting the effects of increased temperatures (associated with tree removal and climate change) by providing shade to enhance cooling and resilience to heat stress, affecting humans, livestock, crops, the natural environment and seed viability. For particular land uses, shade can enhance productivity.
- **Productivity** – retaining native vegetation property boundary buffers will enhance land use productivity (e.g. crops and livestock) through the benefits of enhanced erosion and sediment control, dust and chemical spray drift management and shade retention as described above.

- **Wildlife movement** – retention of native vegetation along property boundaries can serve to enhance connectivity within the wider landscape between areas of retained native vegetation and wildlife corridors, providing shelter and facilitating wildlife movement and promoting population viability. (Note: property boundary buffers are separate to wildlife corridors – refer to 4.4.10 - **Wildlife corridors**).

To avoid environmental degradation and to maintain these benefits, native vegetation should be retained along property boundaries in accordance with Table 14. Recommended buffer widths increase with property size to ensure mitigation is proportionate to the level of risk – i.e. larger properties have greater scope for larger clearing areas and property size is generally reflective of locality, proximity to sensitive receivers, land use and the role buffer width will play.

Table 14: Property boundary buffers.

Property size	Minimum buffer width (m)
<8ha	25
8 to 20ha	50
20 to 100ha	100
>100ha	200

Note: Firebreaks should not encroach on property boundary buffer widths; refer to section 4.3.6 - **Firebreaks**.

Where retention of property boundary buffers is not considered feasible (e.g. due to property dimensions), an application is required to:

- request that discretion be applied by the consent authority
- provide detailed reasons explaining why the recommended buffers should not be retained and supporting evidence (as applicable)
- identify the type, level and likelihood of risks associated with not retaining the recommended buffers
- demonstrate how these risks will be appropriately mitigated.

In determining whether to apply discretion, the consent authority should take the following considerations into account:

- Issues associated with weed and fire management are not a legitimate reason for non-retention of native vegetation property boundary buffers; in accordance with legislation, weed and fire management is the responsibility of every landholder, irrespective of whether a clearing application is approved or not.
- Historical clearing to property boundaries on adjoining land is not a legitimate reason for non-retention of native vegetation property boundary buffers; in fact it increases the importance of retaining such buffers.
- Land use is subject to change and once native vegetation is removed it can take decades to re-establish to maturity (if at all); so even if a future variation application were to relinquish a clearing area and propose that it be rehabilitated, it may not be viable. Therefore it is vital to retain the maximum buffer width wherever appropriate and possible.

Discretion may be applied to the size requirement for property boundary buffers where a property is identified as being within a precinct for more intensive land use.

4.3.4 Land management buffers

In addition to retaining native vegetation buffers along property boundaries, it may be necessary to retain additional native vegetation buffers within the property, for the purpose of providing additional functional benefits associated with erosion and sediment control, management of dust and chemical spray drift, amenity and shade for stock. Although increased retention of such buffers may require additional maintenance (e.g. weed management), depending on the risk which the buffer is designed to mitigate, the benefits will ultimately exceed maintenance costs.

Siting, alignment and width of land management buffers will also depend on the purpose of the buffer (and therefore be at the discretion of the landholder) as well as the scale of the proposed clearing. Generally, buffer effectiveness will increase with width. Land management buffers are likely to be narrower than designated wildlife corridors (see section 4.4.10 - **Wildlife corridors**), however there will be some overlap in benefits between the two.

Land management buffers may be applied in either of the following situations:

- as an additional best practice, assuming all other inappropriate or unsuitable land has been excluded from the proposed clearing area, or
- as an alternative mitigation measure where another parameter is not considered feasible.

With regard to minimising erosion risk, land management buffer design should take the following principles into account:

- the longer the length of slope, the greater the number of buffers required
- the steeper the slope gradient, the shorter the spacing between buffers should be
- the longer the spacing between buffers, the wider the buffer should be
- buffers should be aligned on-contour for effective interception of runoff.

In assessing the suitability of proposed land management buffers, the following factors will be considered:

- applicable soil loss factors
- the intended land use and
- buffer design principles outlined above.

4.3.4.1 Proximity to existing residences

Where applicable, such as in agricultural contexts, to reduce the risks posed by (potential) chemical spray drift, clearing of native vegetation should not be permitted within a minimum distance of 20m of an existing residence. This relates to existing dwellings within and outside of the property subject to the application.

4.3.5 Road reserves, easements and adjoining land

It is important to consider whether the proposed clearing will impact on land owned or managed by government such as road reserves, easements or conservation areas. As clearing applications will be referred to affected agencies for assessment and comment, applications should demonstrate how impacts to government land will be prevented or managed. Ideally, developers should consult with the relevant agency prior to application submission if their proposal adjoins or will impact government land. Permits to clear native vegetation within a designated easement (e.g. drainage easement or gas pipeline easement) will not be issued without consent from the relevant authority or for purposes other than those

associated with the purpose of the easement. Table 15 identifies agencies responsible for various types of government land. Note also that requirements differ between local councils and easements are recorded on property titles.

Table 15: Agencies responsible for managing government land.

Land	Agency
Council land (roads, drains, parks)	Refer to relevant local council
Crown land (vacant, parks)	Department of Infrastructure, Planning and Logistics, Crown Land Estate
NTG road reserve	Department of Infrastructure, Planning and Logistics, Transport and Civil Services Division
National Parks and Conservation Reserves	Department of Environment, Parks and Water Security
Gas pipeline easement	Department of Industry, Tourism and Trade
Drainage and stormwater easements	Refer to relevant local council (or) Department of Infrastructure, Planning and Logistics
Service easements (electricity, water, sewer)	PowerWater

4.3.5.1 Road buffers

For land adjoining a NTG road reserve, Transport and Civil Services Division of the Department of Infrastructure, Planning and Logistics (DIPL) generally recommend the following:

1. where the land proposed for clearing is adjacent to a public road reserve, the developer shall retain a vegetated buffer, a minimum of 50m wide as native vegetation or established groundcover, to reduce overland flow
2. the clearing and future use of the land shall not prevent or impede the drainage of the public road reserve through the blocking of offset drains or natural drainage channels.

These requirements are particularly in relation to permanent stormwater management (as opposed to temporary erosion and sediment control) and are focussed on protecting road and drainage infrastructure and reducing safety risks associated with flooded roadways.

Where the direction of overland flow is towards the road, retention of a vegetated buffer is intended to increase infiltration within the property and therefore reduce the volume of flow entering the road reserve. It will also assist in reducing the velocity of the flow, thereby reducing the risk of soil being removed from the site and deposited in the road reserve, ultimately causing blockage of drains and flooding of the roadway. Slower flows will also prevent erosion from occurring within the road reserve and damage to road and drainage infrastructure.

Where the direction of overland flow is away from the road, ensuring the 50m buffer does not contain obstructions (e.g. such as windrows or stockpiled materials) will also prevent the road from flooding by allowing overland flow to drain into the adjoining property. Ensuring the buffer is effectively and permanently vegetated (i.e. no annual cropping) will prevent stormwater from the road reserve causing erosion within the property.

These recommendations should be taken into account when designing proposed clearing areas, retention of native vegetation property boundary buffers, and erosion and sediment control measures.

The developer should refer to the relevant local council for advice regarding road networks owned by local council.

4.3.6 Firebreaks

In accordance with the NT *Bushfires Management Act 2016* firebreaks of minimum 4m width should be installed along (or as close as practicable to) all property boundaries of properties located within a Fire Protection Zone. On freehold and Crown land, the Land Clearing Guidelines (this document) recommends the maximum width of a firebreak that does not require consent, be based on property size (Table 16). On pastoral land, firebreaks are deemed to be exempt from clearing controls (i.e. a clearing permit is not required for firebreaks along property boundaries or elsewhere within the property). However regardless of tenure, firebreaks should **not encroach on native vegetation property boundary buffers**. For example: a clearing application for a freehold property that is 5ha in size is required to install minimum 4m wide firebreaks and does not require consent to install firebreaks to a maximum width of 5m. The developer is also recommended to retain 25m wide native vegetation property boundary buffers; effectively meaning that the permitted clearing area should not be located any closer than 30m to the property boundary. Table 16 outlines recommended maximum firebreak widths based on property size and tenure.

When installing firebreaks, best practice requires that appropriate erosion and sediment control measures be adopted and the following management recommendations are provided:

- Mineral earth firebreaks significantly increase the likelihood of erosion, which can impact trafficability and impact fenceline infrastructure. Therefore alternative treatments such as slashing or ploughing are recommended.
- In circumstances where grading is required, avoid dropping the blade too low as this will result in the creation of windrows which serve to concentrate runoff and cause erosion. As such all windrows must be removed.
- Wherever possible maintain natural levels to enhance sheet flow across firebreaks.
- Installation of rollover banks will assist in preventing erosion and should be installed at regular intervals along sections of long or steep slope.

Find out about erosion and sediment control measures when installing firebreaks, go to the [erosion and sediment control measures when installing firebreak](#).¹⁸

Table 16: Recommended firebreak widths based on property size and tenure.

Property type	Firebreak width (m)	Note
<8ha Freehold or Crown Lease	5	<i>Bushfires Management Act 2016</i> stipulates minimum width of 4m. The Land Clearing Guidelines recommends a maximum width of 5m and considers the additional 1m exempt from requiring consent.
>8ha Freehold or Crown Lease	10	<i>Bushfires Management Act 2016</i> stipulates minimum width of 4m. The Land Clearing Guidelines recommends a maximum width of 10m and considers the additional 6m exempt from requiring consent. Note: to ensure a retained native vegetation property boundary buffer remains intact and is not depleted by incremental widening of a firebreak overtime, it is recommended that the maximum firebreak width is applied.

¹⁸ <https://nt.gov.au/environment/soil-land-vegetation>

Property type	Firebreak width (m)	Note
Pastoral Lease	10	The NT Pastoral Land Clearing Guidelines recommends firebreaks on pastoral land be limited to a maximum width of 10m. Consent should be sought to clear firebreaks wider than 10m.

4.4 Biodiversity

4.4.1 NTPS requirements

- Clause 3.2(5) – the clearing of native vegetation is to:
 - avoid impacts on environmentally significant or sensitive vegetation
 - avoid impacts on drainage areas, wetlands and waterways
 - avoid habitat fragmentation and impacts on native wildlife corridors.
- Clause 3.2(6) – an application for the clearing of native vegetation is to demonstrate consideration of the following:
 - the presence of threatened wildlife as declared under the *Territory Parks and Wildlife Conservation Act 1976*
 - the presence of sensitive or significant vegetation communities such as rainforest, vine thicket, closed forest or riparian vegetation
 - the presence of essential habitats, within the meaning of the *Territory Parks and Wildlife Conservation Act 1976*
 - the impact of clearing on regional biodiversity
 - the presence of permanent and seasonal water features such as billabongs and swamps
 - the retention of native vegetation adjacent to waterways, wetlands and rainforests
 - the retention of native vegetation corridors between remnant native vegetation.

In order to address the above NTPS requirements and ensure design of the proposed clearing footprint satisfactorily excludes areas which should not be cleared due to their ecological and environmental value, it is necessary to determine the presence, extent and value of the important flora, fauna and habitat features specified. The following sections outline how an application should go about demonstrating consideration of biodiversity issues, including sourcing and provision (in an application) of information required in order to undertake a biodiversity risk assessment. Recommendations are also provided regarding appropriate treatment of risks; exclusion and buffering of habitat features; and the retention and design of wildlife corridors.

Note: Section 37 of the *Territory Parks and Wildlife Conservation Act 1976* defines an area of essential habitat as a habitat that is essential for the survival in that area or those areas of wildlife generally or a species of wildlife. As yet, no such areas have been declared.

4.4.2 Biodiversity information requirements

The assessment of biodiversity value requires consideration beyond the proposed clearing footprint (refer to section 3.6 - **Assessment approach**). To determine the risk to threatened species and regional biodiversity, information is to be considered at the scale of the proposed clearing footprint and evaluated within a regional context.

Migratory and threatened species listed under the EPBC Act are matters of national environmental significance. Where these are present developers should also assess whether their application will trigger a referral under the EPBC Act (refer to section 3.5 - **Other relevant legislation**).

4.4.2.1 Clearing footprint

The information to be considered at this scale includes:

- the area (location and extent) of native vegetation proposed to be cleared (i.e. the proposed clearing footprint)
- the type and general condition (e.g. 'intact', 'previously cleared', 'disturbed' or 'cleared') of the native vegetation proposed to be cleared
- the flora and/or fauna species that are likely to occur within the proposed clearing footprint.

4.4.2.2 Regional level

The regional context will consider the area surrounding the property, typically the catchment or bioregion. For more information on bioregions, go to the Australian Government's, [Department of Agriculture, Water and Environment website](http://www.environment.gov.au/land/nrs/science/ibra).¹⁹

The information to be considered at this scale includes:

- the composition and extent of remnant vegetation (i.e. intact/uncleared native vegetation)
- connectivity between areas of remnant vegetation
- the relative importance of the affected vegetation as habitat for threatened or significant species
- surrounding land uses.

Developers will need to consider information at the scale of both the clearing footprint and region to determine a preliminary rating of risk to biodiversity posed by the application, guided by Table 17. This preliminary rating determines the biodiversity information required to assess applications.

