

5 Forests in upland hill and plateau landscapes

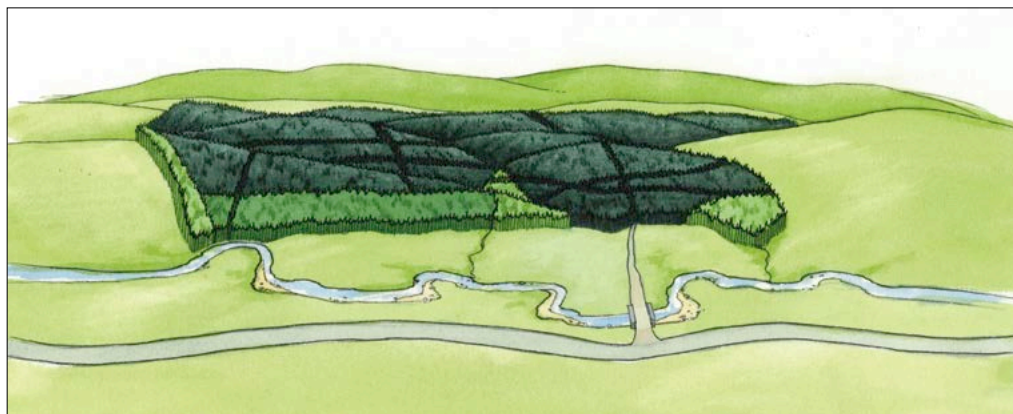
5.1 A large-scale conifer forest on a high windthrow plateau

This example is typical of many in parts of the West Country, Wales, northern England, southern Scotland, the Antrim Plateau and elsewhere. The poor soils, high windthrow risk, early terminal heights, lack of any but geometric windfirm edges and limited views mean that a different approach has to be adopted in developing a stable and diverse structure for the future forest. The objectives focus on timber production and the restructuring of the forest away from even-aged monoculture. Biodiversity enhancement focuses on watercourses and larger unplanted areas within or outside the forest, with links between them being important. Landscape quality tends to be focused on the more prominent edge sections which drop down the sides of the hills. Recreation can be locally important so internal views also matter in places, especially the valleys.

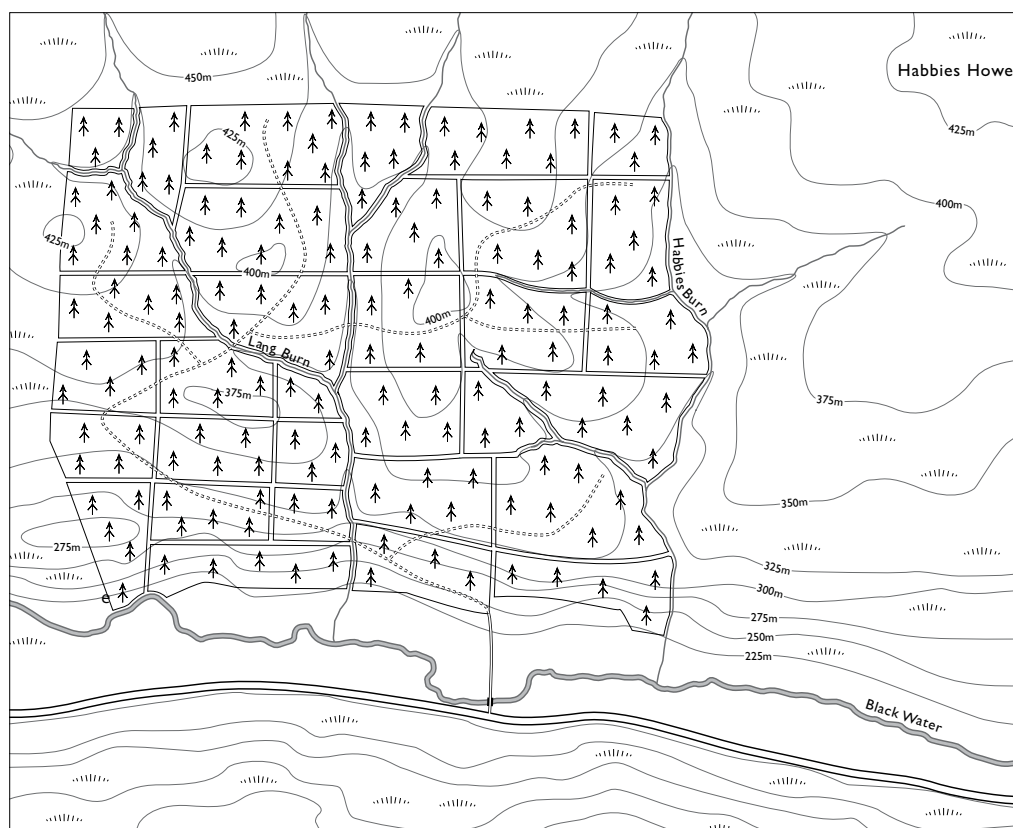
Objectives

Resource	Objective	Indicator of objective being met
Timber	To produce as much timber as is economically possible	Productive species occupy ground that is both fertile for tree growth and accessible for harvesting
Financial	To maximise net present value (NPV)	Forest is felled as close to max. NPV as possible New areas of open space and tree species of low commercial value are kept to a minimum
Landscape	To enhance the visually sensitive parts of the forest	Species diversity is concentrated in visually sensitive parts of the forest Intrusive boundaries are eradicated where they appear in views
Biodiversity	To enhance the biodiversity value of the forest in the context of low sensitivity	Open ground to be increased and connected to unplanted areas outside the forest Broadleaves will be planted Some age class variation will be introduced
Historic environment	To protect sites of archaeological value	Known sites to be kept open and managed as open space
Public access and recreation	To maintain the right of way	Right of way to be kept open and managed to enhance user experience
Water	To enhance water quality	Streams to be opened up Wetlands to be restored Riparian woodland to be established

