

Map User Notes: *Pinus radiata* Suitability Map

Summary:

The mapping aims to classify land suitable for growing *Pinus radiata* according to four suitability classes: “1.0 Well suited”, “2.0 Suitable”, “3.0 Moderately suitable”, and “4.0 Unsuitable”. These are produced from a set of pre-determined rules in accordance to a suitability matrix (refer to page 2) developed in consultation with industry. They are based on soil and climatic influences on *Pinus radiata* production using data garnered from soil cores and temperature logger records collected from hundreds of site locations across the state (refer to [metadata](#) for more information).

How is suitability determined?

The overall suitability rating is determined using a most-limiting-factor approach, where the lowest rated parameter becomes the overall suitability rating. As an example, a location may possess the following characteristics:

<u>Soil/Climate parameter</u>	<u>Threshold</u>	<u>Rating</u>
Soil depth:	>50cm	(Well suited)
Depth to sodic layer:	>140cm	(Well suited)
pH:	5.5 – 6.5	(Well suited)
Electrical conductivity:	<2	(Well suited)
Drainage:	Poor	(Unsuitable)
Soil texture (Sand %):	35 - 55%	(Well suited)
Exchangeable calcium	>5ppm	(Well suited)
Rainfall:	550 - 650mm	(Suitable)
Frost days:	<50 days	(Well suited)
Overall rating:		4.0 Unsuitable

In this case, the overall suitability is classified as “4.0 Unsuitable” due to ‘Poor (Unsuitable)’ soil drainage therefore limiting suitability due to this classification. Alternatively, if for example, soil drainage were rated ‘Well drained (Well suited)’, the overall rating would then revert to “2.0 Suitable”, due to the Rainfall parameter ‘550 - 650mm (Suitable)’ now limiting the rating to this classification (refer to suitability matrix on page 2 for rule-set). A “1.0 Well suited” rating is achieved if all attributes are rated ‘Well suited’. Note that designated conservation/protection areas as well as existing urbanised/residential zones and major waterbodies were automatically classified as “4.0 Unsuitable”.

Supplementary information for managing soils:

- Soil management website (DPIPWE):
<http://dPIPWE.tas.gov.au/agriculture/land-management-and-soils/soil-management>
- Information for soil management for Tasmanian farmers:
<http://dPIPWE.tas.gov.au/Documents/Soil-Guide.pdf>
- Information for managing Tasmania’s cropping soils:
<http://dPIPWE.tas.gov.au/Documents/Managing-Tasmanias-Cropping-Soils-2000.pdf>

Suitability Rule Matrix – *Pinus radiata*

Rating	Soil depth	Depth to sodic layer	pH (100 – 200cm depth)	Electrical conductivity (EC _{se}) dS/m (100 – 200cm depth)	Soil texture (% sand) (100 – 200cm depth)	Soil drainage	Exchangeable calcium (0 – 15 cm depth)	Frost (annual mean number of T _{min} days <0°C)	Annual mean rainfall
1.0 Well suited	>50cm	>140cm	5.5 – 6.5	<2	35 - 55%	Excessively well drained, Well drained, Moderately well drained	>5ppm	<50 days	>650mm
2.0 Suitable	40 - 50cm	>140cm	5 - 5.5, 6.5 – 7	2 – 2.5	30 – 35%, 55 – 65%	Imperfect	4 – 5ppm	50 – 60 days	550 – 650mm
3.0 Moderately suitable	40 - 50cm	80-140cm	4 – 5, 7 - 8	2.5 - 3	20 – 30%, 65 – 70%	Imperfect	4 – 5ppm	50 – 60 days	450 – 550mm
4.0 Unsuitable	<40cm	<80cm	<4, >8	>3	<20%, >70%	Poor, very poorly drained	<4ppm	>60 days	<450mm

Definitions of Suitability Classes (in relation to the suitability matrix)

1.0 Well suited: Land having no significant soil or climatic limitations to sustained production where risk of significant crop loss due to adverse conditions are unlikely.

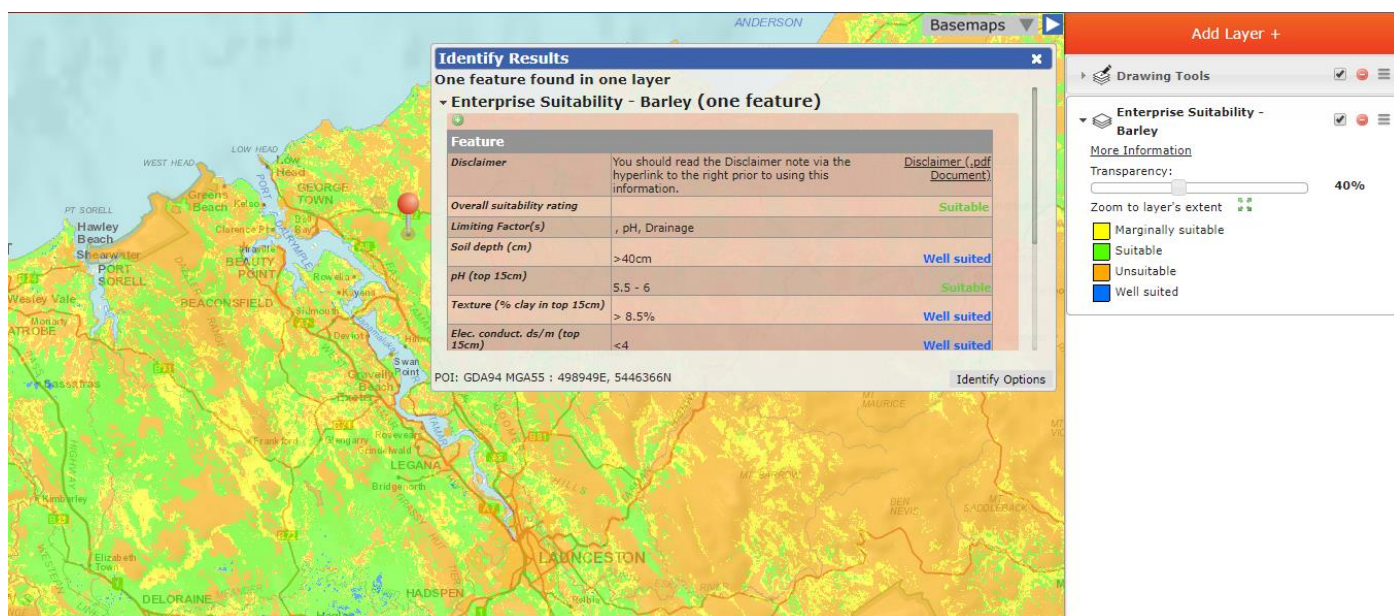
2.0 Suitable: Land having only minor soil or climatic limitations that will not significantly reduce productivity where any risk of crop loss is possible, but inherently low.