Clearing applications rated as low risk do not need to provide a detailed biodiversity assessment. However, if during formal assessment, available data suggests the level of risk is higher than claimed in the application, further information may be required. At a minimum, low risk applications are required to provide a description of all the vegetation types present and their spatial extent in relation to the proposed clearing footprint (refer to section 4.2.3 - **Soil, vegetation and land resource assessment** and section 4.2.4 - **Soil and landform data**).

Medium and high risk applications should provide an assessment of biodiversity values sufficient to confirm the nature of the potential impact and severity of risk. Medium and high risk clearing applications may require measures to reduce associated potential impacts on biodiversity including reduced or modified proposed clearing areas, specified buffers around significant vegetation types or threatened species habitat, or other measures designed to minimise potential impacts.

¹⁹ <http://www.environment.gov.au/land/nrs/science/ibra>

Table 17: Preliminary biodiversity risk rating for determination of information requirements.

Biodiversity risk rating	Description	Interpretation
Low risk	<p>Clearing is characterised by a combination of factors including:</p> <ul style="list-style-type: none"> a relatively small clearing extent absence of sensitive or significant vegetation types areas to be cleared are highly unlikely to provide habitat for threatened, range restricted or otherwise significant species. <p>The proposed clearing is unlikely to cause offsite impacts on regional biodiversity values.</p>	No significant biodiversity values present.
Medium risk	<p>Clearing has characteristics between the low and high risk classes. For example, the native vegetation may support a listed threatened species, however the local occurrence of that species may not be considered significant or the extent of clearing as a proportion of habitat available to the species may be sufficiently small enough to not pose a high risk.</p>	<p>Biodiversity values are present, but their significance requires assessment.</p> <p>Significant biodiversity values are present but the proposed clearing is not likely to impact these values.</p> <p>Significant biodiversity values are present but effective mitigation measures are already in place which reduce the likely impact of the proposed clearing on these values to negligible.</p>
High risk	<p>Clearing can be characterised by a single or combination of factors including:</p> <ul style="list-style-type: none"> clearing that may result in a significant reduction in the regional extent of significant vegetation types clearing vegetation that is important habitat for species listed as threatened under the <i>Territory Parks and Wildlife Conservation Act 1976</i> and/or <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC), or range restricted species close proximity to highly sensitive or significant vegetation, areas of conservation significance or important land features, and may cause impact to those areas. <p>If the clearing has the potential to negatively impact species listed as Threatened, even a small clearing extent could be categorised as high risk.</p>	<p>Significant biodiversity values are present and the proposed clearing is likely to have a potential impact on the significant values either directly or indirectly.</p> <p>Management or mitigation measures to reduce impact are likely to be required and their effectiveness assessed.</p>

4.4.3 Biodiversity risk assessment

Overall risk to biodiversity is assessed on the likelihood of occurrence of biodiversity values, the potential impact of the clearing on those values and any measures proposed to reduce potential impact (see Figure 4). The focus is on conservation of significant biodiversity values. The determination of significance will vary between values and regions and is therefore difficult to define for every situation. The following sections outline the biodiversity values that should be considered as part of a clearing application.

Guidance on how to determine the value of biodiversity, mechanisms for impact to the value and recommendations on how to reduce the impacts of proposed clearing are provided. In some instances it may be the case that the potential for residual risk to biodiversity values remaining after management/mitigation actions are implemented is at a level that is deemed unacceptable and the proposed clearing should be reconsidered or reconfigured to reduce these risks to an acceptable level, otherwise the application may be refused.

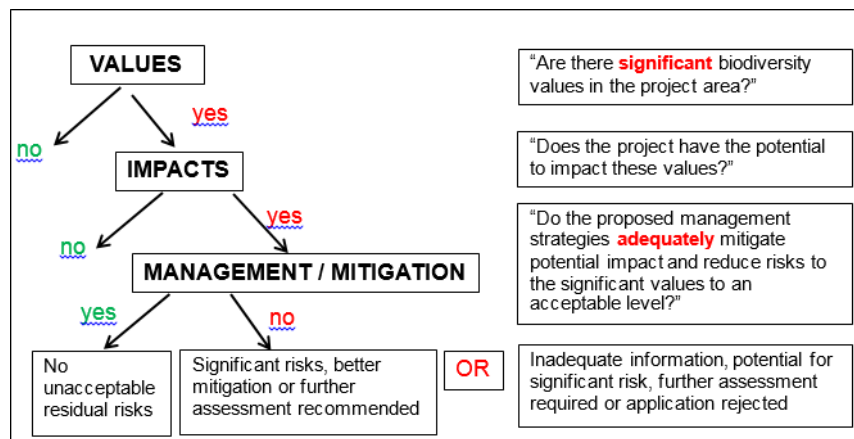


Figure 4: A flow chart showing how to carry out a risk assessment of a biodiversity value.

4.4.3.1 Mitigating risk

Native vegetation buffers and corridors are important property and landscape scale management tools for reducing impacts associated with clearing native vegetation. They reduce the risk of erosion, capture sediment, improve water quality, and can maintain connectivity of habitat for wildlife. Buffers and corridors should link with existing stands of native vegetation and retain landscape connectivity, where possible.

Where a range of biodiversity values requiring a variety of native vegetation buffers is present, the default requirement is the largest buffer width (i.e. the buffer with the greatest width should be applied). Where an application is not proposing to retain buffers in accordance with the guidelines, justification must be provided and alternative mitigation or management strategies must be identified to address the associated risks (e.g. by preventing or minimising the likelihood and severity of impacts).

Inadequate baseline information can result in uncertainties about the level of risk posed to particular values. Where information gaps occur the developer will be required to undertake further work, including surveys to demonstrate the level of risk. This is likely to include targeted surveys at an appropriate time of the year with adequate methods to detect target species, undertaken by suitably qualified professional.

4.4.4 Threatened and significant species

Applications are required to demonstrate consideration of the presence of threatened wildlife as declared under the Territory Parks and Wildlife Act 1976. The Act defines 'wildlife' as:

- animals and plants that are indigenous to Australia
- animals and plants that are indigenous to the Australian coastal sea or the sea-bed and subsoil beneath that sea
- migratory animals that periodically or occasionally visit Australia or the Australian coastal sea
- animals and plants of a kind introduced into Australia, directly or indirectly, by Aboriginals before the year 1788
- such other animals and plants as are prescribed.

An assessment of the likelihood of occurrence of threatened and significant species is based on known presence, known absence, or presence of suitable habitat. Significant species include those that are:

- range restricted in the Northern Territory
- regionally important occurrences of those with a conservation status of near threatened and data deficient
- listed as migratory under the EPBC Act where clearing of native vegetation may impact on habitat considered important to the species during any part of its life cycle.

A biodiversity assessment should include the following information.

4.4.4.1 Native animals (fauna)

- All threatened or significant native animal species or wildlife aggregations that may be found within the proposed clearing extent, on the property and its surrounds and that may be affected either directly or indirectly by the development.
- The habitat requirements of the above species, and whether the proposed clearing is likely to impact on these species.
- The area of native vegetation to be excluded from proposed clearing (i.e. retained) in order to protect fauna as outlined in the proposed clearing plan.
- Adequacy and accuracy of the information provided.

4.4.4.2 Native plants (flora)

- All threatened or significant plant species that may be found within the proposed clearing extent, on the property and its surrounds and the impacts of the proposed clearing on these (including indirect impacts).
- The habitat requirements of the above species, and whether the proposed clearing is likely to impact on these species.
- The area of native vegetation to be excluded from proposed clearing (i.e. retained) in order to protect significant species as outlined in the clearing plan.
- Details on how retained vegetation will be managed to maintain its integrity.
- Adequacy and accuracy of the information provided.

Note: the clearing plan is the map delineating the proposed clearing footprint, to be provided with the application.

For clearing applications where a preliminary assessment suggests that the biodiversity risk rating is either 'high' or 'medium' and this is related to the likely presence of threatened species, it is highly likely that field survey will be required to clarify this risk. If flora or fauna surveys have been undertaken in the area or on the land parcel, a copy of the report or data including survey methods, date/s and the names and qualifications of those involved should be provided with the application.

For more information about terrestrial vertebrate fauna survey methods, [guidelines](#)²⁰ have been published by the [NT EPA website](#).²¹

Similarly, general vegetation and flora survey methodologies for the Northern Territory are outlined in Brocklehurst et al. (2007). However, it should be noted that targeted methods for threatened species may differ significantly from these methods and it is recommended that developers consult with the Flora and Fauna Division, DEPWS to discuss specific survey methodologies.

Threatened and significant species can be directly impacted by clearing through the removal of individuals and/or their habitat. Indirect impacts result from alterations to habitat through changes to ecosystem processes such as hydrological regimes, fire regimes, invasive species introduction (including weeds) and changing land uses.

The assessment of risk to a particular species should consider the importance of the population and the likelihood that the clearing of native vegetation will:

- lead to a long-term decrease in the size of a population
- reduce the area of occupancy of the species
- fragment an existing population into two or more populations
- adversely affect habitat critical to the survival of the species
- disrupt the breeding cycle of a population
- modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline
- result in invasive species that are harmful to a threatened or significant species becoming established in the critically endangered or endangered species habitat
- introduce disease that may cause the species to decline.

For species classified as Endangered or Critically Endangered risks are to be assessed for any population, irrespective of size. For species classified as Vulnerable, assessment of risks to “important populations” of a species is required. Important populations are those necessary for the long-term survival and recovery of the species. This includes populations that are a key source for either breeding or dispersal, necessary for maintaining genetic diversity, or near the limit of the species’ range. These assessments can be fairly complex. Flora and Fauna Division, DEPWS can provide advice on assessments for particular species. There are also federal guidelines on the determination of a significant impact for a small number of threatened species on the Australian Government’s [Department of Agriculture, Water and the Environment website](#).²²

Mechanisms to avoid or reduce impacts to threatened and significant species are varied and are often specific to a particular species habitat requirements or life-history characteristics. These mechanisms are likely to be required **in addition** to general mitigation measures such as wildlife corridors. Mechanisms include but are not limited to:

²⁰ https://ntepa.nt.gov.au/data/assets/pdf_file/0004/287428/guideline_assessment_terrestrial_biodiversity.pdf

²¹ <https://ntepa.nt.gov.au/>

²² <http://www.environment.gov.au/biodiversity>

- Avoidance of clearing of known occurrences of flora species and retention of buffers of an appropriate size for the protection and maintenance of ecological processes required to maintain the species/population.
- Retaining key habitat requirements for the species such as large hollow trees, roosting sites or caves. This may also include temporary habitats which are critical for the maintenance of populations (e.g. a critical food resource) or completion of a species life-cycle (e.g. temporary breeding habitat).
- Staging the timing of works to avoid removal of habitat during times at which there is a higher likelihood of occupancy. This is only likely to apply where a species is able to occupy alternative available habitat after removal of the previously occupied habitat e.g. the breeding season of particular bird species which do not need to return to the same nesting site to successfully breed.
- Maintaining sufficient habitat through landscape planning incorporating connectivity and sufficient habitat to retain ecological processes required to maintain the species such as pollinator assemblages and fire regimes.
- Mitigating indirect impacts such as weed invasion.

It is recommended that, where mechanisms to avoid or reduce the potential impacts of the proposed clearing are being considered, the developer consult with Flora and Fauna Division, DEPWS to seek advice on the proposed approach in relation to the values identified on or adjacent to the proposed clearing footprint.

4.4.5 Conservation areas, natural land features and regional biodiversity

If the proposed clearing footprint or property falls wholly or partly within, or is adjacent to, areas recognised as having biodiversity value/s (i.e. internationally – Ramsar Convention; or nationally – Directory of Important Wetlands in Australia, important wetlands, Sites of Conservation Significance, or sites on the Register of the National Estate) an application should provide information about the nature of those values and their significance (i.e. local, regional, national or international) and demonstrate how impact/s on those values will be minimised.

An application should identify any adjacent national parks, public reserves, Priority Environmental Management areas or Conservation zones identified under the NTPS. In addition, if the property contains or adjoins significant natural land features such as sinkholes, caves, ranges, craters or sites of geological or geomorphologic significance, the application must assess the extent of the impact and, if there is likely to be any, demonstrate how impact on those features will be minimised.

The maintenance of biodiversity across the landscape relies upon the preservation of systems and processes that are essential to the completion of species' lifecycles. For many species, the key components of these systems and processes are unknown and the maintenance of ecosystem diversity at the regional scale is used as a surrogate for ensuring these attributes are maintained.

In most instances, an individual clearing footprint is unlikely to impact upon regional scale processes, except in cases where clearing:

- is large in total area (e.g. greater than or equal to 5,000ha) or
- is medium to large in area (greater than or equal to 1,000ha) and will remove a high proportion of the total extent of any individual ecosystem or vegetation type from a property or region
- will remove or impact regionally rare or uncommon ecosystems or vegetation type(s)
- will result in degradation of important riparian systems

- is assessed as likely to impact upon significant biodiversity values, or
- has the potential for significant off-site impacts beyond the clearing footprint.

In these cases, the developer will be required to assess the potential impacts of the proposed clearing upon regional biodiversity values. It is highly likely that such an assessment will require a significant investment in obtaining field information, and adequate regional contextual information.

In the absence of such an assessment it is recommended that the potential impacts associated with such applications are avoided through the configuration (i.e. design and layout) of proposed clearing footprint.