Base – perspective



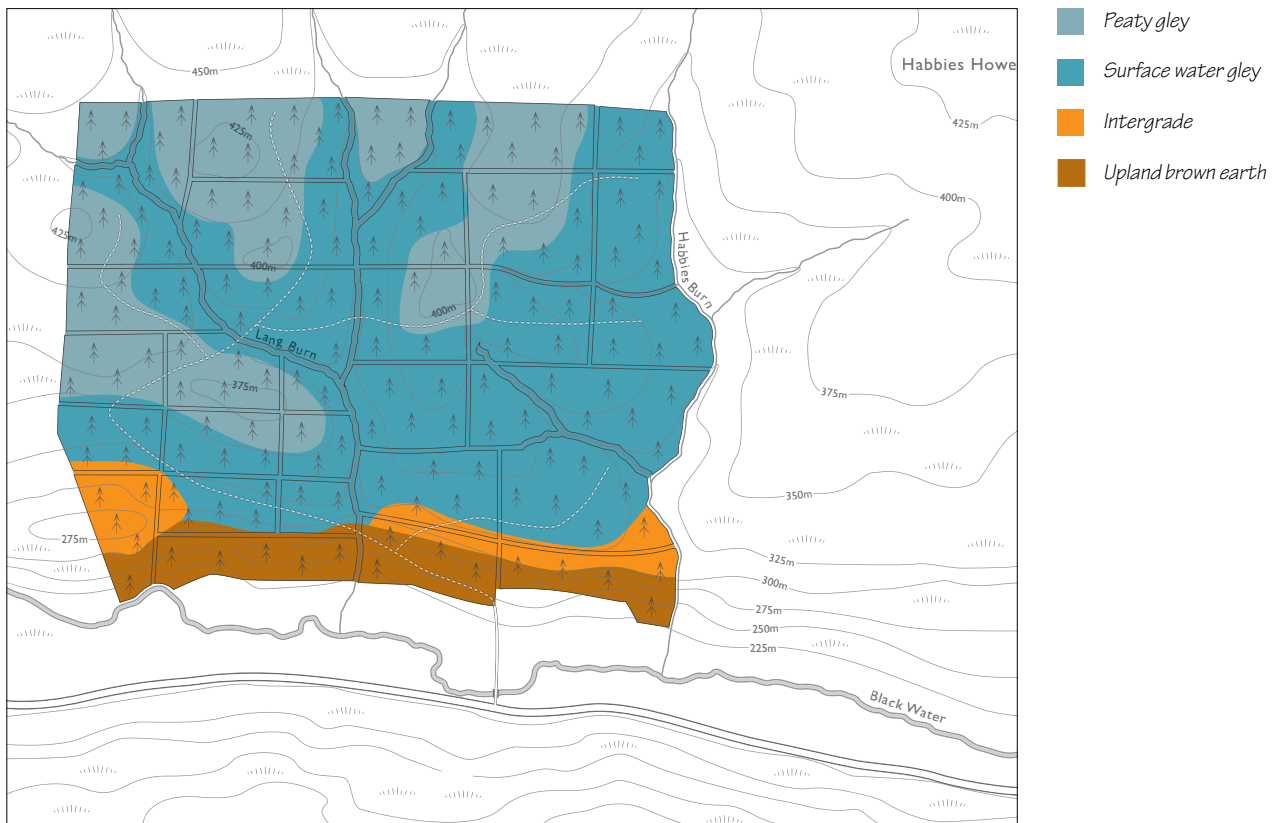
Base – plan



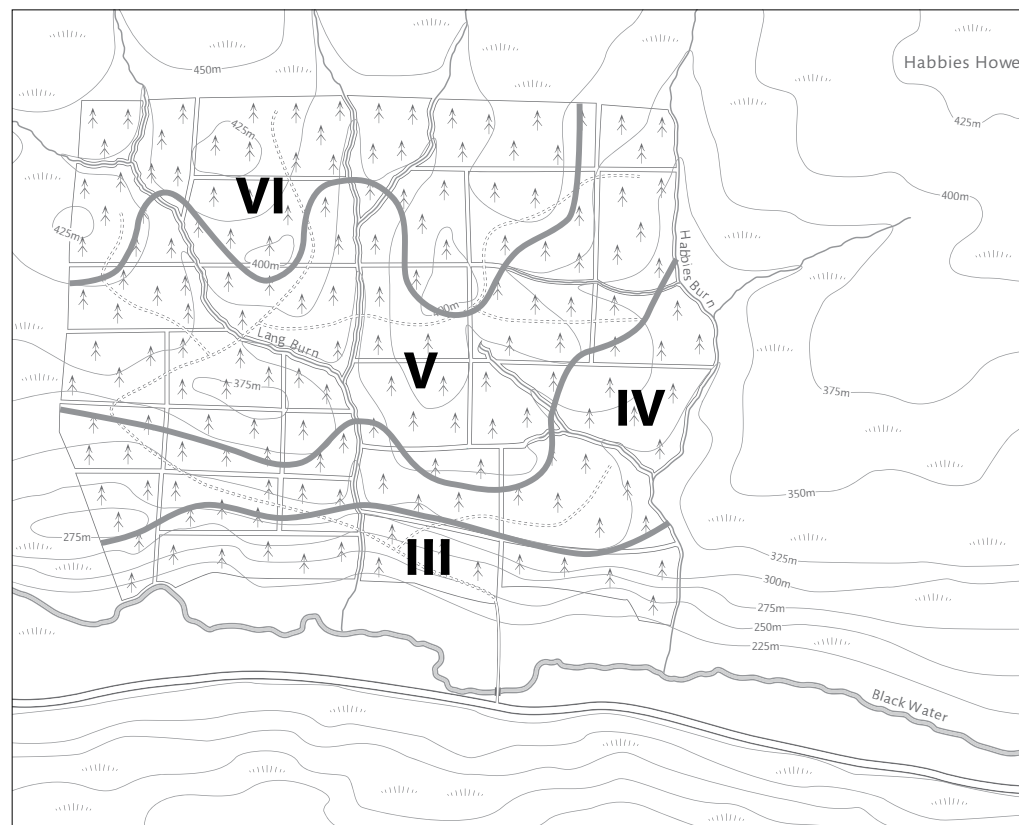
Access, historic environment and landscape context



