

Reviewing Biodiversity Values Map and Threshold Tool area clearing threshold results

Guidance for proponents and local government



Department of Planning and Environment

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1. Purpose

This guidance is for proponents and decision-makers seeking to review the native vegetation area clearing calculations generated by the Biodiversity Values Map and Threshold Tool (BMAT Tool). The guideline describes standards for developing an alternative property-scale native vegetation extent (NVE) map and calculation of proposed native vegetation clearing.

When to use this guide

This guide outlines the process for reviewing the native vegetation area clearing calculations generated by the BMAT Tool. This guide does not relate to areas mapped on the Biodiversity Values Map – there is a separate process for reviewing areas on the Biodiversity Values Map.

2. The Biodiversity Values Map and Threshold Tool

The Biodiversity Offsets Scheme (the scheme) is the framework for offsetting unavoidable impacts on biodiversity from development with biodiversity gains through landholder stewardship agreements. It was established under the *Biodiversity Conservation Act 2016*. The Biodiversity Conservation Regulation 2017 sets out threshold levels for development that trigger the scheme. The scheme is activated when:

- the amount of native vegetation proposed to be cleared exceeds an area threshold
- the clearing of land is within an area mapped on the Biodiversity Values Map.

The scheme threshold applies to proposed development under Part 4 Division 4.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and proposed vegetation clearing regulated by Chapter 2 of the *State Environmental Planning Policy* (*Biodiversity and Conservation*) 2021 (the Biodiversity and Conservation SEPP).

The Biodiversity Values Map and Threshold Tool (BMAT Tool) is a web-based decisionsupport tool that can support a decision about whether a proposed development or vegetation clearing is likely to exceed the scheme threshold. The evaluation report generated by the BMAT Tool will indicate whether the proposal is likely to impact on land within the Biodiversity Values Map or exceed a native vegetation clearing area threshold.

The BMAT Tool uses the Native Vegetation Area Clearing Estimate (NVACE) data layer to calculate the proposed area of clearing and can help to determine if a native vegetation clearing threshold has been exceeded. The NVACE layer is not a regulatory map (unlike the Biodiversity Values Map), but has been developed to guide proponents in their assessment of clearing thresholds. The NVACE is built using a combination of existing vegetation extent layers, land use classification and recent clearing and disturbance information. For more information, see the *NSW Native vegetation area clearing estimate mapping method* (see Section 4 Additional guidance and resources).

A review of the native vegetation area clearing threshold calculations from the BMAT Tool may be required when:

- the proponent or consent authority dispute the area clearing calculations in the BMAT Tool evaluation report
- the proposed area of native vegetation clearing calculated by the BMAT Tool is close to the area clearing threshold
- the BMAT Tool reports 'unknown' for the area clearing threshold.

When the proposed clearing area is in dispute or close to the area clearing threshold, engage early with the consent authority to confirm the information that will be required to submit with the development application and avoid delays in the development approval process.

Ultimately, the consent authority decides if the area of native vegetation clearing required for a proposal exceeds the area clearing threshold. The consent authority will decide whether the proponent has accurately included all components of the development in the clearing footprint shown in the BMAT report.

Section 4 Additional guidance and resources provides further information and links to the dataset and imagery as well as documents and legislation referred to in this report.

2.1 What is native vegetation clearing?

Clearing of native vegetation for the purposes of development is defined in section (s) 60C of the *Local Land Services Act 2013* and includes:

(a) cutting down, felling, uprooting, thinning or otherwise removing native vegetation

(b) killing, destroying, poisoning, ringbarking or burning native vegetation.

Lopping of vegetation is not considered clearing when the lopping does not compromise the health of the tree. For example, lopping the branch of trees from a neighbouring property.

Native vegetation is defined in s 60B of Local Land Services Act as any of the following types of plants that are native to New South Wales (NSW):

(a) trees (including any sapling or shrub or any scrub)

(b) understorey plants

(c) groundcover (being any type of herbaceous vegetation)

(d) plants occurring in a wetland.