4.4.6 Sensitive or significant vegetation types

Sensitive vegetation is a term applied to ecosystems easily impacted by neighbouring or adjacent land uses or management. Significant vegetation also includes spatially restricted habitat types that are important to a relatively large number of wildlife species including rainforest, monsoon vine forest or vine thicket; sandsheet heath; riparian vegetation; mangroves; and vegetation containing large trees with hollows suitable for fauna. Many of these significant vegetation types are also sensitive. (Note: significant vegetation can be sensitive, but not all significant vegetation is sensitive). Definitions of sensitive or significant vegetation types can be found in the Glossary. Find out about [sensitive or significant vegetation](#).²³

The value of any occurrence of sensitive or significant vegetation communities is based on:

- the type, location, extent and spatial arrangement of any sensitive or significant vegetation present
- the known presence or likelihood of occurrence of threatened or otherwise significant plants or animals within the sensitive or significant vegetation
- the known occurrence of or likelihood of occurrence of particular attributes of the vegetation (e.g. high density of fruiting trees, important reproductive sites likely to act as genetic 'sources') which contribute to the maintenance of regional biodiversity values
- the local and regional context of the occurrence.

With regard to the presence and density of **large trees with hollows suitable for fauna**; the criteria by which such stands of vegetation can be identified in *Eucalyptus miniata* and *E. tetradonta* communities is defined as a minimum of five or more stems greater than 50cm diameter per hectare and/or 30 or more stems greater than 40cm diameter per hectare. Although this is a useful guide for large parts of the Top End, it should be noted that the development of hollows and the size of trees which are suitable for use by fauna will be dependent on the climate and species of tree and fauna using hollows. Developers proposing to clear woodland that is not dominated by *E. miniata* and *E. tetradonta*, are encouraged to consult with the Flora and Fauna Division, DEPWS for further information on the definition of **large trees with hollows suitable for fauna**. Where identified, these stands of vegetation are by default considered high value.

Sensitive and significant vegetation communities have the potential to be impacted either directly or indirectly by a range of processes associated with clearing activities. In the most direct form this constitutes habitat destruction as a result of clearing activities, but can also include habitat degradation (potentially leading to eventual destruction) as a result of changed hydrology, fire regime or other

²³ <https://nt.gov.au/property/land-clearing/information-and-factsheets/land-clearing-fact-sheets>

environmental parameters, spread of invasive species or the interruption of ecological processes integral to the function of the ecosystem.

Sensitive and significant vegetation types should be excluded from the proposed clearing footprint and appropriate native vegetation buffers retained to protect them. The appropriate buffer size depends on the value of the sensitive or significant vegetation community and recommended buffer widths are provided below (see Table 18 and Table 19). Where an application has not applied buffers in accordance with guidelines recommendations, justification must be provided and alternative mitigation or management strategies must be identified to avoid impacts.

Table 18: Recommended widths of sensitive/significant vegetation buffers.

Habitat type	Value	Buffer width (m)
Sensitive/significant vegetation (see definition in Glossary) Buffers are measured from the outer edge of the sensitive/significant vegetation *#where defined by the land type map.	Low	50
	Medium	100
	High	250
<p>* The boundaries of mangroves, rainforests and related forest/thicket vegetation types are generally abrupt and characterised by the limits of dense tree cover and special plant life-forms (e.g. palms, vines, stilt and prop roots etc.). Similarly, the boundaries of sandsheet heath vegetation will generally be well defined by a change in vegetation structure and floristics associated with the transition from wetland to upland habitats (see section 4.2.8 -Land suitability assessment) or a change in environmental characteristics within the wetland zone that results in a fundamental change in the character of the vegetation association.</p> <p># It is highly likely that the delineation of vegetation containing large trees with hollows suitable for fauna will only be possible through field survey. Vegetation considered sensitive/significant on the basis of the density of large trees with hollows suitable for fauna will be attributed a default value of 'high' and require a 250m buffer. However, where an application can demonstrate high levels of connectivity between retained stands of sensitive/significant vegetation with large trees and surrounding intact habitat areas at the adjoining property, landscape and/or regional scales and an inherently lower risk to the vegetation as a result, these buffers may be able to be reduced.</p>		

In the first instance, it is recommended that all sensitive/significant vegetation types be assessed for the values that they possess in the context of the clearing application. Where a sensitive/significant vegetation type can also be considered under an alternative value classification (e.g. as a wetland or a waterway), a precautionary approach should be adopted by default and the most conservative mitigation recommendation applied. For example: where an assessment identifies a medium value riparian rainforest (100m buffer) along a first order stream (25m riparian buffer), the wider buffer associated with the most significant biodiversity values should be retained.

4.4.7 Riparian areas

Native vegetation within and immediately surrounding a waterway is known as riparian vegetation. Riparian vegetation plays a critical role in the maintenance of instream ecological processes as well as providing physical stability to the waterway, ameliorating water quality and providing critical habitat or resources for a range of plant and animal species not available elsewhere within the savanna landscape mosaic. Drainage depressions are level to gently inclined, long narrow, shallow open depressions with a smoothly concave cross-section, rising to moderately inclined side slopes, eroded or aggraded by sheet wash. They may not be an obvious part of a stream system and are often poorly defined and characterised by the lack of an incised stream channel. They act as natural sediment traps, filtering water before it reaches defined streams and large water bodies. Disturbance of drainage areas can have consequences in terms of flooding and erosion both on and offsite. Certain types of vegetation indicate wet or seasonally inundated areas that are largely unsuitable for particular developments and can extend above the 100 year flood levels (now referred to as the one per cent annual exceedance probability line).

Clearing of riparian vegetation and drainage depressions has the potential to not only result in the direct removal of sensitive/significant vegetation and impact on the values associated with this habitat, but also to negatively impact receiving environments immediately adjacent and downstream of the development site. This may be through the alteration of water quality, increased volume or intensity of run-off or physical destabilisation or habitat destruction. Riparian vegetation should not be cleared and appropriate native vegetation buffers should be retained to reduce impacts of land clearing on these systems. The minimum width recommended for a riparian buffer is related to the classification or hierarchy of the stream, known as “stream order” (Figure 5). Watercourses with no tributaries are first-order streams. Two first-order streams join to form a second-order stream, two second-order streams join to form a third-order stream, and so on. Rivers will most often be fifth or sixth-order streams (or higher), which reflects the larger catchments of these features.

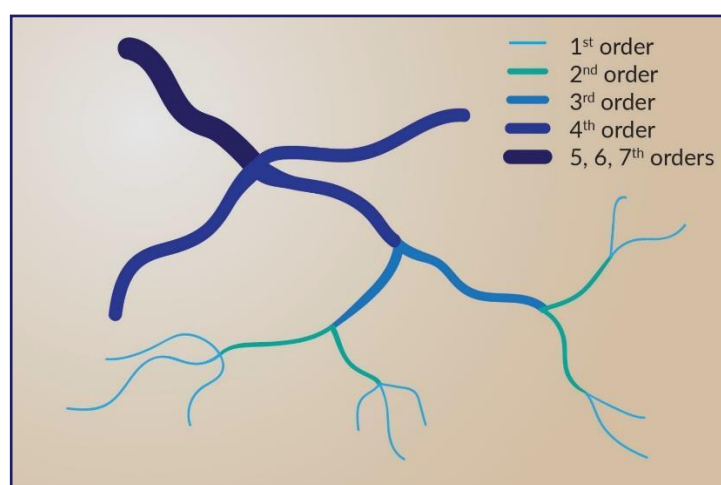


Figure 5: Determining stream order for riparian buffers.

Stream order can be determined from a topographic map of an appropriate scale (generally 1:100,000 or 1:50,000). A stream order spatial dataset is also available on [NR Maps](https://nrmaps.nt.gov.au/nrmaps.html#3f531a10-fbf2-4e05-b8f9-a3ea45fe61db)²⁴ (alignment should be field verified). Table 19 provides recommended native vegetation buffer widths for natural waterways. For more information get the [sensitive vegetation \(riparian\) factsheet](https://nt.gov.au/data/assets/pdf_file/0014/204206/sensitive-vegetation-riparian-english.pdf).²⁵

²⁴ <https://nrmaps.nt.gov.au/nrmaps.html#3f531a10-fbf2-4e05-b8f9-a3ea45fe61db>

²⁵ https://nt.gov.au/data/assets/pdf_file/0014/204206/sensitive-vegetation-riparian-english.pdf

Table 19: Recommended widths for riparian buffers.

Riparian class	Stream order	Minimum buffer width (m)	Measured from (Refer to Figure 6)
Drainage depression	Not applicable	25	The outer edge of the drainage depression, which is the extent of the associated poorly drained soils and associated vegetation
Intermittent streams	First	25	The outer edge of the riparian vegetation or levee (whichever is the greater). If braided channels are present, the edge of the outer most stream channel
Intermittent streams	Second	50	As above
Creeks	Third and fourth	100	As above
Rivers	Fifth or higher	250	As above

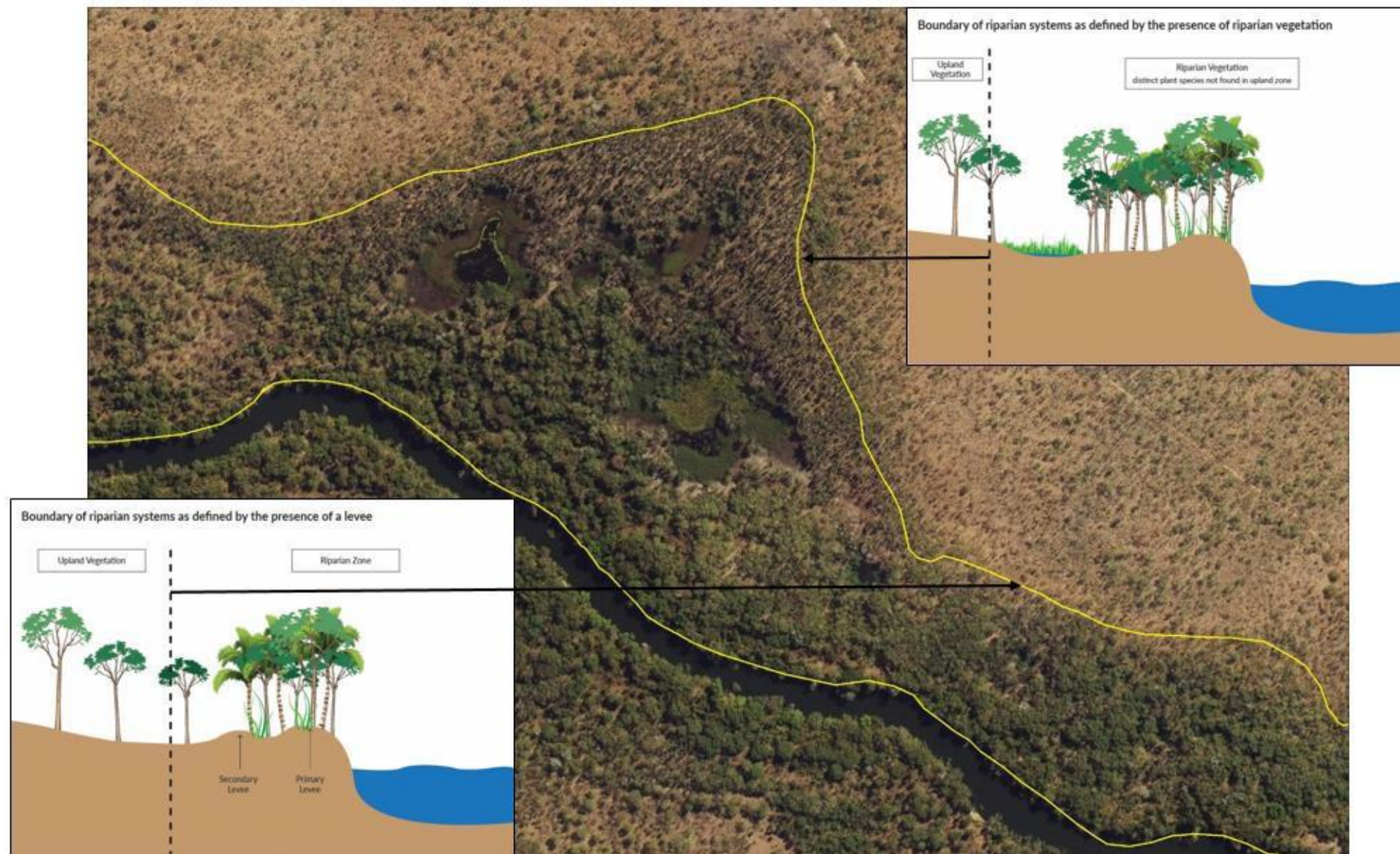


Figure 6: Examples of how to locate the boundary of riparian systems based on vegetation or landform.

4.4.8 Wetlands and Groundwater Dependent Ecosystems

Wetlands encompass a wide range of habitats that permanently or intermittently support plants or animals dependent upon wet conditions to complete their lifecycles. A more complete definition of wetlands and the types of habitats that they encompass can be found in the glossary.

For the purposes of these guidelines, riverine wetlands (natural waterways) and drainage depressions are not considered wetlands and are valued and assessed differently (refer to section 4.4.7 - **Riparian areas**). Landscape features including (but not exclusive to) swamps, sandsheet heaths, lakes, claypans, billabongs, closed depressions and mangroves whether permanent or intermittently wet are all considered wetlands for the purposes of these guidelines.