Soils

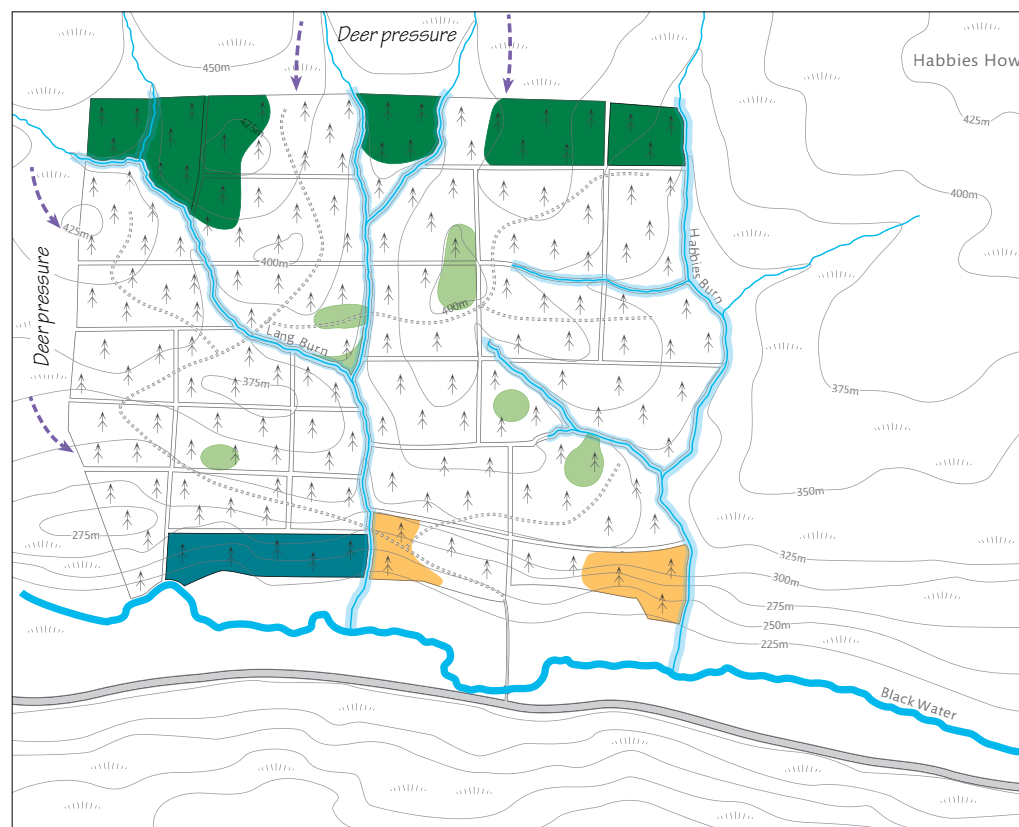


Windthrow hazard classification

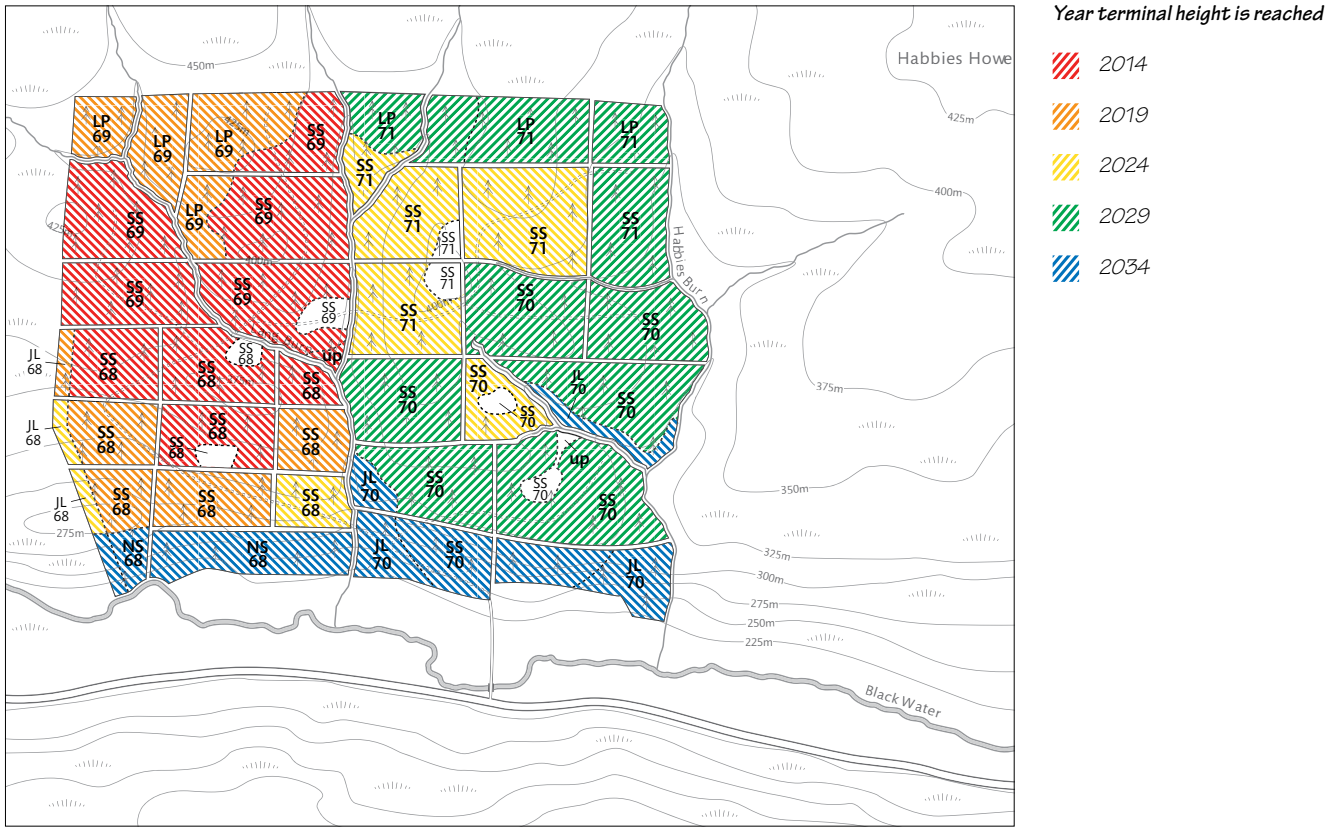


Water and ecology

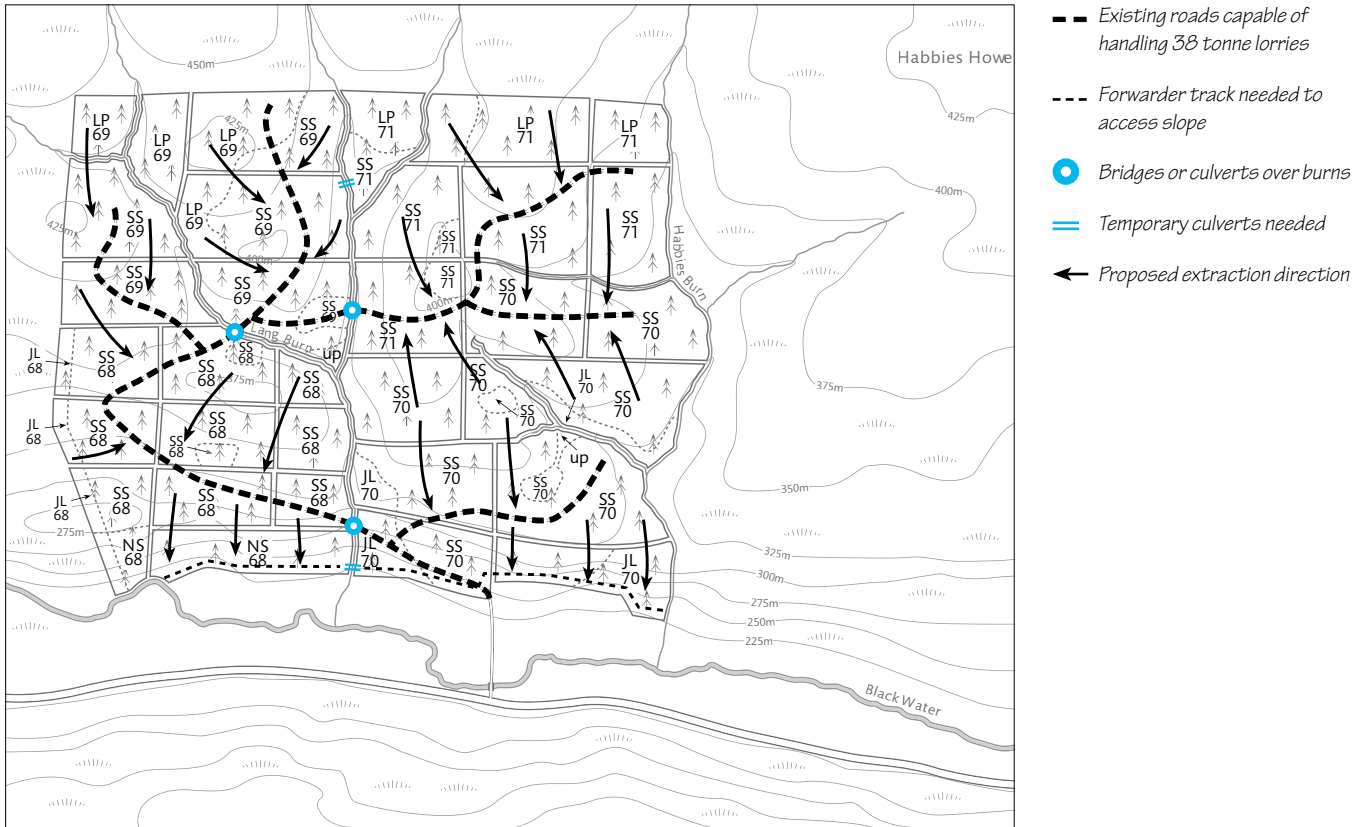
- River valleys with some shelter and local places where broadleaves might grow
- Areas with windblown or checked trees – potential for open space. Semi-natural vegetation persists
- Larch areas: potential retention
- Norway spruce: potential retention and red squirrel habitat
- Lodgepole pine on windthrow hazard class VI: potential to create open-ground habitat



Stock map and economic felling ages



Roads and harvesting



The survey builds up a series of layers with a concentration on soil, windthrow and other practical aspects. This is reflected in the constraints and opportunities analysis.