A plant is native to New South Wales if it was established in New South Wales before European settlement and is listed on the official database maintained by the Royal Botanic Gardens and Domain Trust and published on their website.

Native vegetation extends to a plant that is dead or that is not native to New South Wales if the plant is situated on land that is shown on the Native Vegetation Regulatory Map (NVR Map) as Category 2 – vulnerable regulated land. Therefore, any vegetation occurring on NVR Category 2 – vulnerable regulated land must be included in an area clearing threshold calculation regardless of whether it is living, dead or dying, or is an exotic species.

Native vegetation occurring on NVR Map Category 1 – exempt land is not included in the area clearing threshold calculations. For more information on the NVR Map categories and the scheme please see Section 4 Additional guidance and resources.

Native vegetation also exists as grassland, herb-land and low shrublands that do not have trees or large shrubs. It may also have naturally scattered trees up to 50 m apart. Native vegetation also includes freshwater wetlands, but it does not include marine vegetation (i.e. mangroves, seagrasses or any other species of plant that at any time in its life cycle must inhabit water other than fresh water). Clearing of marine vegetation is regulated under the *Fisheries Management Act 1994.*

3. How to review the area clearing calculations from the Biodiversity Values Map and Threshold Tool

This section describes the steps involved in reviewing the area clearing threshold results in the BMAT Tool evaluation report, and the process is illustrated in Figure 1. In summary, the review requires the proponent to prepare an alternative property-scale map and native vegetation extent (NVE) calculations with an evidenced based justification and methods. The review is submitted to the consent authority to demonstrate the area clearing threshold has not been exceeded.

Key principles for review of BMAT Tool reports

- The method to assess and calculate NVE must have a high level of accuracy, be repeatable and sufficiently documented with an evidenced-based justification.
- All vegetation within the proposed development/clearing footprint is considered native unless it can be demonstrated as non-native.
- Partially exotic vegetation scattered throughout native vegetation is considered as native vegetation for the purpose of calculating NVE.
- Exotic groundcover with an overstory of native vegetation is considered native vegetation for the purpose of calculating NVE.
- Groundcover in heavily disturbed ecosystems with no native overstory (i.e. derived ecosystems), which is a mix of native and exotic cover may be adjusted in line with the ruleset for calculating NVE in these areas.
- Trees from adjacent properties with canopies that overhang the development/clearing footprint are not included in calculations for NVE, unless the canopy will be removed.
- Data used (e.g. photos and aerial images) should include the date of collection.



gure 1 The process of preparing an alternative property-scale map to better inform results of the area clearing threshold calculations in the BMAT Tool

3.1 Method

Step 1 – Delineate development or clearing footprint

Identify the boundaries of the development or clearing footprint on a map. In some cases, a screenshot/export from the BMAT Tool may be a suitable map. Alternatively, use a map of aerial images with the date of the aerial image captured.

What is included in a development or clearing footprint?

Include all buildings and ancillary uses such as asset protection zones (APZ), tree protection zones (TPZ), landscaping, fence lines, driveways, services (refer to civil works plans) and any temporary works or facilities required during construction or operation.

For proposed subdivision developments under Part 4 of the EP&A Act, include the total area of native vegetation clearing that, in the opinion of the consent authority, is required or likely to be required for future land use (such as housing development). For example, areas of future vegetation degradation or clearing resulting from operational use, including ancillary uses.

Step 2 – Desktop assessment

Review the best available native vegetation mapping and aerial imagery for the clearing footprint. Refer to Section 4 Additional guidance and resources for links and information on the best available data and imagery. Only the disputed area needs to be assessed.

Use the imagery or best available vegetation mapping to demonstrate that the NVE proposed to be cleared is less than the area calculated by the BMAT Tool. Use the data to generate a map, supported by site photos and their locations, and submit to the consent authority. If the consent authority is satisfied that the map and site photos clearly demonstrate that the area clearing threshold has not been exceeded, no further calculations are required.