Valuing a wetland should take into account:

- wetland type and complexity
- size – can be used as a surrogate for wetland habitat diversity as larger wetland systems are generally considered to support a more diverse range of habitats at the site scale due in part to the increasing depth of water
- aggregation – many individual wetlands are known to function as part of broader, interconnected hydrological complexes that may be continuous or disjunct. The occurrence of a wetland within a discrete aggregation may increase its value
- the known presence or likelihood of occurrence of threatened or otherwise significant plants or animals within the wetland
- the occurrence or likelihood of occurrence of key resources or habitat for threatened or significant species including migratory species
- permanence and context in landscape – can be used as a surrogate for refugial habitats, especially in arid climate zones (see Groundwater Dependent Ecosystems below). Permanent or near permanent waterbodies in such environments may play an essential role in the maintenance of regional biodiversity values
- listed importance (Directory of Important Wetlands in Australia (DIWA), Ramsar etc.) or recognised special value (e.g. Howard Sand Plains sandsheet heath).

Clearing within and adjacent to wetlands has the potential to impact upon these values directly and through alterations to quantity and quality of inflow to these system. It is recommended that wetlands and appropriate buffers are retained, based on the specific values associated with the wetland (see Table 20 and Figure 7). Where an application is not consistent with the recommended buffers, justification must be provided and alternative mitigation or management strategies must be identified which avoid impacts.

4.4.8.1 Groundwater Dependent Ecosystems (GDEs)

Groundwater Dependent Ecosystems (GDEs) occur widely throughout the Northern Territory and include those lands typically referred to as wetlands but may also include those ecosystems dominated by native plant species dependent upon access to groundwater resources for at least part of their hydrological requirements. Generally, where groundwater is within 20m of the land surface some species of native plant may access and use groundwater. In the arid zone GDEs may be particularly important refugial habitats for a range of flora and fauna providing critical resources particularly between major rainfall events. Similarly, in tropical climate zones, GDEs such as spring-fed rainforests may represent habitat areas important for the maintenance of populations and ecological function at the landscape scale as part of a network of small interconnected habitat patches.

Clearing applications where the proposed clearing footprint will be used for activities that require water within close proximity to a GDE, must consider the impact of water use. Groundwater drawdown has the potential to significantly impact GDEs as a result of direct modification of the hydrological regime these ecosystems experience (i.e. reduced water availability) or indirectly as a result of changes to prevailing ecological processes that may influence the quality or extent of these ecosystems (e.g. reduced water availability may result in increasing fire susceptibility for fire sensitive species).

Taking or diverting water from natural waterways or groundwater should not have a significant impact on the health (and water requirements) of GDEs; and the *Water Act 1992* requires that water is allocated to the environment to maintain the health of aquatic ecosystems, including GDEs. It is also important to note that the 'halo of hydrological influence' surrounding a GDE may cover an area significantly larger than the ecosystem itself as a result of hydrogeological connectedness at regional or sub-regional scales.

Consequently, clearing applications must consider the potential for such indirect impacts as a result of water utilisation. As a minimum requirement, GDEs should be excluded from the proposed clearing footprint and be assessed (and buffered) as other wetlands, based on the inherent values of the ecosystem. Notably, the requirements of GDEs are a key determinant of how much water will be allocated for consumptive uses in water allocation plans made under the *Water Act 1992*. (Refer to section 4.5 - **Water** for more information regarding water use and allocation).

4.4.8.2 Buffers for wetlands and GDEs

Wetlands and GDEs should not be cleared and should be protected from the proposed clearing by a buffer of retained native vegetation. The minimum acceptable width of the buffer (Table 20) depends on the value of the wetland and the risks posed by the clearing application (as described in section 4.4.3 - **Biodiversity risk assessment**).

Table 20: Recommended widths of wetland buffers.

Habitat type	Value	Buffer width (m)
Wetlands and GDEs Note: Buffers are measured from the outer edge of areas that are dominated by plants adapted to seasonally saturated and/or inundated conditions. See Figure 7.	Low	50
	Medium	100
	High	250

The outer edge of a wetland or GDE is not always easy to determine. This is due largely to the soil and landscape hydrology that provides the conditions conducive to supporting wetlands. After rainfall and infiltration, water moves as runoff (overland flow) and lateral subsurface flow (through-flow) which provides the additional input necessary for wetlands. Although overland flow ceases relatively quickly after rain, water moving through the soil matrix as through-flow provides a more prolonged and attenuated input. This allows for a consistent water input between rainfall events as well as an extended input at the end of a Wet season. This process fluctuates with rainfall and operates within a range of landscapes. Consequently, the margins of wetlands could be reasonably well defined and narrow or broad and indistinct. The determination of outer margins and application of appropriate buffers are intended to protect wetlands and landscape function that supports them. Figure 7 demonstrates where the edge of a wetland is located in general terms with the accompanying table detailing the attributes on which this determination can be made.

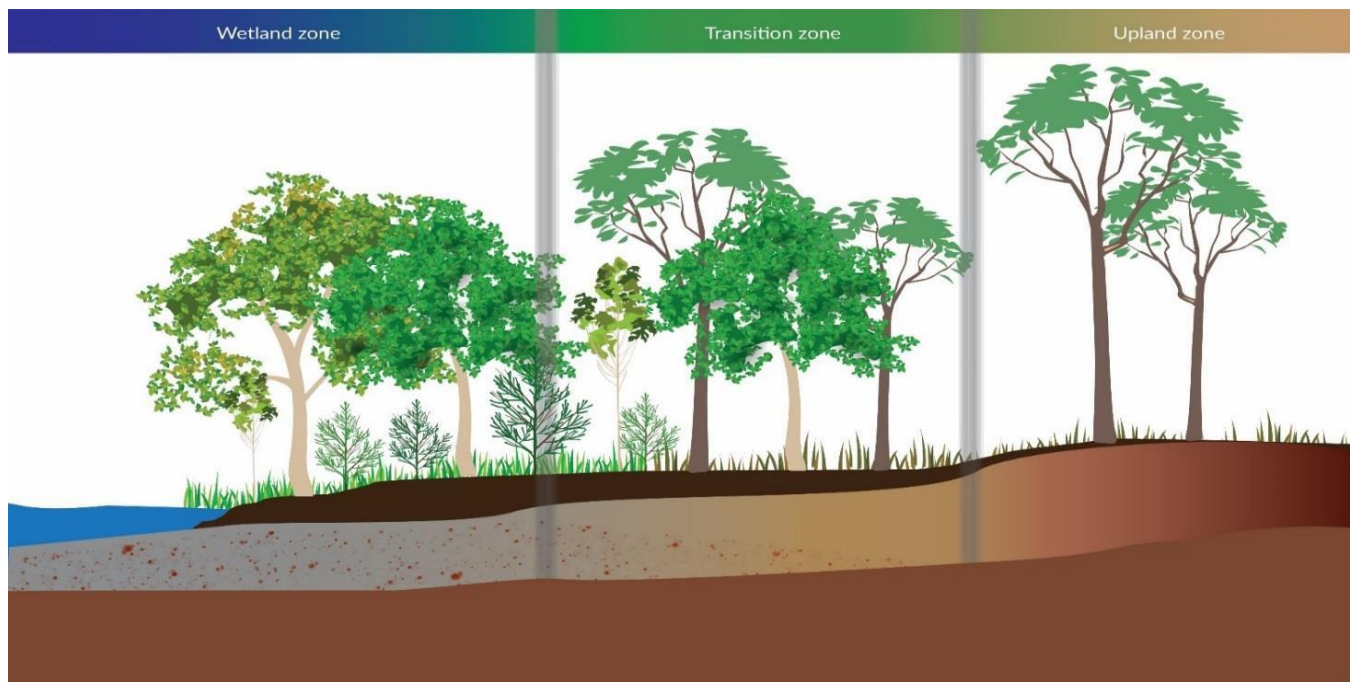


Figure 7: Zonation of vegetation from wetland to upland.

Wetland indicator	Wetland Zone	Transition Zone	Upland Zone
Vegetation	Vegetation dominated by hydrophytes and species dependent upon inundated or saturated condition to complete their life-cycles (e.g. <i>Melaleuca spp.</i> , <i>Lophostemon spp.</i> , sedges, rushes and aquatic plants).	Vegetation a gradational mix of wetland and upland zone species although not clearly dominated by wetland zone species in the dominant vegetation layer.	Vegetation dominated by plant species not requiring inundated or saturated conditions to complete their life cycle (e.g. most <i>Acacia</i> , <i>Eucalyptus</i> and <i>Corymbia species</i> , <i>Callitris spp.</i>). Ground layer vegetation typically grasses and/or shrubs.
Soil	Generally imperfect to poorly drained soils with extensive development of whole profile characteristics typical of prolonged periods of soil saturation. These may include the presence of redox features (e.g. significant mottles, segregations ferruginisation) and/or gleying, organic material, evidence of acid sulfate soils etc.	Soils have features intermediate between the wetland and upland zone. Generally the whole soil profile will not be dominated by indicators of prolonged profile saturation. Soils often yellowish brown.	Generally well to moderately well drained red and brown soils of varying depth.

Wetland indicator	Wetland Zone	Transition Zone	Upland Zone
Hydrological regime	Typically inundated or saturated to at or above the land surface for extended periods during typical rainfall events. In tropical environments this may be annually but in arid environments may be on inter-annual timescales.	May be saturated (or inundated) for periods of time during a typical rainfall event but not of a duration to facilitate the development of biological or pedological characteristics typical of the wetland zone.	Seldom saturated to at or near the soil surface, if so only for brief periods associated with intense rainfall events.

4.4.9 Sinkholes

Sinkholes are an opening in the land surface caused by water dissolving rock over time, and may be open or closed (i.e. covered, buried or partially filled with soil, rocks, vegetation, weathered bedrock, water or miscellaneous debris). Sinkholes are a type of GDE and are usually associated with karst (limestone) landscapes and cave systems. They contribute to ground water recharge and provide unique habitats for biodiversity. They effectively operate as islands within terrestrial ecosystems, and may support species (such as land snails) with highly restricted distributions. Sinkholes are affected by both overland flow and fluctuations of the water table.

Urbanisation, agricultural and industrial development may change local hydrological regimes and increase the frequency and magnitude of sinkhole flooding and the probability of collapse. As such, developers should be aware of the risk of ground subsidence and sinkhole collapse on their property, particularly in relation to asset protection. (Note: Sinkhole management from an asset protection perspective is beyond the scope of these guidelines).

Clearing of native vegetation from the land immediately surrounding sinkholes can contribute to their collapse through increasing the volume or velocity of surface water flow.

Groundwater quality can be compromised as sinkholes can provide direct connection to groundwater systems. As such, suspended contaminants and increased sediment loads may more readily enter sinkholes without native vegetation filters. This may result in both direct impacts upon the unique flora and fauna that occupy these habitats and indirect impacts upon groundwater and groundwater users in a much wider area than that immediately affected by the clearing activities.

Impacts to sinkholes can be mitigated by retaining native vegetation buffers (see Table 21) to help prevent contaminants entering aquifers and maintaining surface flows (DIPE, 2002). Ideally, sinkholes should be connected by native vegetation corridors to other native vegetation so that remnant (isolated) patches are not created. Buffers should be measured from the external perimeter of the sinkhole and not the centre point. Any variation from the recommended buffer needs to be justified via a geotechnical assessment conducted by a suitably qualified professional.

Table 21: Recommended width of sinkhole buffers

Sinkhole	Buffer Width (m)
All types	100

Note: An application is required to demonstrate consideration of the retention of corridors between remnant (isolated) vegetation, and as such corridors should be used to connect sinkhole buffers to other areas if possible. Buffers should be measured from the external perimeter of the sinkhole and not the centre point.

4.4.10 Wildlife corridors

Wildlife or landscape corridors provide a link of native vegetation suitable as wildlife habitat joining two or more larger areas of intact native vegetation. Corridors are critical for the maintenance of ecological processes in fragmented landscapes, including allowing the movement of animals and the continuation of viable populations. Recommended corridor widths for the maintenance of landscape connectivity are provided in Table 22. Specific habitat requirements of some threatened or significant species may require variations to these recommendations.

Wildlife corridors are generally of larger widths than buffers by default. This provides a degree of resilience to the retained habitat (i.e. the native vegetation comprising the wildlife corridor) from the potential effects of land use change adjacent to the retained habitat (i.e. the permitted clearing). These effects are likely to result from the change in environmental conditions at the boundary of the wildlife corridor and may lead to an alteration of community structure and function, increased risks of disease, parasitism or exotic species invasion. These processes are commonly referred to as edge effects.

An effective means of mitigating the potential for negative impact is to ensure the width of the corridor exceeds the distance to which an environmental change is expected to extend into the retained native vegetation.

In effect, wildlife corridors need to be large enough to ensure the maintenance of ecological functions and/or that the continuation of viable populations remains possible within them. A corridor of 100m is considered the minimum width to be viable in the NT context for general application. Applications with a clearing size of 100ha or greater are likely to require a wildlife corridor.

To ensure long-term viability, corridors should be managed to: maintain and enhance the existing vegetation condition; control weeds and fire; and reduce impacts from stock and feral animals.