3.0 Moderately suitable: Land having soil or climatic limitations that is likely to impact on sustained productivity where risk of significant crop loss is possible in some years.

4.0 Unsuitable: Land having soil and climatic limitations that are too severe for sustained production and will so reduce benefits, or increase required inputs, that this expenditure may not justify. Risk of crop loss is high.

LISTmap instructions

The *Pinus radiata* suitability map is a digital layer that can be manually interrogated within [LISTmap](#). Any location can be enquired within Tasmania to provide location specific parameters pertaining to *Pinus radiata* suitability. To interrogate a location, simply click on any location whilst the *Pinus radiata* suitability layer is active in the table of contents panel and a window will appear listing important attributes. An example is given below:



The window provides information such as the “Overall Suitability Rating” as well as other useful information including:

- ‘Constraints’ - provides a list of attributes that limits a classification to a particular suitability rating;

In addition, information pertaining to each soil and climate attribute (according to the classifications provided in the suitability matrix on page 2) are also provided and appear below the overall suitability rating and constraint fields (as shown in the example above). This allows users to ‘drill down’ and view site-specific information regarding soil and climate requirements that relate to *Pinus radiata* production for any point of interest in Tasmania.

Vulnerable soils

Listed within the suitability layer (below the individual soil/climate fields) are ratings pertaining to soil vulnerability hazards including:

- Sodicity (ratings of high, moderate, low, nil);
- Salinity (ratings of high, moderate, low, nil);
- Water Erosion (ratings of extreme, very high, high, moderate, low, very low, nil);
- Water Logging (ratings of extreme, very high, high, moderate, low, very low, nil); and
- Wind Erosion (ratings of high, moderate, low, nil).

Information in regards to managing vulnerable soils can be obtained here:

http://nrmdatlibrary.dpiw.tas.gov.au/FactSheets/WfW/ListMapUserNotes/Vulnerable_soils.pdf

Note that vulnerable soils categories are complementary material to the mapping and does not contribute to the “Overall Suitability Rating”.

Flood risk

Also listed within the suitability layer are categories relating to risk of flood inundation, as provided by flood plain layer within the LIST Hydrography dataset (http://listdata.thelist.tas.gov.au/public/LIST_Hydrographic_Information.pdf).

Ratings of ‘High’, ‘Moderate’ or ‘Nil’ are listed that correspond to ‘Severe’, ‘Moderate’ or ‘Nil’ flooding potential.

Note that flood risk categories are complementary material to the mapping and does not contribute to the “Overall Suitability Rating”.

Additional Information

For information about using LISTmap, please consult the help document:

<http://listdata.thelist.tas.gov.au/public/outgoing/sif/listmaphelp.pdf>

For technical information relating to the dataset, please consult the [metadata](#).

For information relating to irrigation investment, please consult the Investing in Irrigation web-portal:

<http://dpipwe.tas.gov.au/agriculture/investing-in-irrigation>

Contact

Land Management Enquiries

171 Westbury Road

PROSPECT TAS 7250

Phone: 03 6777 2227, Email: LandManagement.Enquiries@dpipwe.tas.gov.au

Caution and Disclaimer

The information and material in LISTmap (including the enterprise suitability map layer for *Eucalyptus globulus* and accompanying soil and climate input datasets, i.e. “material”) is based on computer modelling of the potential suitability of *Eucalyptus globulus* to a given area and, as such, there are inherent uncertainties in the results. While every effort has been made to ensure the material is accurate, the Crown in Right of Tasmania (“Crown”) provide no warranty, guarantee or representation that the material is accurate, complete, up to date, non-infringing or fit for a particular purpose. Furthermore, the Crown expressly disclaim all and any legal liability and responsibility whatsoever arising from or connected with: (a) the accuracy, reliability, validity, currency or completeness of the material; (b) the consequences of anything done or omitted to be done by any person, either in whole or in part, in reliance of the material. The material does not take into account personal circumstances. The material is made available on the understanding that the Crown are not providing professional advice and that users of this material should undertake site-specific investigations and research and obtain appropriate professional advice relevant to their particular circumstances. The relevant maps that form part of the material have been prepared at 1:50,000 scale (landscape level). These maps consider only soil and climate constraints and do not take into account other parameters or any legislative, regulatory and/or policy requirements of Federal, State or Local Governments that apply to the land in question and/or which could affect the proposed land use or agricultural enterprise.