Where imagery or vegetation mapping and site photos fail to clearly demonstrate that the area clearing threshold has not been exceeded, further field assessment is required. **Go to Step 3**.

Step 3 – Assessment and mapping of vegetation

Where the desktop assessment does not clearly demonstrate that the clearing threshold has not been exceeded, conduct an on-site survey and assessment of vegetation species and groundcover to evaluate the presence and extent of native vegetation.

Evidence from field survey results must be prepared by a person with sufficient skills in native vegetation identification, field survey and spatial mapping, but the person does not need to be accredited in the use of the *Biodiversity Assessment Method*.

Identify and map the following:

- the areas of the NVACE map that are in dispute
- any area that contains native or exotic living, dead and dying canopy/trees in areas mapped as Category 2 – vulnerable regulated land – these areas are considered 100% native vegetation for the purpose of the Biodiversity Offsets Scheme threshold and are included in NVE calculations

- areas of groundcover with a mix of native and exotic species in a derived (disturbed) plant community see box below for more information and Appendix A for a recommended survey method
- areas that are 100% exotic, such as primary production crops or orchards these areas are not included in calculations of NVE
- areas that meet the definition of a threatened ecological community, including bare areas, rock or litter these areas are included in calculations of NVE.

Calculations of NVE should include temporal variations in certain vegetation communities, for example, during drought some native vegetation communities can have rocky ground and open patches, such as soaks, saltpans or bare areas.

If the alternative assessment of NVE calculations demonstrates that the area clearing threshold is exceeded, cease investigations and advise the consent authority of the result.

If the assessment demonstrates that the area clearing threshold has not been exceeded, **go to Step 4**.

Calculating native vegetation extent for groundcover with a mix of exotic and native species

Groundcover in heavily disturbed ecosystems with no native overstory (i.e. derived ecosystems) which is a mix of native and exotic cover may be adjusted in line with the ruleset below for calculating NVE.

Note: this does not apply to vegetation that is consistent with the final determination for a threatened ecological community.

To adjust NVE calculations for partially exotic groundcover in highly disturbed/derived plant communities, apply the following ruleset:

- if there is greater than 75% native groundcover this is adjusted to 100% native
- if there is between 15% and 75% native groundcover the calculation of native vegetation extent is adjusted by multiplying the proportion (%) of native groundcover by the total area to be cleared
- if there is less than 15% native groundcover the area is assessed as nonnative vegetation and is not included in NVE.

The ruleset has been developed based on an analysis of thresholds for offset generation and is designed to avoid *Biodiversity Assessment Method* assessments in degraded areas that fail to generate an offset obligation.

The proportion of exotic to native vegetation cover should be assessed using a robust and repeatable method, such as the quadrat field assessment method provided in Appendix A. The approach used and subsequent adjustment must be well documented with an evidenced-based justification provided in the supporting information submitted with a development application.

Step 4 – Preparing to submit to the consent authority

Where the assessment of NVE calculations demonstrates that the area clearing threshold is not exceeded, submit a report to the consent authority. The report should be short, clear and concise, and document the methods and results of the alternative NVE calculations for the disputed area.

The aim of the report is to assist the consent authority with decision-making. Check that the report includes:

- 1. the original BMAT Tool evaluation report
- 2. the alternative property-scale NVE map for the development/clearing footprint showing all of the areas identified in Step 3 (see example below)
- 3. the alternative total area calculations for NVE proposed to be cleared
- 4. methods used to assess and calculate NVE
- 5. images and photos labelled with location, orientation and date
- 6. field survey results, including, where relevant, results of the assessment of groundcover, including scanned field datasheets and any spatial data generated during the assessment.

Example of property-scale native vegetation extent map

Figure 2 provides an example map showing the information needed to help the consent authority with decision-making. The example shows an area where the BMAT Tool report has identified that the development/clearing exceeds the area clearing threshold.