When assessing an application, the connectivity of corridors must be considered from a wider perspective than the property scale. Applications for clearing areas greater than 100ha will need to demonstrate how corridors will maintain landscape connectivity. They should be designed strategically and consider:

- the size of the areas of habitat being connected
- corridor width – a single broad corridor may be more effective than multiple narrow ones
- the ecological requirements of any important wildlife species that the corridor proposes to support
- how the corridor system incorporates and connects with sensitive vegetation communities and buffers applied to them (if relevant)
- adequate representation of the vegetation community proposed to be cleared
- the current condition of the vegetation being retained and any management that may be required to maintain or enhance it
- minimising encroachment of property infrastructure (such as roads, fences, firebreaks).

Table 22: Recommended widths for wildlife/landscape corridors

Clearing Size (ha)	Minimum Width (m)
100 < 500	100
≥ 500	200

The density of corridors within a proposed clearing footprint (i.e. the number required) is likely to be context dependent, with the size and shape of individual clearing areas, features of the landscape and degree of landscape connectivity between retained habitat areas key to corridor alignment and design. It is generally recommended that corridor design should respond to the natural features of the landscape and be focussed around other significant habitats that have been previously identified as part of an overall biodiversity assessment and design of the proposed clearing footprint. Additional corridors can then be placed in relation to these natural features to achieve the desired outcomes in terms of connectivity between retained habitat areas within and outside the clearing footprint.

As a default recommendation, corridor density should be at a rate of approximately one corridor per linear kilometre of clearing or equivalent (e.g. Figure 8).

It is recognised that such a prescriptive arrangement is not necessarily pragmatic or conducive to the most beneficial land management or biodiversity conservation outcomes. Developers are encouraged to design wildlife corridor arrangements which achieve a density as close as possible to those recommended above, but with the flexibility to position corridors in such a way as to maximize connectivity between intact habitats. Where an application can demonstrate the merits of an alternative approach to design of a corridor network, they are encouraged to develop such a proposal and consult with the Flora and Fauna Division, DEPWS for further advice. For example, a design may propose to reduce the total number of individual corridors and increase the width of retained corridors for at least a comparable total area of habitat retained. This is likely to result in positive biodiversity outcomes through reduced edge effects and increased resilience, and may have the additional benefit of providing a more pragmatic configuration for land management.

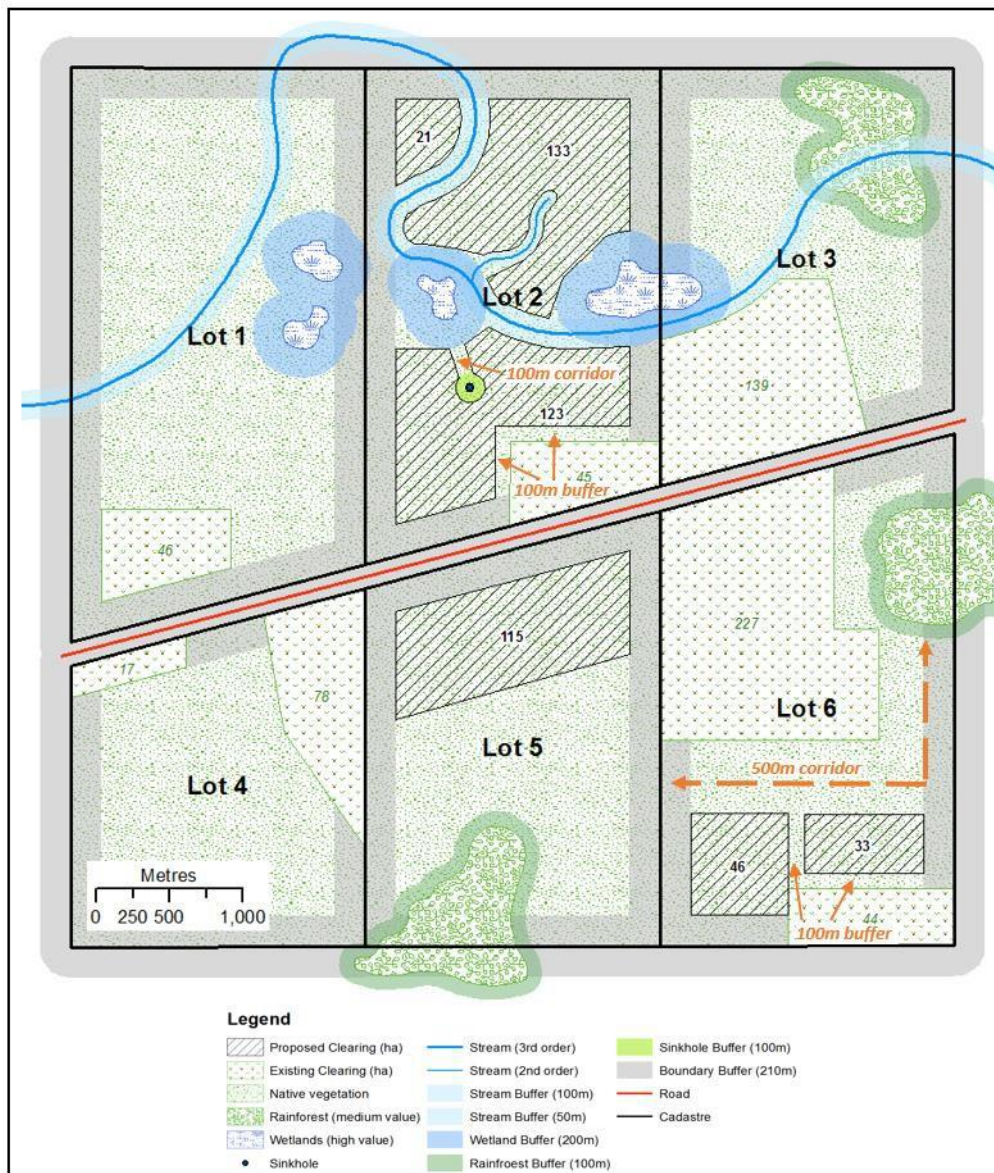


Figure 8: Two examples demonstrating how retention of native vegetation buffers and corridors can be configured to respond to existing features within the landscape (and assume suitable soil types and slope). **Example Lot 2:** Proposed clearing on Lot 2 has applied native vegetation buffers of the following widths: 210m to the property boundary (i.e. including 10m wide firebreak for lot size greater than 8ha); 200m to the two high value wetlands; 100m to the 3rd order stream; 50m to the 2nd order stream; and 100m to the sinkhole. The application has also provided a 100m wide wildlife corridor linking the sinkhole buffer to the wetland buffer, and a 100m wide land management buffer between the proposed clearing and the existing clearing (noting the existing clearing extends to the property boundary). The proposed buffers and corridors also provide habitat connectivity between Lot 1 and Lot 3. **Example Lot 6:** Proposed clearing on Lot 6 has retained a 500m wide wildlife corridor and a 100m wide land management buffer; as well as 210m wide property boundary buffers. The application seeks to provide connectivity between the two areas of medium value rainforest (on Lot 5 and Lot 6) and takes into account the large extent of existing clearing on Lot 6 and its extension to the property boundary. Given a total of 350ha will be cleared (including existing and proposed) and the recommended corridor density of one corridor per linear kilometre equivalent, the application has proposed to retain a single 500m wide corridor (incorporating the property boundary buffer), rather than three corridors (approximately equally spaced) each with a minimum width of 100m. Notably 500m exceeds the minimum recommended requirement and has been used to illustrate the pragmatic and discretionary flexibility which can be applied to corridor configuration.

4.5 Water

4.5.1 NTPS Requirements

- Clause 3.2(6) – an application for the clearing of native vegetation is to demonstrate consideration of the following:
(g) whether there is sufficient water for the intended use.

Clearing applications are required to demonstrate consideration of various issues relating to the water resource, including potential impacts to surface and groundwater. Several of these matters which have implications for biodiversity (e.g. protection and buffering of aquatic systems) are covered in section 4.4 - **Biodiversity**. In addition to these matters, issues relating to water quality, quantity, availability and use should also be considered. The following section provides additional guidance on relevant matters pertaining to the *Water Act 1992*, as well as information required to address NTPS criteria.

As a priority, developers should ensure they have access to a sufficient water supply before investing effort and resources into developing a clearing application.

4.5.2 Impacts on water resources

Clearing applications need to consider direct impacts related to:

- interference or obstruction of a waterway
- water quality and aquatic health
- recharge of aquifers and runoff to rivers.

If the proposed clearing footprint is located within a declared water allocation plan area or water control district the application should identify the name of the relevant area/district and any beneficial use declarations (as declared under the *Water Act 1992*). Further information is available through [NR Maps](#)²⁶ or by contacting the Water Resources Division, DEPWS. Developers are advised to check whether water is available to be allocated under the relevant water allocation plan, as some plan areas are fully allocated. Note that an extractive water licence is not required for rural stock and domestic use. For more information on [water allocation, water availability, requirements for permits and licences](#).²⁷

4.5.2.1 Interference or obstruction of a waterway

It is an offence to interfere with a waterway or to obstruct the flow of water in a waterway unless there is an exemption in place (published in a Gazette notice) or there is an authority to do so under the *Water Act 1992*. In accordance with the Act, the definition of a waterway includes, but is not limited to, a river, creek, stream, watercourse or natural channel irrespective of whether flow is continuous or not, a lake, lagoon, swamp or marsh either naturally occurring or as a result of works (refer to Glossary for further details). Accordingly clearing applications (and other development applications such as those for the purpose of excavation and fill) should not cause interference or obstruction of a waterway.

²⁶ <https://nrmaps.nt.gov.au/nrmaps.html#fad25063-cbb5-4b01-bf4e-0f7282fe8a3b>

²⁷ <https://nt.gov.au/environment/water>

4.5.2.2 Water quality and aquatic health

Where clearing of native vegetation is permitted, clearing activities must not pollute or degrade water quality within a waterway, groundwater resource or tidal water. The beneficial use, quality standards, criteria or objectives of water or waste may be declared in the Gazette for specific areas. Where this is the case, nothing is to be done, suffered or permitted which prejudices the beneficial use, quality standards, criteria or objectives. Accordingly clearing applications should seek to minimise the risk of erosion and detrimental effects of aquatic health (refer to section 4.3.2 - **Erosion risk**).

A waste discharge licence may be granted under the *Water Act 1992*, to carry out an action that would otherwise be an offence under the Act.

Note: Penalties may also apply for causing pollution (i.e. environmental nuisance or environmental harm) under the *Waste Management and Pollution Control Act 1998*. For further information on waste pollution go to the [NT EPA website](https://ntepa.nt.gov.au/your-environment/waste).²⁸

4.5.2.3 Recharge of aquifers and runoff to rivers

The clearing of native vegetation may impact both groundwater and surface water systems. Removal of vegetation increases surface runoff, groundwater recharge and the risk of erosion and sedimentation, which may degrade the water quality of a waterway or groundwater. In some circumstances, increased runoff also reduces the availability of water for aquifer recharge, which could impact on groundwater availability and quality. Retention of native vegetation buffers as described in sections 4.3 - **Land resource management** and 4.4 - **Biodiversity** will assist in reducing risk and managing impacts.

Furthermore, exchanging deep-rooted native vegetation with crops and other exotic species can affect evapotranspiration processes which may result in water table rise and subsequently increase the risk of salinisation, depending on the underlying soil chemistry and structure (refer to section 4.2 - **Land and vegetation resource assessment**). Retention of well-placed land management buffers are an important tool for avoiding and minimising these risks (refer to section 4.3.4 - **Land management buffers**).

4.5.3 Water use on cleared land

Where the proposed clearing of native vegetation will result in new activities and land uses that require water, a secure and sustainable water supply and details of water use requirements for the full life cycle of the development are required. Clearing applications need to consider:

- water availability
- water licensing and permitting
- saltwater intrusion and
- the impact of extraction on Groundwater Dependent Ecosystems (refer to section 4.4.8 - **Wetlands and Groundwater Dependent Ecosystems**).

4.5.3.1 Water availability

Clearing applications are required to demonstrate that there is sufficient water available for the intended use. 'Water availability' refers to both physical access as well as the volume of water that may be taken for the intended use from a specific water source. Significantly, a water resource may hold water but may not

²⁸ <https://ntepa.nt.gov.au/your-environment/waste>

necessarily be available or permitted for extraction. Therefore, clearing applications which will require access to groundwater or surface water should consider water availability from the outset.

Water licensing and regulation is governed by the *Water Act 1992*, including the requirement for bore construction permits and water extraction licences to take surface water and groundwater. Notably however water for rural stock and domestic use is exempt from licensing. At a resource scale, the amount of water generally available for allocation is set out in the [Northern Territory Water Allocation Planning Framework](#).²⁹

Water Control Districts (WCD) are declared under the Act in areas where there is a high level of competition for water or the need for more stringent management of the water resource. For a specific water resource within a WCD, a Water Allocation Plan (WAP) may have been developed which outlines local rules regarding how the resource is to be managed, in addition to those outlined in the NT Water Allocation Planning Framework. Further information on [WCDs](#)³⁰ and [WAPs](#).³¹

The local environment will also impact water availability. Yield from groundwater bores vary considerably in terms of depth to the water table and the hydrogeological properties of the aquifer. Proximity to other extractors will also impact on potential bore yield.