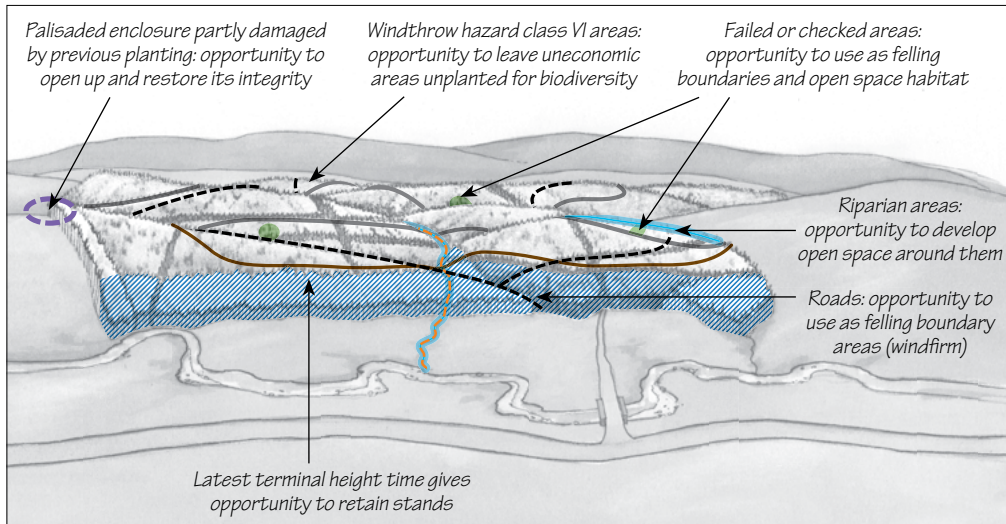
Constraints and opportunities analysis

Factor	Constraint	Opportunity
Windthrow risk	Terminal heights are close to each other and occur relatively soon Felling boundaries will have to follow windfirm edges which may be geometric Age class separation cannot meet 2 m difference in 1st rotation	Areas with later terminal heights give a chance to hold on to some stands New, more landform related windfirm edges can be planned at restocking To achieve as much age class separation as possible and prepare the ground for the next rotation
Age class	The forest is all of a similar age	To increase age variation at restocking
Species	Very little species diversity Poor soil limits ranges of species possible	To introduce broadleaves and larch where sites and soils are suitable
Historic environment	Some sites are hidden or partly covered by trees	To open them up and maintain and manage their open space
Habitats	Very limited habitats of value in the forest	To create new open habitat in preference to tree species diversity

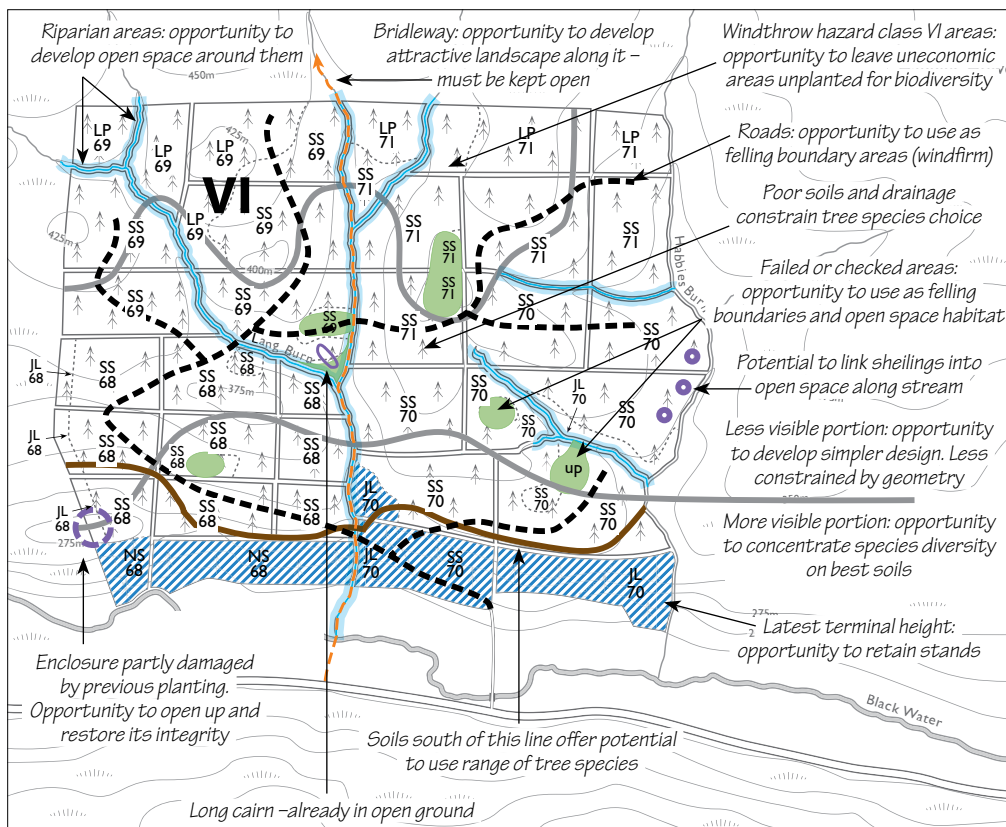
The landscape character analysis is mainly important in the sections of the forest which are visible and sensitive from external views – much of the area on the plateau is not visible. The geometric ride pattern is a specific feature which could remain a problem if the coupe pattern has to be defined by green edges.

The concept recognises that in such a constrained area there is limited scope for radical change. The design needs to consider the future layout of the forest before developing a felling plan to fit, given the major constraint of felling to green edges. The concept envisages the use of open space to develop a more organically shaped forest. This would be used especially along the streams and also in the areas where high windthrow hazard class and very poor soils suggest replanting is uneconomic. This framework maximises the planting of productive spruce while other species, such as broadleaves and larch, are used in minimal quantities but strategically where they will have the best effect.