The example map displays the following features:

- lot boundary and size
- size and location of development footprint
- size and location of areas mapped on the NVACE layer (i.e. NVE)
- size and location of the disputed area under review
- location of the photo points/field surveys.

In the example, the disputed area is highlighted in a hatched pattern. The photo points are clearly marked and are within the disputed area. The area calculations are shown within the image indicating the size of the total development footprint, lot size, the area mapped as native vegetation by the BMAT Tool (i.e. NVACE) and the area being disputed. In this instance, the area being reviewed is 0.17 ha. If the consent authority accepts evidence that the disputed area is not native vegetation, this reduces the area of native vegetation being impacted and puts it below the area clearing threshold.



Figure 2 Example of a property-scale native vegetation extent map

4. Additional guidance and resources

A range of mapping products are available to assist proponents and consent authorities with the review and refinement of property-scale NVE maps.

4.1 Guidance documents

- <u>Biodiversity Offsets Scheme and land management framework: biodiversity</u> <u>assessment and approval pathways for local government [PDF 1MB] (NSW</u> <u>Government 2021)</u>
- <u>When does the Biodiversity Offsets Scheme apply?</u> Department of Planning and Environment webpage
- <u>'Guidance for local government of applying the Biodiversity Offset Scheme</u> <u>threshold'</u> (DPIE 2019)
- <u>'Area clearing threshold technical explanation'</u> (DPIE 2020)
- 'NSW native vegetation area clearing estimate method' (DPE 2023)
- <u>'Biodiversity assessment method'</u> (DPIE 2020).

For information on how to interpret the BMAT Tool evaluation report, please see:

• <u>'Biodiversity Values Map and Threshold Tool user guide: a step-by-step guide to</u> using the Biodiversity Values Map and Threshold Tool' (DPE 2022).

For information about proposed development on Category 1 – exempt land, please see:

- <u>'Determining native vegetation land categorisation for application in the</u> <u>Biodiversity Offsets Scheme</u>' guidance document (DPE 2022)
- Native vegetation regulatory (NVR) map.

For information on reviewing the Biodiversity Values Map, please see:

• <u>Biodiversity Values Map review</u> – Department of Planning and Environment webpage.

4.2 Government web services

4.2.1 Sharing and Enabling Environmental Data (SEED)

The SEED data portal is the NSW Government's central resource for Sharing and Enabling Environmental Data. It was developed for the NSW community in a collaborative effort between government agencies to provide an accessible and reliable platform for environmental data. SEED is a shared resource for environmental data that includes public access to the department's datasets.

The SEED map, a tool found on the SEED webpage, can also be used to perform basic GIS operations such as drawing polygons and calculating areas.

To search for available map data, go to: <u>SEED The Central Resource for Sharing and</u> <u>Enabling Environmental Data in NSW</u> and use the search function to select the relevant local government area for your area, and available file formats if relevant. To filter specifically for vegetation type maps, use 'VIS' or 'SVTM' in the search bar or filter relevant Tags (e.g. vegetation, TEC, Coastal wetlands). Some important layers in SEED are:

- <u>NSW State Vegetation Type Map</u> (DPE 2022)
- <u>Native Vegetation Area Clearing Estimate</u>
- Biodiversity Values Map (DPE 2018 v14.4).

4.2.2 ePlanning Spatial Viewer

The <u>NSW Planning Portal</u> is an initiative of the NSW Government and has been designed to provide public access to a range of planning services and information, including documents or other information in the NSW planning database established under the EP&A Act.

The NSW planning database is an electronic repository of spatial datasets or other maps that are adopted or incorporated by way of reference by environmental planning instruments, plans or other documents or information relating to the administration of the EP&A Act that are required to be published on the NSW Planning Portal by the regulations or by the Secretary of the Department of Planning and Environment.