Rainfall variability impacts both groundwater and surface water availability, both seasonally and in the longer term. Consequently developers need to consider potential contingency water supply sources should their full licenced entitlement not be available for extraction in a water accounting year.

Developments involving clearing of native vegetation in association with water dependent activities are advised to contact the Water Resources Division, DEPWS as the first step in their planning process.

Note: Developers are not automatically entitled to available water. In accordance with the Act, a **Water Extraction Licence** will be required to provide the appropriate authorisation to extract water. This is a separate assessment process to a clearing application.

4.5.3.2 Saltwater intrusion, salinity and acid sulfate soils

Clearing applications where the proposed clearing footprint will be used for activities that require water from an aquifer near coastal or tidal water, need to consider the potential for saltwater intrusion. Under natural conditions, the seaward movement of freshwater prevents saltwater from encroaching on coastal aquifers, and the interface between freshwater and saltwater is maintained near the coast or far below land surface (USGS, 2017). Groundwater extraction can reduce freshwater flow toward coastal discharge areas and cause saltwater to be drawn toward the freshwater zones of the aquifer. Saltwater intrusion decreases freshwater storage in the aquifers, and, in extreme cases, can result in the abandonment of bores.

Furthermore, clearing of sensitive/significant vegetation (e.g. mangroves and wetlands) may contribute to the mobilisation of acid sulfate soils (refer to Table 8). The risk of clearing vegetation and changes to wetting and drying regimes for these ecosystems should be considered in the application (refer to section 4.2 - **Land and vegetation resource assessment** and section 4.4 - **Biodiversity**).

4.5.3.3 Buffers triggered by Water Allocation Plans

In addition to the buffers described in section 4.4.8.2 - **Buffers for wetlands and GDEs**, there may be instances where the maintenance of vegetation buffers around certain areas is considered critical for hydrology and water quality outcomes in groundwater and surface water systems.

²⁹ https://denr.nt.gov.au/_data/assets/pdf_file/0011/476669/nt-water-allocation-planning-framework.pdf

³⁰ <https://nt.gov.au/environment/water/water-resources-of-the-nt/water-control-districts>

³¹ <https://depws.nt.gov.au/water/water-management/water-allocation-plans>

Where the proposed clearing footprint is located within a Water Allocation Plan (WAP) area, the clearing application should adhere to any groundwater protection buffers identified within the relevant WAP. For example, where GDEs are known and at risk of being adversely affected by water drawdown, retention of native vegetation buffers which minimise or exclude water extraction around these ecosystems may be required. Where such buffers are identified in a WAP, they should be adhered to from a land clearing perspective due to the risk of hydrological change associated with clearing adversely impacting on the ecosystem.

4.6 Weeds

The clearing of native vegetation provides ideal conditions for weed proliferation due to soil disturbance and exposure, increasing the risk of weeds seed contamination. Clearing can also lead to the introduction or spread of weeds within an area from weed contaminated vehicles and machinery, used to undertake the clearing works.

For the purposes of these guidelines, a weed is defined as a plant species that has been declared under the *Weeds Management Act 2001* (the Act) and as such landholders and occupiers have statutory obligations to manage these species. Notably, exotic species such as pastures can also present a risk to rare and threatened species or significant biodiversity areas and may also require specific management.

4.6.1 Regulatory controls

An application to clear native vegetation should include a list of declared weed species present on or in close proximity to the property and detail how they will be managed in accordance with requirements under the Act. Clearing applications should also identify weed management measures for all phases of the proposed development; including clearing, development and ongoing land use. This information would be best described in a Weed Management Plan (WMP) to ensure best management practices are implemented, including vehicle hygiene procedures and weed spread prevention measures, during the clearing stage and ongoing land use/management. As such it is recommended that clearing applications include a WMP.

Depending on the severity of weed issues within a property, the requirement for preparation and implementation of a formal WMP may be required as a condition on a clearing permit, at the discretion of the consent authority.

Under the *Weeds Management Act 2001* weed species may be declared as:

- **Class A** – To be eradicated
- **Class B** – Growth and spread to be controlled
- **Class C** – Not to be introduced to the Territory.

All Class A and Class B weeds are also considered to be Class C weeds.

A number of declared weeds have **statutory weed management plans** and these plans outline the minimum requirements for these weed species under the Act. This information should be included as part of the clearing application and WMP.

If a permit to use a declared weed (section 30 of the Act) is in place on the property, this information must also be provided and considered as part of the clearing application and WMP.

4.6.2 Regional weed priorities

Regional weed management plans identify the priority weeds for each region (Darwin, Katherine, Barkly and Alice Springs) which have been identified by Regional Weed Reference Groups that represent the key stakeholders for each region. Regional priority weeds also need to be considered in the WMP.

4.6.3 Preventing weed spread

Preventing weed spread is the most cost-effective method to manage weeds, and measures should be identified to prevent the spread of weeds as part of the clearing application. A key principle for best practice weed management is to ensure spread is prevented through:

- appropriate vehicle/machinery hygiene
- not driving through seeding weeds
- eradicating weeds from the site (which is preferable to containing infestations).

4.6.4 Grassy weeds

Grassy weeds, including gamba (*Andropogon gayanus*) and grader grass (*Themeda quadrivalis*), require considerable attention when developing a WMP associated with clearing works. Grassy weeds have the ability to spread and invade very easily in disturbed situations.

Proposed clearing areas in the Top End often contain gamba grass, which is a compliance priority for the Northern Territory Government. Clearing applications will need to identify how gamba will be addressed, if present within the property.

Grader grass is a growing concern in the Katherine region and is gradually spreading across pastoral areas and along infrastructure corridors and easements. Grader grass is a prolific seeder and the window of opportunity for control is limited, making timing of control critical.

Both gamba grass and grader grass have **statutory weed management plans**. These can be found at the 'statutory weed management plans' link below.

4.6.5 Key information resources

- List of [declared weeds](#)³² in the Northern Territory
- [statutory weed management plans](#)³³
- [regional weed management plans](#)³⁴
- [Preventing weed spread is everybody's business](#)³⁵
- [Keep your vehicles and equipment clean](#)³⁶
- [Weed planning guides](#).³⁷

³² <https://nt.gov.au/environment/weeds/weeds-in-the-nt/A-Z-list-of-weeds-in-the-NT>

³³ <https://depws.nt.gov.au/rangelands/guidelines-and-management-plans2/weed-management-plans>

³⁴ <https://depws.nt.gov.au/rangelands/guidelines-and-management-plans2/weed-management-plans>

³⁵ https://denr.nt.gov.au/_data/assets/pdf_file/0011/257987/preventing-weed-spread.pdf

³⁶ <https://nt.gov.au/environment/weeds/how-to-manage-weeds/prevent-weed-spread-industry-and-recreation/keep-your-vehicles-and-equipment-clean>

³⁷ <https://nt.gov.au/environment/weeds/how-to-manage-weeds/weed-management-planning>

4.7 Cultural Heritage

4.7.1 NTPS Requirements

- Clause 3.2(6) – an application for the clearing of native vegetation is to demonstrate consideration of the following:
 - (n) the presence of declared heritage places or archaeological sites within the meaning of the *Heritage Act 2011*
 - (o) the presence of any sacred sites within the meaning of the *NT Aboriginal Sacred Sites Act 1989*.

The clearing of native vegetation should not impact declared heritage places, archaeological sites or sacred sites; and these areas should be excluded from the proposed clearing footprint as applicable.

If the proposed clearing is on a property that contains or is near a site of Aboriginal archaeological significance that may be disturbed, a full description of those sites must be provided. The result from a register search from the Aboriginal Areas Protection Authority is required with all applications. An authority certificate is also desirable. This is not compulsory under the *Northern Territory Aboriginal Sacred Sites Act 1989*, however, without a certificate, a developer would not have immunity from prosecution if the proposed clearing disturbed a sacred site.

For a proposed clearing that contains or adjoins post-settlement sites of historical or cultural significance, details should be provided in the application; along with details of any consultation with the Parks and Wildlife Division of the Department of Environment, Parks and Water Security.

5 Footprint design

Further to the eight conceptual steps highlighted in section 4.2 - **Land and vegetation resource assessment**, the following strategic approach is presented as a guide to identifying areas which are appropriate for clearing of native vegetation, designing a feasible and practical clearing footprint and preparing the necessary clearing plan (i.e. map of the proposed clearing area) and spatial data (i.e. shapefiles) to submit with an application.

In order to identify areas which are appropriate for clearing, the following sequential steps may assist. It is advisable to ensure there is sufficient water available for the intended use before committing resources to undertaking field investigations and survey.

5.1 Desktop

- **Water availability:** Estimate the total extent of potential clearing (in hectares) and confirm whether there is sufficient water available for the intended use (see section 4.5.3 - **Water use on cleared land**).
- **Context:** Look at the property as a whole, within the context of the wider catchment. Consider the potential clearing areas' proximity to identifiable natural features and position within the landscape. Consider the sensitivity of adjoining land and the direction of slope.
- **Boundary Buffers:** Apply property boundary buffers in accordance with Table 14 in section 4.3.3 - **Property boundary buffers**.
- **Land types:** Develop a draft land types map (see section 4.2.6 - **Land type map**) based on imagery and other relevant available spatial data. Identify areas that will require field verification, such as boundaries between land types.

- Soil and slope: Based on the draft land types map and available slope mapping, exclude areas of slope >2% (see Table 13 in section 4.3.2 - **Erosion risk** and NR Maps) and areas of unsuitable soil in accordance with section 4.2 - **Land and vegetation resource assessment**. Identify areas which may require field verification or survey.
- Biodiversity: Assess and exclude all known biodiversity issues and apply buffers as required (e.g. threatened species, sensitive and significant vegetation, wetlands, etc.) in accordance with section 4.4 - **Biodiversity**. Identify areas which may require field verification or dedicated survey.
- Significant features: Exclude all significant natural (see section 4.4 - **Biodiversity**) and cultural (see section 4.7 - **Cultural Heritage**) features (e.g. sacred sites, heritage sites, etc.).

5.2 Field verification

- Before committing resources to the field, liaise with the appropriate agency to ensure that the proposed survey design is fit for purpose. In particular, contact the:
 - Land Assessment Branch, DEPWS regarding validation of the land types map (including soil types and slope) and to confirm whether a land suitability or a land capability assessment is required.
 - Flora and Fauna Division, DEPWS regarding threatened species survey methodology.
- Undertake the surveys at an appropriate time of year and at the agreed scale/intensity. Ensure all necessary data is captured and recorded appropriately.

5.3 Modification

- Based on survey results, finalise the land types map and modify the proposed clearing footprint (e.g. adjust sensitive vegetation buffers, exclude areas of unsuitable soil/slope, include areas of suitable soil slope, exclude threatened species habitat, etc.).
- Consider the overall extent of suitable land and whether it is necessary to divide it into discrete management areas (e.g. smaller polygons/blocks/paddocks) by incorporating wildlife corridors (see section 4.4.10 - **Wildlife corridors**) and land management buffers (see section 4.3.4 - **Land management buffers**) as required or appropriate.
- Mindful design will reduce maintenance costs and support sustainable land use. Apply the following recommendations accordingly:
 - where two buffers intersect/overlap, apply the precautionary principle (i.e. apply the widest buffer)
 - ensure design considers land management factors such as the length and direction of slope; siting and alignment of existing and proposed infrastructure; and the direction of prevailing weather (e.g. wind, rain, sun) (see section 4.3 - **Land resource management**)
 - wherever practicable and possible, consider straightening the proposed clearing boundaries to minimise the number of vertices for ease of management (see section below).

5.4 Proposed clearing shapefile

It is important to recognise that the shapefile of the proposed clearing footprint provided with an application should reflect the actual extent of native vegetation proposed to be cleared on-ground. This means that the boundary of the proposed clearing footprint represented in the shapefile should be accurate. This will also have significant implications from both a legal and practical perspective, as well as for calculation of the total

proposed (and permitted) clearing area.

If using a geographic information systems (GIS) program to create proposed clearing shapefiles, it may be necessary to manually 'straighten' the boundaries of proposed clearing polygons which are generated by excluding automated buffers*. For example, shapefile buffers generated from natural features datasets such as creeks, or vegetation or soil boundaries, tend to have lots of curved lines and vertices. To minimise the number of vertices in the clearing boundary and facilitate ease of on-ground management, it may be necessary to produce a shapefile which excludes these buffers but has straighter boundaries (e.g. the fewer the vertices, the easier for machinery to operate and for fencelines/infrastructure to be installed). This is particularly relevant to larger broad acre clearing, as smaller-scale clearing is able to more easily respond to environmental complexity. It will also assist in reducing **edge effects** (see section 4.4.10 - **Wildlife corridors**) impacting biodiversity values (e.g. ecosystem health).

*Note: As described in section 4.2 - **Land and vegetation resource assessment** and section 4.4 - **Biodiversity**, land type boundaries and native vegetation buffers should always be ground-truthed.

6 Glossary

Alignment – the route or location of a linear development such as a road, fenceline, firebreak, railway, powerline or pipeline (also referred to as “easement”). Alignment is also used in reference to the positioning of boundaries (property, clearing, buffer), landscape features and soil conservation structures.

Amenity – an aspect of land or landscape that enhances its value to people. In relation to a locality or building, means any quality, condition or factor that makes or contributes to making the locality or building harmonious, pleasant or enjoyable (definition from the *Planning Act 1999*).

