Te Uru Rākau
Forestry New Zealand

# Resource Management (National Environmental Standards for Plantation Forestry) Regulations 2017

Erosion Susceptibility Classification and Operational Scale Forestry Earthworks Management and Harvest Management Plans Guidance

Purpose: The purpose of this document is to support the National Environmental Standards for Plantation Forestry Erosion Susceptibility Classification, and the requirement for finer scale mapping in Schedule 3 of the regulations.

## 1. Operational Scale Planning

To manage erosion and protect our waterways, plantation forestry activities must be managed for the risk of erosion under the National Environmental Standards for Plantation Forestry (NES-PF). The Erosion Susceptibility Classification (ESC) is used to identify the erosion risk of land as a basis for determining where a plantation forestry activity:

- is permitted, subject to certain conditions being met, or
- requires resource consent on higher-risk land.

The Erosion Susceptibility Classification (ESC) is the initial risk screening step in the management of erosion risk of plantation forestry activities. The ESC has a mapping scale of 1:50,000. This small scale reflects the resolution of the New Zealand Land Resource Inventory (NZLRI). At the 1:50,000 sale – the Minimum Legible Area (MLA) on a paper map is 10 ha, about 6.3 mm x 6.3 mm.

After consulting the ESC, an essential second step in risk assessment to guide decision is detailed planning at an operational scale. Additional site specific information, such as the likely effects of topography, soils, drainage and risks of high intensity rainfall events provide for the ESC outputs to be refined to a larger scale. It is not credible to apply (e.g. simply blow up/expand to a larger scale) the ESC at this scale without interpretation and/or adjustment to the operational management plans scale.

The NES-PF requires Forest Earthwork Management Plans and Harvest Plans be prepared at a mapping scale of not less than 1:10,000, outlined in Schedule 3. This equates the MLA on a paper map to about 0.4 ha.

This more detailed assessment will support operational decisions that manage forest management activity risk to acceptable levels. Where the need for resource consents is identified, the detailed plans will support discussion with the local council consenting authority personnel.

## 2. Field Assessment Required

Translating the 1:50,000 scale ESC outputs to 1:10,000 scale will require field assessment during the operational planning for the proposed forest activity.

The particular contour and landscape features of individual NZLRI Land Use Capability (LUC) units are described in published bulletins and extended legends which are included in the references below.

The NES-PF ESC report provides a list of the NZLRI and LUC units within the forest area, along with identifying the NZLRI legend that applies. The LUC unit descriptions included in the published

bulletins and extended legends then provide a basis for the ESC to be refined to the operational planning scale with appropriate land parcel polygons being fitted to observed contour and landscape features. Polygon boundaries can then be transcribed to the planners base map or aerial photographs. More details on the ESC report are outlined in Section 4.

Note that finer scale mapping at the 1:10,000 scale may already be available for your use. Contact the land management team within your regional authority to find out if this information is available.

## 3. NES-PF Erosion Susceptibility Classification Tool

The ESC can be downloaded in a variety of formats on the MPI Open Data Portal, and can also be viewed as a web-based tool on the NES-PF ESC website.

The web-based tool allows users to access and view the ESC as a spatial layer without uploading the data into geospatial software. The tool operates using ArcGIS Online, and can be used by anyone with an internet connection and Google Chrome web browser.

While the tool and database allows users to readily rescale the ESC report beyond the 1:50,000 standard, any significant enlargement of scale will likely produce an unreliable and misleading output. As a general rule, the underlying NZLRI data should not be enlarged beyond the scale at which it was originally collected.

The ESC tool allows the user to query a land parcel using the New Zealand Primary Parcel identification number or address. Alternatively, users can draw unique property boundaries using the polygon feature. Once the parcel boundaries are identified, the tool produces a customized ESC report featuring the underlying NZLRI Land Use Capability (LUC) Units and their ESC.

Users should exercise caution when using the ESC tool output map and the zoom feature. The scale of the zoom feature can be identified within the *Selection, Reporting and Data Export* widget within the ESC tool.