4.2.3 SIX Maps (Spatial Information Exchange)

<u>SIX Maps</u> (Spatial Information Exchange) is the entry point to view Spatial Services' interactive images and mapping of New South Wales, incorporating a range of spatial and property data.

4.2.4 Threatened species and threatened ecological community profile database

Threatened species and threatened ecological community descriptions can be found using the NSW Government <u>threatened biodiversity profile search</u>. The threatened species or community profile pages provide an overview of the threatened entity and where it is found.

4.2.5 Plant community type database

Plant community types (PCTs) are the finest level in the NSW vegetation classification hierarchy. They identify and describe recurring patterns of native plant species assemblages in relation to environmental conditions (soil, temperature, moisture and other factors). The floristic composition of PCTs is characterised by frequently co-occurring species, including combinations of trees, shrubs and/or groundcover plants.

PCT data can be accessed on the <u>NSW Plant Community Type classification</u> webpage.

4.2.6 Native plant species

A plant is native to New South Wales if it was established in New South Wales before European settlement and is listed on the official database maintained by the <u>Royal</u> <u>Botanic Gardens and Domain Trust</u> and published on their website.

4.3 Aerial imagery

Aerial images are an essential section of the review process. The NSW Government web services listed above all have aerial images as basemaps for their spatial services. The following sources contain some aerial photo repositories for New South Wales:

- **Google Earth** is a unique geo-mapping and tagging program that uses composite imagery to form a comprehensive, interactive map of the Earth
- **Esri World imagery** is the base map provided in the Esri GIS systems such as ArcMap and ArcGIS pro

- **Nearmap Limited** is an Australian aerial imagery technology and location data company that provides frequently updated, high-resolution aerial imagery around major population centres, covering 88% of Australia's population
- **Metro map** is an aerial imagery data providing service, offering high-quality and accurate imagery to a subscriber base. MetroMap, by Aerometrex, provides high-quality and accurate geospatial data and can be used for varied applications across a diverse range of industries.

Legislation

- <u>Biodiversity Conservation Regulation, Part 7</u>: Biodiversity assessment and approvals under Planning Act, including Biodiversity Offsets Scheme thresholds
- Land Management (Native Vegetation) Code 2018
- Local Land Services Act 2013

Appendix A – Method for calculating native vegetation extent in grassland areas that contain a mix of native and exotic species in disturbed plant community types

Groundcover species

The area clearing threshold applies to proposed clearing of native groundcover or partially native groundcover. Native groundcover is any native herbaceous vegetation below 1 m in height when mature (but excluding seasonal taller flowering stems on plants like grasses), including all such species native to New South Wales (i.e. not confined to species indigenous to the area). Use the quadrat field assessment method to determine the proportion of native and exotic species in the groundcover layer of derived plant community types.

Persons undertaking the field assessment are responsible for ensuring the accuracy of their field assessment. Where possible, the assessment of groundcover should be made during the time of year and under seasonal conditions when the extent of native groundcover on the subject land is likely to be at its maximum to achieve a quality assessment.

Adjustments to native vegetation extent for the purpose of the area clearing threshold do not apply to vegetation that is a threatened ecological community. For example, where groundcover that is part of a derived or highly disturbed plant community that meets the definition of a threatened ecological community, it must be included as native vegetation.

Quadrat field assessment method

This method, based on Local Land Services' <u>Assessing native groundcover [PDF 1.8MB]</u>, uses a square frame (quadrat) of 100 × 100 cm.

A quadrat is easily assembled using 4 thin pieces of PVC pipe cut to equal lengths and joined with tight-fitting elbow joints.

The quadrat survey method is as follows:

- 1. Prepare a field sheet like the example below (Figure 3), on which to record your observations.
- 2. Select a representative number of sample patches in the area of groundcover across the area being assessed.
- 3. For each representative sample patch, place the quadrat randomly 10 times.
- 4. For each of the 10 quadrat placements estimate the following:
 - a. percentage of the quadrat that has groundcover (native and non-native plants) and record this in Column A (squares Q1 to Q10). Non-vegetative elements that are typical of the native ecosystem, such as sticks and leaf litter, should be included as native groundcover
 - b. percentage of groundcover in the quadrat that is native (including non-vegetative elements that are typical of the native ecosystem such as sticks and leaf litter), and record this in Column B (squares Q1 to Q10).