An important population – is a population that is necessary for a species long-term survival and recovery, including populations that are:

- key source populations for either breeding or dispersal
- populations that are necessary for maintaining genetic diversity, and/or
- populations that are near the limit of the species range.

Area of occupancy – the area within a species distribution that is occupied by the species. Generally the entire distribution of a species may contain some unsuitable or unoccupied habitats.

Biodiversity – the variety of living organisms and the ecological communities in which they occur.

Buffer – an area of land used or designed to isolate one area of land from another so that adverse effects arising from one area do not affect the other. Native vegetation buffers can be used, for example, to protect drainage lines, watercourses or sensitive vegetation communities and to improve public amenity.

Catchment – the source area for runoff flowing to a particular point.

Clear felling – the removal of all or the vast majority of vegetation across an area of land.

Clearing application – any type of development proposal involving the clearing of native vegetation pertaining to the *Planning Act 1999* or *Pastoral Land Act 1992*.

Clearing footprint – refers to the extent of the proposed clearing area and may comprise multiple discrete areas.

Clearing of native vegetation – the removal or destruction, by any means, of native vegetation on an area of land, other than:

- the removal or destruction of a declared weed within the meaning of the *Weeds Management Act 2001* or of a plant removed under the *Plant Health Act 2008*
- the lopping of a tree
- incidentally through the grazing of livestock
- the harvesting of native vegetation planted for harvest
- the clearing of firebreaks or roads for access to the land or other land
- in the course of Aboriginal traditional use, including the gathering of food or the production of cultural artefacts
- by fire

- the removal or destruction of native vegetation occurring on a site previously cleared in accordance with a permit issued under the *Planning Act 1999*
- incidentally through mowing an area previously cleared of native vegetation.

Clearing of **native vegetation** includes the selective removal of a species of plant, a group of species of plants, a storey or group of storeys in whole or in part. The clearing of native vegetation is sometimes also referred to as land clearing.

Clearing plan – a map outlining the extent of the proposed clearing footprint, submitted with a clearing application.

Consent authority – a person or group having the function to determine a development application for land use under relevant legislation.

Contour – a line connecting points of equal elevation.

Coordinating agency – the agency responsible for coordination of the assessment process.

Corridor – a band of vegetation that serves to connect distinct patches on the landscape, generally by linking larger, separated patches of vegetation.

Developer – the person or entity intending to instigate the clearing of native vegetation. The developer may be the land owner, the developer or a third party.

Development Consent Authority – the Development Consent Authority is established under the *Planning Act 1999*. Divisions of the authority determine development applications within their division area. Outside those areas, the consent authority is the Minister or their official delegate/s.

Development Permit – a document issued under the *Planning Act 1999* when a clearing application is approved for the purpose of clearing of native vegetation.

Drainage depression – are level to gently inclined, long narrow, shallow open depressions with a smoothly concave cross-section, rising to moderately inclined side slopes, eroded or aggraded by sheet wash (NCST, 2009).

Erosion and sediment control measures – activities based on structural works, vegetation management, tillage operations and/or other management options designed primarily to achieve control of soil erosion and sedimentation.

Erosion hazard – the susceptibility of an area of land to the agents of erosion such as wind and water. Erosion hazard is dependent on a combination of climate, landform, soil characteristics, land use and land management factors. As opposed to erosion risk, land use or management factors are considered in determining erosion hazard.

Erosion risk – the intrinsic susceptibility of an area of land to the agents of erosion such as wind and water. Erosion risk depends on a combination of climate, landform and soil characteristics. As opposed to erosion hazard, land use or management factors are not considered in determining erosion risk.

(For the purposes of these Guidelines, Erosion Risk is specifically associated with the active clearing of native vegetation and its subsequent absence).

Firebreak – a cleared access trail, usually located along property boundaries. In some NT Fire Control Regions the Regional Committee requires breaks to be a minimum of 4 metres wide, graded or slashed to a maximum height of 50 millimetres with all slashed material removed. They must be continuous around all property boundaries, but may deviate around wet or rocky areas and large trees.

On lots up to 8 hectares firebreaks may be a maximum 5 metres wide only along property boundaries. On lots greater than 8 hectares firebreaks may be a maximum of 10 metres wide, either along boundaries or internal fence lines. These widths may be varied by a Regional Bushfires Committee, specified in writing, to a maximum of 30 metres.

Groundwater dependent ecosystems – are ecosystems which require access to groundwater on a permanent or intermittent basis to meet all or some of their water requirements so as to maintain their communities of plants or animals, ecological processes and ecosystem services (Richardson et al. 2011).

Habitat – the natural environment in which plants or animals exist and upon which they depend.

Habitat critical to the survival of a species – areas that are necessary:

- for activities such as foraging, breeding, roosting or dispersal
- for the long-term maintenance of the species (including maintaining species essential to the species such as pollinators)
- for the reintroduction of populations or recovery of the species.

K factor – inherent soil erodibility factor which represents both susceptibility of soil to erosion and the rate of runoff, as measured under the standard unit plot condition.

Intact native vegetation – native vegetation which has not previously been cleared (or disturbed) by human activity is referred to as being 'intact' i.e. it is not regrowth and also falls within the NTPS definition of "native vegetation".

Land clearing – refer to definition of clearing of native vegetation.

Land degradation – The decline in quality of natural land resources, commonly caused through improper use of the land by humans. Land degradation will often cause a decline in land capability status.

Land management – is defined as the application to land of cultural, structural, vegetative or any other types of measures, either singly or in combination, in order to achieve a desired land use. In a soil conservation context, land management includes provision for the control and/or prevention of soil erosion (Houghton & Charman, 1986).

Land resources – physical, chemical and biological elements relating to the land including geology, soils, landform, vegetation and the location and behaviour of water in the landscape.

Land type – simplified land unit description which is "a reasonably homogenous part of a land surface, distinct from surrounding terrain with consistent properties in landform, soils or vegetation" (Hooper 1970).

Land unit – an area of relatively uniform landform, soils and vegetation types (Hooper 1970).

Levee – very long, low, narrow, nearly level, sinuous ridge immediately adjacent to a stream channel, built-up overtime by over-bank flow. Levees are formed, usually in pairs bounding the two sides of a stream channel, at the level reached by frequent floods (NCST, 2009).

Mowing – for the purpose of these guidelines mowing means the cutting down of grass with a hand held implement or powered machine; including slashing.

Map scale – the relation, expressed as a ratio, between a unit of length on a map and the actual length it represents on the land surface.

Native vegetation – terrestrial and intertidal flora indigenous to the Northern Territory including grasses, shrubs and mangroves.

Native Vegetation Assessment Panel – a group comprising experts in natural resources (land, water and biodiversity), primary industry and planning who provide recommendations to the consent authority on clearing applications.

NR Maps – a web-based mapping application for the discovery, interrogation and mapping of natural and cultural resource data and information – see <https://nrmaps.nt.gov.au/nrmaps.html>

Pastoral Land Board – the consent authority for the clearing of native vegetation on pastoral land.

Pasture improvement – the replacement of native cover by introduced species to be used for grazing.

Permit – a document issued under the *Pastoral Land Act 1992* for the clearing of native vegetation on pastoral land.

Population – is an occurrence of the species in a particular area. These include but are not limited to:

- A geographically distinct regional population, or collection of local populations; or
- A population, or collection of location populations, that occur within a particular bioregion.

Precautionary principle – generally defines actions on issues considered to be uncertain, for instance applied in assessing risk management. The principle is used to justify discretionary decisions in situations where there is the possibility of harm from making a certain decision (e.g. taking a particular course of action) when extensive scientific knowledge on the matter is lacking.

Previously cleared vegetation – native vegetation recurring on an area of land that has been cleared sometime in the past; also called “regrowth”.

Property – refers to the parcel of land in which a clearing footprint is located, usually a single lot or NT Portion.

Rainforest – plant communities, including vine thicket and monsoon forest, dominated by non-sclerophyllous trees which generally form a closed (>80% crown cover) upper stratum. Rainforests commonly occur in discrete, fire protected patches with increased moisture availability and abrupt edges. Wet monsoon rainforests are typically associated with permanent creeks and springs and are dominated by evergreen trees and palms. Dry monsoon rainforests, also referred to as monsoon vine thickets, occur on sites where moisture is seasonally scarce, and may be found on beach dunes and rock outcrops.

Regrowth – native vegetation which has re-grown/re-established after previously being cleared and may be young or old.

Rehabilitation – the treatment of degraded or disturbed land to achieve an agreed level of capability and stability, preferably at least equal to that which existed prior to degradation or disturbance.

Requirements – criteria identified under the NTPS which developers and the consent authority are required to consider (e.g. Clause 3.2 of the NTPS).

Restricted range species – species of plants and animals that have their entire distribution restricted to a very small area, and which are therefore vulnerable to land clearing or other disturbance in any part of their range.

Riparian vegetation – plant species or an assemblage of species that grow beside or near waterways (including swamps, lakes, and creek systems) and are dependent on them for their existence.

Runoff – the portion of rainfall not immediately absorbed into or detained on the soil, which becomes surface flow. Runoff is the major agent of water erosion. The amount of runoff depends on rainfall intensity and duration, slope, surface roughness, vegetation cover, surface soil conditions (including moisture content) and soil type.

Sand sheet heath – vegetation associations occurring on seasonally saturated or inundated sandy to silty hydrosols characterised by the dominance of mid-tall heathshrubs, shrubs and/or low trees in the upper stratum (typically *Banksia dentata*, *Grevillea pteridifolia*, *Lophostemon lactifluus*, *Melaleuca nervosa*, *Melaleuca viridiflora*, and *Verticordia* spp.) and a ground stratum with a diverse range of sedges, herbs and grasses but typically dominated by the restiads, *Dapsilanthus spathaceus*.

Sediment – material that is being or has been removed from its original site by the action of wind, water or gravity.

Service authority – the *Planning Act 1999* defines service authority as: the Territory, a minister, a local authority, the Power and Water Corporation or a prescribed statutory corporation.

Sensitive or significant vegetation – sensitive or significant vegetation communities such as rainforest, vine thicket, closed forest or riparian vegetation (clause 3.2 of the NTPS). The terms are used in these guidelines to also include mangroves, monsoon vine forest, sandsheet heath and vegetation containing large trees with hollows suitable for fauna habitat.

Significant species – this includes: threatened species; animal species that are listed as migratory or marine species under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999; those that are range restricted in the Northern Territory; and in some instances those listed as data deficient and near threatened under the *Territory Parks and Wildlife Conservation Act 1976*.

Site – refers to a specific location within a clearing footprint where data is collected as part of a field survey.

Site scaled map – a specific high resolution map of a site that provides the appropriate level and detail of field validated information required to plan on the ground activities. Developing a site scaled map will generally require the collection of new field data.

Slope – An incline, upward or downward, from the horizontal. Its angle is measured in degrees or as the ratio of the difference in elevation to the horizontal distance between two points, expressed as a percentage. Slope is also used to refer to a landform which is neither a crest nor a depression and that has an inclination greater than about one percent (1%). (Houghton & Charman, 1986).

Soil erodibility – the susceptibility of a soil to the detachment and transportation of soil particles by erosive agents. It is a composite expression of those soil properties that affect the behaviour of a soil and is a function of the mechanical, chemical and physical characteristics of the soil.

Soil erosion – the detachment and transportation of soil and its deposition at another site by wind, water or gravitational effects. Accelerated soil erosion occurs primarily as a result of the influence of human activities. (Houghton & Charman, 1986).

Stick rake – an attachment for heavy machinery consisting of a number of vertical bars. A stick rake is used to push debris, but allows soil to pass through.

Stream bank – very short, very wide slope, moderately inclined to precipitous, forming the marginal upper parts of a stream channel and resulting from erosion or aggradation by channelled stream flow (NCST, 2009).

Stream channel – linear, generally sinuous open depression, in parts eroded, excavated, built up and aggraded by channelled stream flow. This element comprises stream bed and banks (NCST, 2009).

Stream order – describes the relative size and frequency of well-defined watercourses.

Threatened species – species that are listed under the Territory Parks and Wildlife Conservation Act 1976 or the Environment Protection and Biodiversity Conservation Act 1999 as “Critically Endangered”, “Endangered” or “Vulnerable”.

Unzoned land – Land which is not zoned in accordance with the NTPS but which is still subject to controls. Also termed “no zone”. If the land or activity is not subject to the operation of any Act in force in the Northern Territory, other than the *Planning Act 1999*, consent is required where aggregate clearing will exceed one hectare. Note: Freehold, Aboriginal or Crown land may be either zoned or unzoned, while Pastoral Leases are subject to the *Pastoral Land Act 1992*.

Watercourse or waterway – for the purpose of these guidelines, are defined as natural drainage depressions, creeks, streams or rivers. The following definitions are from section 4(1) of the *Water Act 1992* and exclude parts (d), (f) and (g):

- (a) a river, creek, stream or watercourse
- (b) a natural channel in which water flows, whether or not the flow is continuous
- (c) a channel formed wholly or partly by the alteration or relocation of a waterway described in paragraph (a) or (b)
- (e) land on which, as a result of works constructed on a waterway described in paragraph (a), (b) or (c), water collects, whether or not the collection is continuous
- (h) land declared under section 5(1) of the *Water Act 1992* to be a waterway.