## 4. References

Guidance on the field mapping process is contained within Section 4 – Mapping of the *Land Use Capability Survey Handbook*, 3rd Edition, which is available at:
www.landcareresearch.co.nz/__data/assets/pdf_file/0017/50048/luc_handbook.pdf

The following documents can be found on the NES-PF ESC website:

- Land Use Capability Classification and Land Resources of the Bay of Plenty – Volcanic Plateau Region (1st edition)
- Land Use Capability Classification Gisborne-East Coast Region (2nd edition)
- Land Use Capability Classification of the Northland Region (2nd edition)
- Land Use Capability Classification of the Taranaki-Manawatu Region (1st edition)
- Land Use Capability Classification of the Northern Hawke's Bay Region (1st edition)
- Land Use Capability Classification of the Southern Hawke's Bay-Wairarapa Region (1st edition)
- Land Use Capability Classification of the Wellington Region (1st edition)
- Land Use Capability Extended Legend – Coromandel Region
- Land Use Capability Extended Legend – Eastern Bay of Plenty Region
- Land Use Capability Extended Legend – Waikato Region
- Additional Notes to Accompany Waikato Region Land Use Capability (M R Jessen, 1992)
- Land Use Capability Classification of the Marlborough Region Bulletin

- Land Use Capability Classification for the South Island
- Land Use Capability Extended Legend – South Island Errata
- Plantation Forestry Erosion Susceptibility Classification Risk Assessment Report for the NES-PF (MPI Technical Paper 2017/47)
- List of mapped LUC units, Legend and their ESC - March 2018[1]

## 5. Frequently Asked Questions (FAQs)

*Q1. What is the ESC?*

A1. The ESC is a screening tool in the management of the erosion risk of plantation forestry activities. The ESC is derived from New Zealand Land Resource Inventory (rock type, soil type, slope, vegetation cover, potential erosion severity type), and its Land Use Capability extended legends.

The ESC tool divides the New Zealand landscape into four colour-coded erosion risk zones. Green (Low) and yellow (Moderate) is land less likely to erode. Orange (High risk) or red (Very High risk) is land more likely to erode.

*Q2. Why is the ESC at a 1:50,000 scale?*

A2. The ESC utilises the best dataset available until finer scale mapping at a national level is available. This small scale reflects the resolution of the underlying NZLRI.

*Q3. Can I use the ESC to reliably determine the 2ha threshold?*

A3. At the 1:50,000 sale – the Minimum Legible Area (MLA) on a paper map is 10ha, about 6.3 mm x 6.3 mm. At no less than 2ha, about 2.8 mm x 2.8 mm on a paper map, the threshold for Permitted Activity conditions applying within the red zone cannot be appropriately determined directly from the published ESC. Field assessment, as described in Section 3 above, is required.

*Q4. I've heard LiDAR can be the solution to finer scale mapping. Is this true?*

A4. LiDAR (Light Detection and Ranging) data, or height data, is precise laser measurements of the Earth's surface that is used for creating highly accurate 3D maps of the land. The Provincial Growth Fund has recently funded the national coverage of LiDAR data, and the outputs can be used to improve the slope element of the ESC.

*Q5. What is the value of using the ESC tool?*

A5. The web-based tool is valuable for users without Geospatial Information System (GIS) software. Users can view the ESC through their Google Chrome browser and an internet connection, and also produce customised reports.

[1] The current version of ESC may, subject to the development of an improved methodology, be replaced by Gazette Notice.

*Q6. I have a complex landscape with compound LUC units, and I believe my red zone is overclassified. What should I do?*

A6. In complex landscapes, it is not always possible to appropriately differentiate individual parcels of land with different erosion risk susceptibility at the 1:50,000 NZLRI mapping scale. In these situations, particular mapping polygons were assigned compound Land Use Capability units. The ESC class assigned to such polygons reflect the Land Use Capability unit with the higher potential erosion severity. For example, a compound unit including NZLRI Bay of Plenty – Volcanic Plateau Legend LUC units 6e7 (ESC Moderate risk) and 8e2 (ESC Very High risk) is classified as ESC Very High risk. A field assessment, conducted at a scale of no less than 1:10,000, would clearly distinguish and identify the plant-able 6e7 areas from the higher erosion risk 8e2 area within the Very High red zone compound unit.

*Q7. Does red zone mean I cannot plant, harvest or re-plant trees?*

A7. Red zone means that you are required to apply for a resource consent with your council before initiating afforestation, earthworks, forestry quarrying, harvesting, mechanical land preparation and/or replanting.

*Q8. Is all Land Use Capability (LUC) class 8e classified as red zone land?*

A8. No, LUC class 8e land ranges across Low, Moderate, High and Very High risk classifications depending on the region. For additional information on LUC Class 8e and their consent conditions, please refer to the "User Guide" on the NES-PF guidance website.

*Q9. What are some of the scenarios that could change to the ESC?*

A9. The underlying LUC unit is incorrect at the 1:50,000 scale;

A new LUC unit is to be documented at the 1:50,000 scale;

The underlying ESC unit is incorrect at the 1:50,000 scale;

A new ESC unit is to be documented at the 1:50,000 scale.