

Prescriptions and guidelines for sustainable harvest of plantations on west coast dunesands

Earth Sciences Guidelines provide information for Forest Practices Officers on soil, water and geoscience issues in production forests. These guidelines are advisory and should be read in conjunction with the requirements of the Forest Practices Code.

BACKGROUND

Planning for harvest of pine plantations on dunesands north of Strahan began in the mid-2000s. The dunesands under plantations have well-developed topsoils and are classified as having high erodibility because of loose sands in subsoils (B and C horizons). To the west the actively eroding Henty dunes have very high erodibility, but these dunes do not support commercial plantations.

The plantations were established before the first edition of the Forest Practices Code in 1987 and consequently were planted over all slope classes and on some slopes exceeding 30°, and up to the banks of streams including those of the major river draining the east of the area, the Fabritong Rivulet (Class 1). Harvest is complicated by the fact that many dunes faces are steep (over 20°) and some reach angles of 30° or more. The combination of very steep slopes, plantings in riparian zones, high erodibility and difficult access for machines including cable harvest machinery means that significant areas fall outside normal Code provisions and must technically be harvested under the salvage provisions of the 2015 Code.

In the first edition of these guidelines published in 2010 (substantially the same as Version 1.0 published on the FPA website in 2015) a cautious approach was taken because of the perceived risk of wind erosion of exposed subsoils and of landsliding into streams, especially into the Fabritong Rivulet, which has long very steep (>26°) slopes where it abuts plantations on its western (left) bank. Since the development of the guidelines, harvest of large areas has shown that actual erosion occurring after harvest is minimal. The stability of the high erodibility soils after plantation harvest can be attributed to the combination of well-developed topsoils, high rainfall, rapid growth of bracken after pine removal and vigorous spread of shrubs and pine wildings in most places. In view this evidence of land stability, some prescriptions in the original Strahan Guidelines have been relaxed¹.

These revised guidelines were developed after a meeting with Forestry Tasmania and Timberlands Pacific staff in the plantations on 20 December 2016. For most coupes subject to FPPs inclusion of the provisions specified in these guidelines will mean that an application for permission to salvage harvest is not required. However permission for salvage harvest is still required in some situations, and these are specified. Where the guidelines appear to be impracticable to implement the Chief Forest Practices Officer or the Manager, Earth Sciences and Cultural Heritage should be consulted.

¹ Recommendations will be made to incorporate new prescriptions into a revised Code to cover the apparently unique situation at Strahan of stable sandy soils on steep and very steep slopes under high annual rainfall, and to remove the necessity to consider all harvest on very steep slopes as salvage operations.

GUIDELINES

Active dune fronts

- A 50 m reserve of unharvested pines will be applied, measured from the leading edge of active dunes (Henty dunes) on the western boundary of plantations.

Identification of Linear swales / Drainage Depressions / Class 4 streams

- Linear swales will be defined as Class 4 streams if they have clear evidence of flowing water in the form of a channel and topsoils are not continuous across the lowest part of the swale.
- Linear swales will be defined as drainage depressions if (1) they have a significant change of vegetation with respect to surrounding areas, e.g. tree ferns, blackwoods, tea tree, sedges; and (2) topsoils are continuous across the lowest part of the swale.
- Linear swales that do not meet the above definitions of Class 4 streams or drainage depressions do not require special prescriptions (but see prescriptions for roads and snig tracks).

Harvesting on land 0-19° and short steeper slopes

- Excavator-type harvesting machines are preferred.
- Machines will not proceed up or down slope beyond points where the surface of the ground breaks and pale subsoil sands are exposed.
- Feller-bunchers may be used outside the slope limits (0–19°) for ground-based harvest on high erodibility sandy soils (Code Table 5) provided significant areas of pale sand are not exposed and machines do not slew in their tracks. Self-levelling feller bunchers (with more control on their weight distribution) should be used in preference to non-levelling machines.



Self-levelling feller-buncher being used on a short slope of 32°.

- If pale sandy subsoils are exposed for 10 m or more, harvesting slash will be spread across the exposed sands.
- Harvesting adjacent to streams and drainage depressions will be conducted only when ground conditions are dry or moist and not saturated.

Harvesting on steep land >19°

- Routine sidecutting to access steep areas should be avoided.
- Steep areas >19° that cannot be harvested by ground-based machinery without extensive soil disturbance should be harvested by cable methods.
- FPPs for these areas will require approval by the CFPO and should be forwarded in the first instance to the Manager, Earth Sciences and Cultural Heritage.

- FPP maps should show details of planned roads and access, landing locations, and positions of tailholds in relation to streams and any other vulnerable features.