Wetland –includes, but not restricted to, swamps, marshes, billabongs, lakes, salt marshes, mudflats and mangroves.

Excluding waterways and drainage depressions as defined above, wetlands are areas of permanent or periodic/intermittent saturation or inundation, with water that is static or flowing fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed 6 metres. To be a wetland the area must have one or more of the following attributes:

- at least periodically the land supports plants or animals that are adapted to and dependent on living in wet conditions for at least part of their life cycle or
- the substratum is predominantly undrained soils that are saturated, flooded or ponded long enough to develop anaerobic conditions in the upper layers or
- the substratum is not soil and is saturated with water, or covered by water at some time.

Zoned land – land that is zoned under the NTPS including municipal and rural areas such as Litchfield, Palmerston, Darwin, Alice Springs, Katherine, Tennant Creek, and many remote communities. Note: Freehold, Aboriginal or Crown land may be either zoned or unzoned, while Pastoral Leases are subject to the *Pastoral Land Act 1992*.

7 References

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8 Appendix A – History of clearing controls

The following table outlines the introduction of clearing controls for different land tenures in the Northern Territory.

Land zone/tenure	Date clearing controls were introduced	Instrument
Zoned land (freehold and Crown)	1992 – Permits required for clearing >50% of a single property within Litchfield Shire. 2004 May – Permits required for clearing >1ha in aggregate on a single property within Litchfield Shire. 2007 February – Permits required for clearing >1 ha in aggregate on a single property within zones H, A, RR, RL, R, CP, CN, RD and WM.	Planning Act 1993 <i>Planning Act 1999</i>
Unzoned land (freehold and Crown)	2002 December – Permits required for clearing >1 ha in aggregate on a single property.	<i>Planning Act 1999</i>
Pastoral Lease	1992 – Clearing controls applied to the <i>Pastoral Land Act 1992</i> (upon commencement)	<i>Pastoral Land Act 1992</i>

Native vegetation clearing has been controlled on pastoral land and within the Litchfield Shire since 1992. The NT Government introduced native vegetation clearing controls to the remaining freehold and crown land, outside the existing planning control areas in December 2002 through Interim Development Control Order (IDCO) No. 12.

Following a two year period of consultation and development the IDCO was replaced with permanent controls under the *Planning Act 1999*.

Year	Event
1992	Clearing controls applied to the <i>Pastoral Land Act 1992</i> . NT Pastoral Land Clearing Guidelines introduced.
1992	Clearing controls introduced to the <i>Planning Act 1993</i> with the “50% rule” introduced in the Litchfield Shire Area Plan – permits required where greater than 50% of a parcel proposed to be cleared.
2002	February – Introduction of the Land Clearing Guidelines for freehold land.
2002	December – clearing controls introduced for unzoned land by IDCO No. 12 – permits required to clear greater than 1ha of native vegetation under the <i>Planning Act 1999</i> .
2003	November – Clearing moratorium declared in the Daly River region affecting freehold and pastoral leases.
2004	May – “50% rule” changed to “greater than 1ha” rule in the Litchfield Area Plan for zoned land in Litchfield Shire – permits required where more than 1ha proposed to be cleared on a parcel.
2004	November – IDCO No. 12 becomes permanent in the NTPS affecting unzoned land. The Litchfield Area Plan remains current.
2006	Land Clearing Guidelines for freehold land updated.
2007	February – the NTPS consolidated with clearing of native vegetation criteria applying to unzoned and zoned land across the NT.
2007	December – Daly River region clearing moratorium extended with an emphasis on water allocation planning.

Year	Event
2008	March – clearing moratorium in the Daly River region formalised by IDCO No. 17.
2010	March – IDCO No. 17 expires.
2010	Freehold and NT Pastoral Land Clearing Guidelines updated. Freehold Guidelines includes special provision for the Daly River catchment.

Find out more about [land clearing controls](#).³⁸

8.1 Permitted Clearing

Permitted clearing areas for unzoned and pastoral land can be viewed spatially on [NR Maps](#).³⁹

³⁸ <https://depws.nt.gov.au/rangelands/technical-notes-and-fact-sheets/land-clearing-fact-sheets-reports>

³⁹ <https://nrmaps.nt.gov.au/nrmmaps.html#3f27105d-9bfd-4420-b711-aedd3082f9ee>

9 Appendix B – How an application is determined

9.1 Application determination

Ultimately the matters which a consent authority must consider in determining a clearing application will depend on the legislation that triggered the requirement for consent. It is recommended that all development involving the clearing of native vegetation apply these guidelines in full and that consent not be granted for applications that will potentially have adverse environmental impacts or threaten the sustainability of the Territory's natural and cultural resources.

For applications made under the *Planning Act 1999*, the consent authority is required to consider the following aspects when determining a development application for the purpose of clearing native vegetation:

- Section 51 of the *Planning Act 1999*
- the intent of the NTPS
- clause 3.2 of the NTPS
- the Land Clearing Guidelines.

Developers are required to address clause 3.2(5) and (6) of the NTPS in an application (which can be achieved most effectively by applying these Guidelines), and should be aware of the requirements in order to prepare a robust application – in order to avoid the clearing application being deferred (pending provision of additional information or amendment) or rejected, because it has not adequately addressed the necessary issues.

Importantly, the consent authority should consider the extent to which an application has adequately addressed the applicable issues. Applications that do not meet all requirements and have not provided sufficient supporting evidence, should be deferred (pending provision of additional information or amendment). Applications which are unable to avoid adverse environmental or cultural impacts should not be approved.

9.2 Section 51 of the Planning Act 1999

Section 51 of the *Planning Act 1999* states that a consent authority must, in considering a development application, take the following relevant matters of the development into account:

- any applicable planning scheme (the NTPS)
- any applicable interim development control order (IDCO)
- any applicable environment protection objective as defined by the *Waste Management and Pollution Control Act 1998*
- any submissions received (e.g. from the public, government, or the Planning Commission)
- any matter the Minister has directed be considered (in accordance with section 85 of the Act)
- any Notices of Intent or Environmental Impact Statements and/or related assessment results relating to the development (refer to *Environment Protection Act 2019* requirements)
- the merits of the proposed development (as stated in the application)

- the capability of the land to support the proposed development; and the effect of the development on the land and on other land
- the public facilities or public open space available or required (if applicable)
- the public utilities or infrastructure available or required (if applicable)
- the potential impact on the existing and future amenity of the area
- the public interest, including community safety, water safety and disabled access (if applicable)
- any potential impact on natural, social, cultural or heritage values, including for example, the heritage significance of a heritage place or object under the *Heritage Act 2011*
- any beneficial uses, quality standards, criteria, or objectives, that are declared under the *Water Act 1992*
- other matters it thinks fit.

9.3 The intent of the NT Planning Scheme

In accordance with section 51(a) of the *Planning Act 1999*, in determining a clearing application the consent authority must have regard for the NTPS. The purpose of the Scheme as outlined in clause 1.3 is to:

- further the Objectives of the *Planning Act 1999*
- establish the strategic planning framework to inform and guide all development in the Territory
- establish controls to guide development
- provide a clear framework for the assessment and determination of development applications.

Clause 2.1 of the Scheme states the purpose of the Strategic Framework being:

- promotes the Objectives of the *Planning Act 1999* through the establishment of strategic policy and strategic land use plans to guide development
- establishes a strategic direction for the Northern Territory and its regions that facilitates long term management of development to achieve coordinated and efficient planning outcomes
- provides guidance on strategic planning priorities and intended outcomes of future development
- balances the following considerations to inform strategic planning and decision making for development:
 - the sustainable use of resources and the protection of the natural environment and ecological processes
 - the integration of land use planning with transport and physical infrastructure planning to provide for the equitable, accessible, logical and efficient provision of such services
 - the facilitation of industrial, business and other employment and wealth generating activities to promote, support and engender economic development
 - the promotion of diverse housing options and the integration of planning for community facilities and services to foster a more connected, resilient and supported society
 - the recognition of the unique characteristics, challenges and aspirations in different areas and communities within the scheme area; and
 - the protection of places and buildings, which are of heritage or cultural value.

9.4 Definitions adopted from the NT Planning Scheme

Native vegetation means terrestrial and inter-tidal flora indigenous to the Northern Territory, including grasses, shrubs and mangroves.

Clearing of native vegetation means the removal or destruction, by any means, of native vegetation on an area of land, other than:

- (a) the removal or destruction of a declared weed within the meaning of the *Weeds Management Act 2001* or of a plant removed under the *Plant Health Act 2008*
- (b) the lopping of a tree
- (c) incidentally through the grazing of livestock
- (d) the harvesting of native vegetation planted for harvest
- (e) for a road to access the land or other land
- (f) in the course of Aboriginal traditional use, including the gathering of food or the production of cultural artefacts
- (g) by fire
- (h) the removal or destruction of native vegetation occurring on a site previously cleared in accordance with a permit issued under the *Planning Act 1999*
- (i) incidentally through mowing an area previously cleared of native vegetation.

Clearing of native vegetation also includes the **selective removal** of a species of plant, a group of species of plants, a storey or group of storeys in whole or in part.

9.5 Requirements

In accordance with section 51(a) of the *Planning Act 1999*, in determining a clearing application the consent authority must have regard for the NTPS. Clause 3.2 outlines specific planning principles and requirements that an application must demonstrate consideration of in order to receive consent.

Clause 3.2 states that the purpose of the clause is to ensure that the clearing of native vegetation does not unreasonably contribute to environmental degradation of the locality.

Clause 3.2(5) states that clearing of native vegetation is to:

- (a) avoid impacts on environmental significant or sensitive vegetation
- (b) be based on land capability and suitability for the intended use
- (c) avoid impacts on drainage areas, wetland and waterways
- (d) avoid habitat fragmentation and impacts on native wildlife corridors
- (e) avoid impacts on highly erodible soils.

Clause 3.2(6) states that an application for the clearing of native vegetation is to demonstrate consideration of the following:

- (a) the Land Clearing Guidelines (this document)
- (b) the presence of threatened wildlife as declared under the *Territory Parks and Wildlife Conservation Act 1976*

- (c) the presence of sensitive or significant vegetation communities such as rainforest, vine thicket, closed forest or riparian vegetation
- (d) the presence of essential habitats, within the meaning of the *Territory Parks and Wildlife Conservation Act 1976*
- (e) the impact of clearing on regional biodiversity
- (f) whether the clearing is necessary for the intended use
- (g) whether there is sufficient water for the intended use
- (h) whether the soils are suitable for the intended use
- (i) whether the slope is suitable for the intended use
- (j) the presence of permanent and seasonal water features such as billabongs and swamps
- (k) the retention of native vegetation adjacent to waterways, wetland and rainforests
- (l) the retention of native vegetation buffers along boundaries
- (m) the retention of native vegetation corridors between remnant native vegetation
- (n) the presence of declared heritage places or archaeological sites within the meaning of the *Heritage Act 2011*
- (o) the presence of any sacred sites within the meaning of the *NT Aboriginal Sacred Sites Act 1989*.

9.6 Other matters

Notably, section 51(t) of the *Planning Act 1999* states that the consent authority must take into account other matters it thinks fit. Although this consideration is entirely at the discretion of the consent authority and will usually be case specific, examples of such matters include:

- the presence of declared weeds and proposed management measures, and the associated risks (such as potential spread) that the application poses
- matters raised by the NT EPA (e.g. dust management, contaminated land, etc.)
- whether the evidence provided in support of the application is reputable (e.g. surveys have been undertaken by suitably qualified professionals with expertise relevant to the subject)
- whether the application is retrospective (i.e. the proposed clearing area was cleared prior to application submission)
- whether the application warrants the preparation of specific management plans conditioned on the permit, noting that such plans can only relate to the clearing phase of the project (not the post-clearing development, or operational phases).

10 Appendix C – Key contacts

10.1 Key Northern Territory Government contacts

Coordinating agencies

Topic	Branch	Phone	Email
Pastoral administration	Pastoral Lease Administration and Board Branch, DEPWS	08 8999 4667	pastorallandboard@nt.gov.au
Pastoral clearing	Development Coordination Branch, DEPWS	08 8999 4454	Pastoralassessment.DEPWS@nt.gov.au
Unzoned clearing	Development Coordination Branch, DEPWS	08 8999 3631	landclearing.DEPWS@nt.gov.au
Zoned clearing	Development Assessment Services, DIPL	08 8999 6046	das.dlpe@nt.gov.au

Environmental considerations

Topic	Branch	Phone	Email
Biodiversity, Vegetation Mapping	Flora and Fauna Division, DEPWS	08 8995 5000	biodiversity.assessments@nt.gov.au
Cultural Heritage	Heritage NT, DTFHC	08 8999 5039	heritage@nt.gov.au
Environmental Assessment, EPA	Environment Division, DEPWS	08 8924 4218	eia.ntepa@nt.gov.au
Land Management	Land Management Unit, DEPWS	08 8999 4454	landclearing.DEPWS@nt.gov.au
Land Types, Land Suitability, Land Capability	Land Assessment Branch, DEPWS	08 8999 4443	rangelands@nt.gov.au
Water	Water Resources Division, DEPWS	08 8999 4455	waterresources@nt.gov.au
Weeds	Weed Management Branch, DEPWS	08 8999 4567	weedinfo@nt.gov.au