Constraints and opportunities – perspective

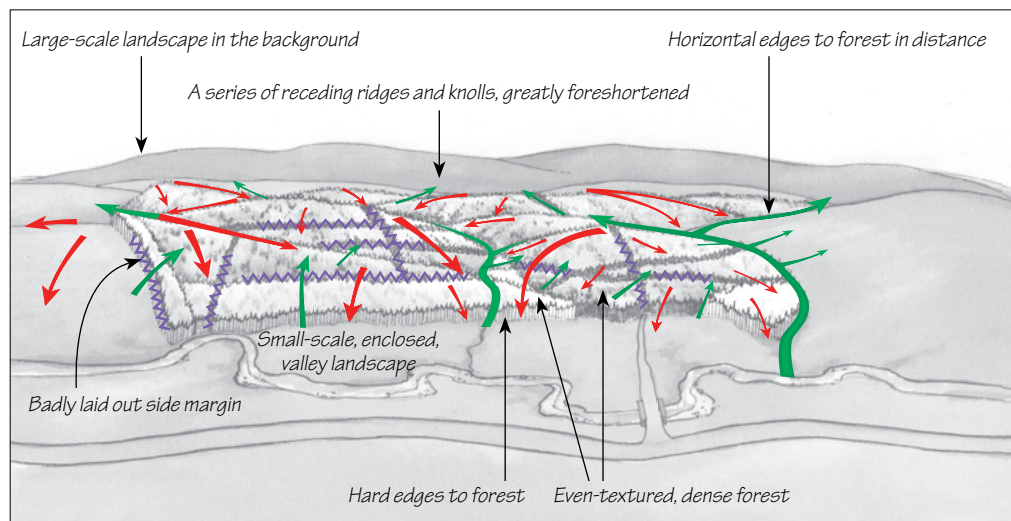


Constraints and opportunities – plan



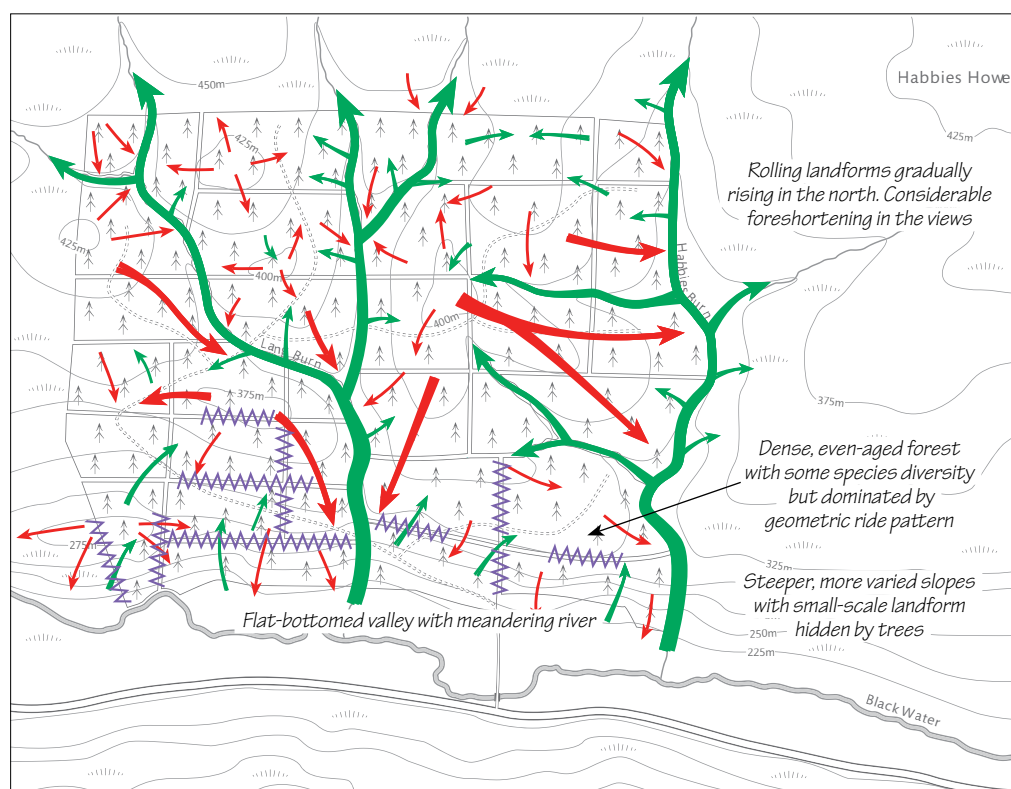
Landscape character analysis – perspective

- ➔ Visual forces running down ridges and spurs
- ➔ Visual forces running up valleys and gullies
- ⚡ Intrusive boundaries cut across landscape



Forest lies in and on a series of landforms but is not tied to the landscape

Landscape character analysis – plan

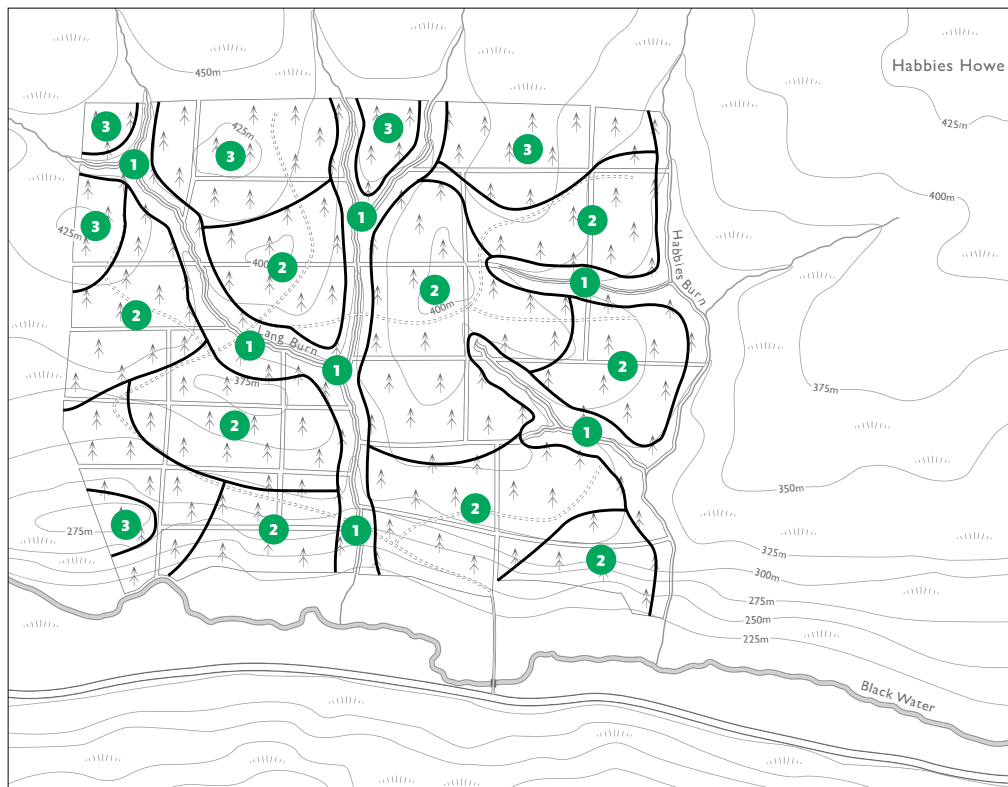


Minimum harvestable units



— Boundaries based on windfirm edges, forest roads, open spaces, checked areas and species changes where stability varies between species as shown by differences in terminal height