*Cable operations
on steep sand dunes*

Landings

- Flattening of dunes to create landings should be avoided where possible.
- Landings should be located on well-drained areas such as low-angle dunes; landings should generally be corded or matted to prevent excessive soil mixing.
- Landings (including continuous roadside landings and stockpiles) should be constructed following the prescriptions of the Code (pp. 41–43).
- Stockpile topsoil for respreading over the landing area after harvest.
- After harvest and processing landings will be left in a tidy state suitable for revegetation. FPPs will specify the restoration measures required for landings, e.g. heaping and/or burning of woody debris, stacking of unsaleable logs, recontouring, respreading of stockpiled topsoil, and ripping or ‘fluffing’ of the surface layer to promote revegetation.



*After harvest waste logs and
debris on landings should be
stacked or heaped and the
landings left in a state suitable
for revegetation.*

Forwarding

- Forwarding should be used in preference to snagging.
- Sidecutting should be minimised; generally sidecuts should be no higher than 1 m.
- The location of forwarder tracks should be planned in advance and their number minimised.
- Forwarder tracks should be matted with pine slash if white sandy subsoils are exposed over distances exceeding 10 m or if (in the opinion of the supervisor or an FPO) unacceptable mixing or rutting of soils is occurring or there is a risk of active wind erosion.
- Major forwarding tracks crossing wet areas should be corded. Cording may be left in place when operations cease.



Cording across a wet low-lying area on a major forwarding track

- Forwarding should not occur along drainage depressions: tracks should be 5 m away from them. Where possible linear swales will be avoided, but where they need to be used for forwarding, matting or cording will be used.
- Excess pine slash will be redistributed back over the harvested area along forwarder tracks, and where possible, over the greater area of the plantation, to ensure minimal exposure of sandy soils, and return of nutrients to the coupe.
- At the end of operations sidecuts will be covered with slash.

Class 4 Stream and Drainage Depression Management

- Normal Code provisions and the Class 4 Guidelines apply.
- Drainage depressions should have 5 m MEZs. If access by alternative routes is not possible, access along or within 5 m of drainage depressions may be approved by the FPO or a delegated supervisor, provided that the drainage depression is used only in dry or moist conditions and the track is matted or corded before use.
- Where possible native vegetation will be protected during machine harvest near streams and lake edges.
- Hand-felling will be used to harvest trees beyond the reach of feller bunchers around swamps. Where hand-felling is not practical, application will be made to the CFPO (via the Manager, Earth Sciences and Cultural Heritage) to use machines under the salvage provisions of the Code.

Class 1 stream (Fabritong Rivulet)

(Salvage provisions, assuming revegetation with native species after harvest)

- All FPPs dealing with cable harvest across the Fabritong Rivulet should be submitted to the CFPO (via the manager, Earth Sciences and Cultural Heritage) for approval.
- Downhill harvest across the Fabritong Rivulet is permitted.
- Where possible native vegetation will be protected during harvest
- Cable yarders should be located on the east side of Lakes Road in harvested cleared enclaves.
- Log stockpiles may be located on the west side of Lakes Road, between the road and the Fabritong Rivulet, but will be located at least 5 m from any stream and should avoid drainage depressions.
- Fine woody debris should be stockpiled at least 5 m from any stream at locations where it can be safely burnt.
- Harvested logs and significant accumulations of debris lodged in the Fabritong Rivulet should be removed, either using grapples suspended from cables, or excavators.
- Landings and stockpile sites will be restored as specified under the heading 'Landings' above. Unsaleable wood will be stacked at least 10 m from any stream.



*Successful native
revegetation on steep
slopes overlooking the
Fabritong Rivulet, 20
August 2014.*

- All slopes harvested by cabling across the Fabritong Rivulet will be revegetated with native species, preferably sourced from the Strahan area, or the nearest practical source. Revegetation should be achieved either by hand planting, or (if there is sufficient mineral soil exposure) by aerial seeding as soon as possible after harvest while bare mineral soil patches still remain. The final native tree density should be at least 100 stems/ha. Stem survival will be monitored and supplementary planting will be done if the 100 stems/ha target is not achieved.
- The flat to undulating land on the eastern side of the Fabritong Rivulet, between Lakes Road and the Rivulet, will be replanted in native species with the aim of achieving a final native tree density of at least 100 stems/ha. Stem survival will be monitored and supplementary planting will be done if the 100 stems/ha target is not achieved.
- Removal of wilding pines in the 0–20 m riparian zone next to the Fabritong Rivulet should be considered.
- Areas subject to salvage harvest, i.e. all slopes requiring cable harvest across the Fabritong Rivulet and land between Lakes Road and the Fabritong Rivulet, will be excluded from future plantation harvest.

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Version control

Version	Date	Author(s)	Summary of changes
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2.0	25 January 2017	PD McIntosh	Minor changes: Several provisions relaxed after field visit and consultation with Timberlands and FT staff on site 20 December 2016
2.1	21 Sept 2017	PD McIntosh	Editing to take account of peer review (Simon McNamara and Gareth Tempest) comments and to improve readability

Stages required for release outside FPA

Category of advice (A1, A2, B1, B2, B3 or C): <i>(Refer to document release protocol in 2013/17049)</i>		
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