5. Estimate percentages as viewed from above, and where non-native vegetation occurs above native vegetation, treat as native vegetation.

	Cover type											
Patch1	Column A % overall groundcover						Column B % Native groundcover					
	Q1	Q2	Q3	Q4	Q5	Total	Q1	Q2	Q3	Q4	Q5	Total
	Q6	Q7	Q8	Q9	Q10	Average	Q6	Q7	Q8	Q9	Q10	Average
Patch 2	Q1	Q2	Q3	Q4	Q5	Total	Q1	Q2	Q3	Q4	Q5	Total
	Q6	Q7	Q8	Q9	Q10	Average	Q6	Q7	Q8	Q9	Q10	Average
Patch 3	Q1	Q2	Q3	Q4	Q5	Total	Q1	Q2	Q3	Q4	Q5	Total
	Q6	Q7	Q8	Q9	Q10	Average	Q6	Q7	Q8	Q9	Q10	Average
Patch 4	Q1	Q2	Q3	Q4	Q5	Total	Q1	Q2	Q3	Q4	Q5	Total
	Q6	Q7	Q8	Q9	Q10	Average	Q6	Q7	Q8	Q9	Q10	Average
Patch 5	Q1	Q2	Q3	Q4	Q5	Total	Q1	Q2	Q3	Q4	Q5	Total
	Q6	Q7	Q8	Q9	Q10	Average	Q6	Q7	Q8	Q9	Q10	Average
	Average across site					Average across site						

Figure 3 Quadrat method field sheet

- 6. For each sample patch and for each column, add squares Q1 to Q10 and divide these totals by 10 to yield the following:
 - a. average percentage of groundcover (native and non-native) across the sample patch (Column A)
 - b. average percentage of native groundcover across the sample patch (Column B).
- 7. For the whole site and for each column, add the averages from all sample patches and divide these totals by the number of sample areas to yield the following:
 - a. average percentage of groundcover (native and non-native) across the entire area
 - b. average percentage of native groundcover across the entire area.

Use the results to revise the calculation of NVE as follows:

- 8. Where there is less than 100% groundcover (from Step 6a), reduce area by proportion not identified as groundcover to derive new area that is vegetated.
- 9. Make adjustments to NVE using the ruleset below relating to the proportion of native groundcover (from Step 6b).

As an example, a 1 ha (10,000 m²) assessment area is measured as having 80% total groundcover (native and non-native, Step 6a). The assessment area is therefore reduced to 0.8 ha (8,000 m²) in accordance with Step 7:

• 1 ha × 80% = 0.8 ha (8,000 m²); or 1 ha – 20% = 0.8 ha (8,000 m²).

In this example the proportion of native groundcover is measured at 45%. Using the ruleset for native groundcover between 15% and 75%, multiply the proportion of native groundcover (45%) by the total area to be cleared (0.8 ha) in accordance with Step 8.

• 0.8 ha × 45% = 0.36 ha (3,600 m²).

In this example, the adjustments to NVE based on the groundcover assessment reduced the area of vegetation to be assessed from 1 ha to 0.36 ha.

NVE adjustment ruleset

To adjust NVE calculations for partially exotic groundcover in highly disturbed/derived plant communities, apply the following ruleset:

- if there is greater than 75% native groundcover this is adjusted to 100% native
- if there is between 15% and 75% native groundcover the calculation of native vegetation extent is adjusted by multiplying the proportion (%) of native groundcover by the total area to be cleared
- if there is less than 15% native groundcover the area is assessed as nonnative vegetation and is not included in NVE.