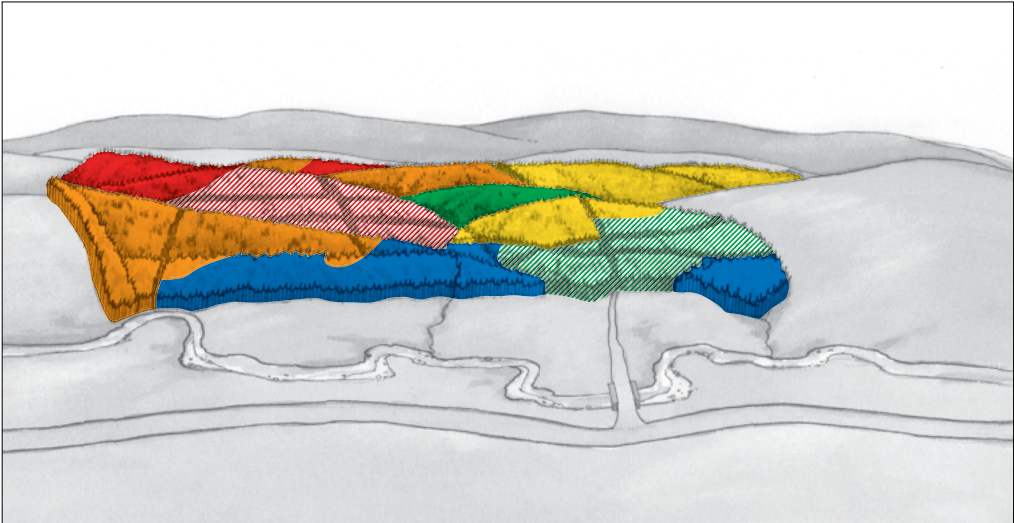
Design strategy



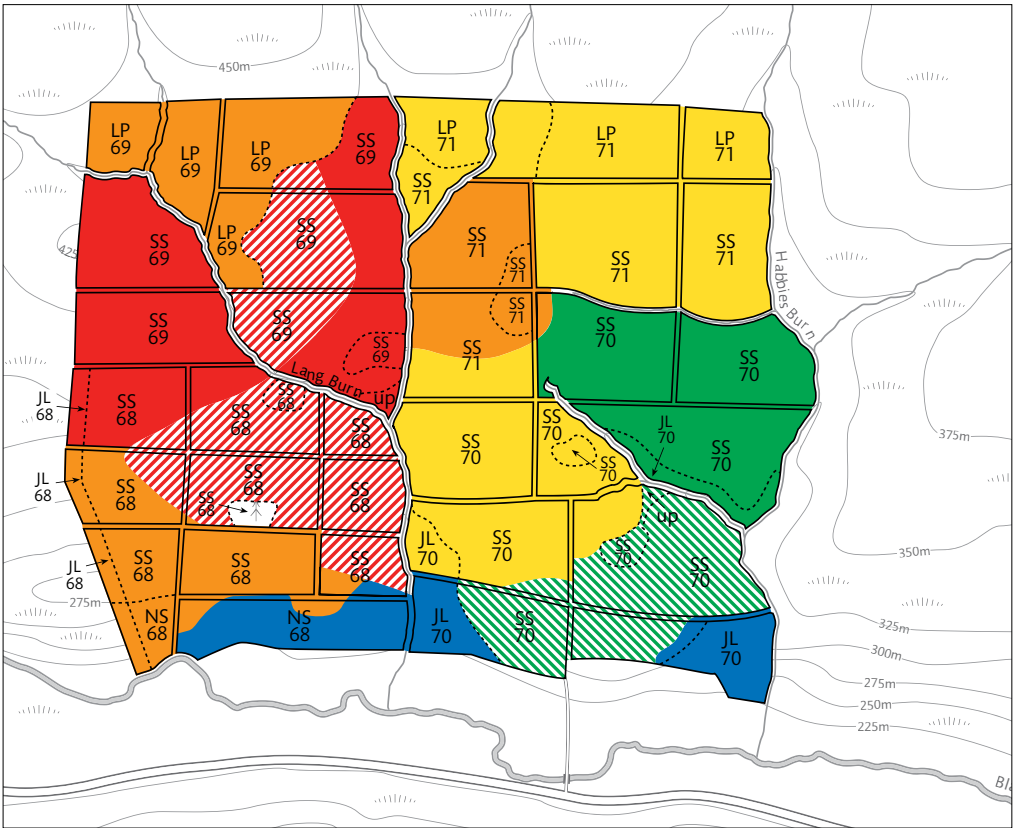
- 1 Develop open space and broadleaves using watercourses and deep valleys as guides
- 2 Break up the forest based on landform, e.g. each knoll is the unit for a coupe
- 3 Leave the highest elevation, poorest soils and most exposed parts open at restocking

Felling design – perspective

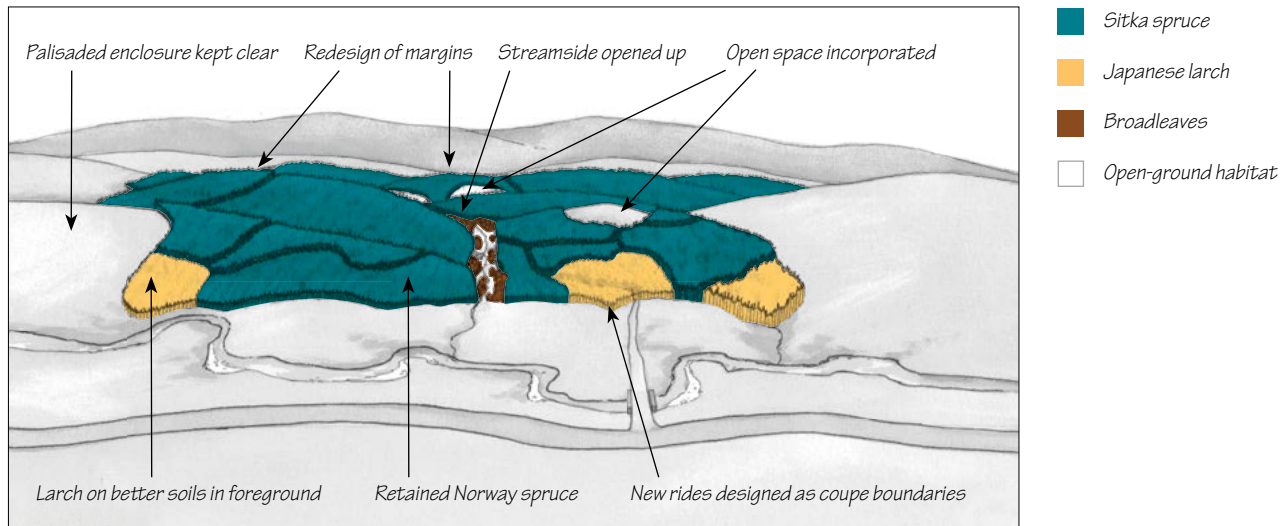
- 2011
- 2014
- 2019
- 2024
- 2026
- 2029
- 2034



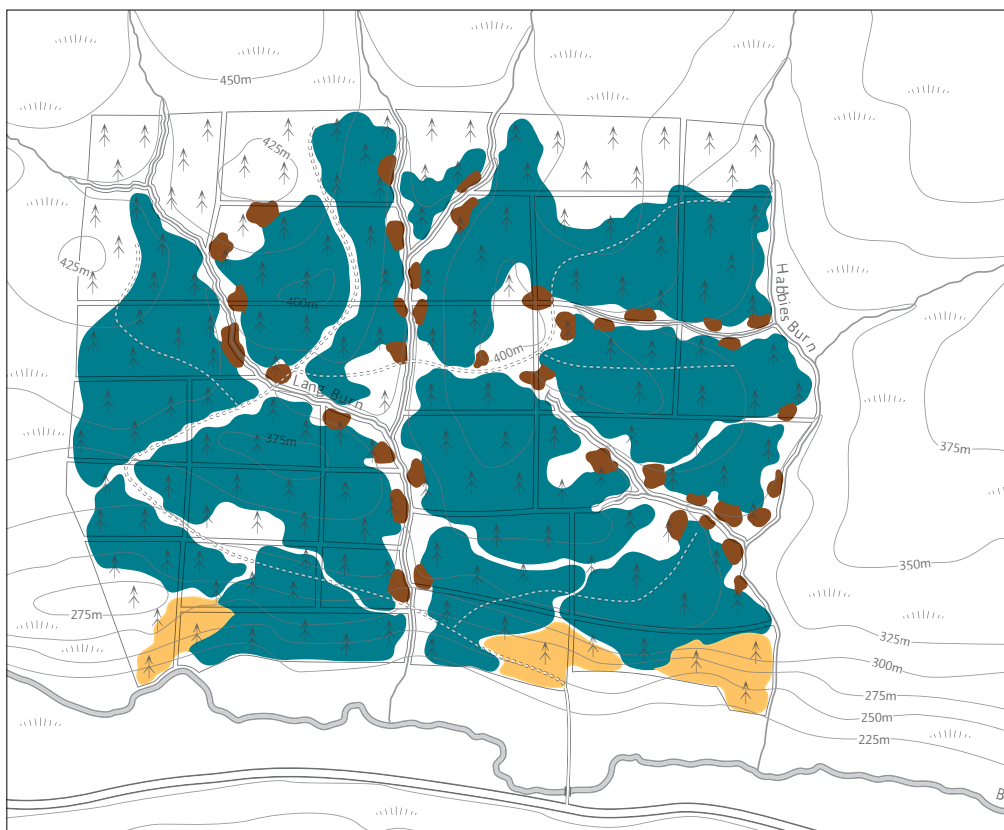
Felling design – plan



Restocking - perspective

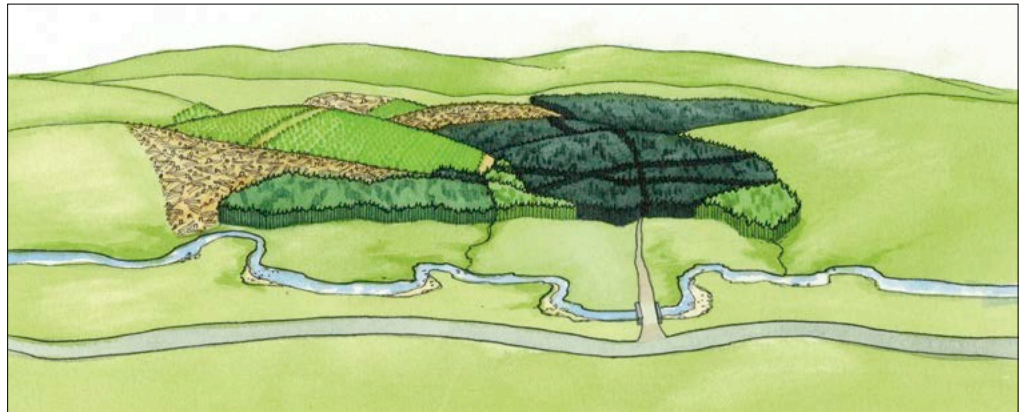


Restocking - plan



Sketch design – projection (Phase 2)

The first felling has been replanted and the second phase felled. The remainder of the forest is intact.



Sketch design – projection (10 years after the final coupe has been felled)

