User Guidance for entry of forecasting data

Introduction

The data in this spreadsheet will be used to produce a 10-year production forecast for the area of interest.

In its simplest terms, a forecast is an estimate of the potential volume arising from thinning and felling interventions in an area given knowledge of the current stand structure and management (both previous and future intent) of the stand. The growth of the stand is projected using yield models. In general, the more detailed the description of the stand and the more the management reflects the likely actions, the more realistic the forecast is. It will never be an exact schedule of production for a stand or coupe, as the projection of growth is based on yield models, and is not a substitute for direct pre-production measurement such as tariffing etc.

In this data collection process, we have tried to minimise the data requirements whilst still allowing for a meaningful forecast. Forecast outputs are shown in Appendix 1.

Production Forecast Spreadsheet

The Production Forecast Spreadsheet contains two worksheets – a Data Input worksheet and a Species Info worksheet. If you cannot see both worksheets, click the resize button to maximise the spreadsheet and allow it to "fit" to your screen size.

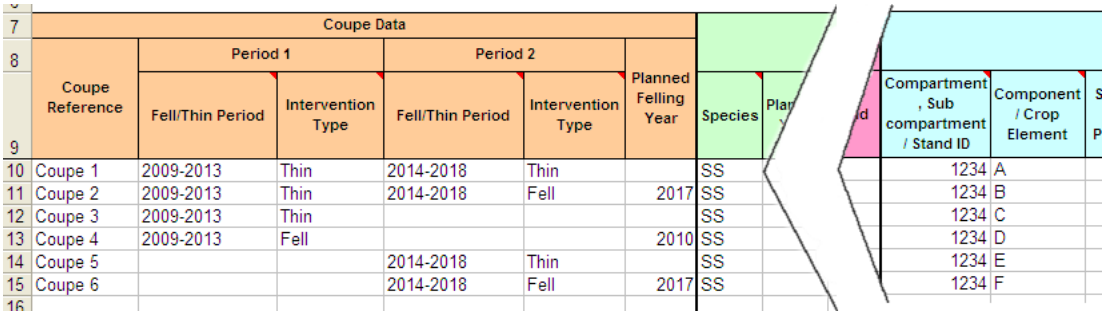
Details of the **stand structure**, the **thinning**, **felling** and **replanting** should be entered in the *Data Input* worksheet. The *Species Info* worksheet shows the list of species available and the corresponding codes.

If you click on the column heading you will see details of the data for that column. Where possible, we have used drop-down lists to speed up entering the data. A full description of each field is given in this guidance document.

What stands to include

The stands included in the spreadsheet may not be the entire area covered by the forest plan. Only those stands where there is a planned thinning, felling or restocking management action during the next 10 years (i.e. the approval period of the forest plan) should be included.

The spreadsheet is organised to allow you to enter the details for a stand (or group of "identical" stands) on each line along with the management actions in each of the felling plan periods. For each stand, there are various combinations of management actions as shown in the table below:



	Coupe Data									
	Coupe Reference	Period 1		Period 2		Planned Felling Year	Species	Plan	Compartment, Sub compartment / Stand ID	Component / Crop Element
		Fell/Thin Period	Intervention Type	Fell/Thin Period	Intervention Type					
10	Coupe 1	2009-2013	Thin	2014-2018	Thin		SS		1234	A
11	Coupe 2	2009-2013	Thin	2014-2018	Fell	2017	SS		1234	B
12	Coupe 3	2009-2013	Thin				SS		1234	C
13	Coupe 4	2009-2013	Fell			2010	SS		1234	D
14	Coupe 5			2014-2018	Thin		SS		1234	E
15	Coupe 6			2014-2018	Fell	2017	SS		1234	F

Note that the "blanks" represent no management action. So, for instance, in Coupe 5, the forecast will assume that there is no thinning in the period 2009-2013.

The spreadsheet will cover two consecutive 5-year periods from the date of the plan.

What data are recorded

- Coupe Data – the timing and type of the management action;
- Stand Data – a description of the current stand;
- Restructuring Areas – a description of how the stand will be restocked;
- Optional Stand Data – an optional set of stand assessments that will help improve the accuracy of the forecast.

Coupe data

The data in this section describe the timing and type of management intervention. The data are described in the following table.

Field	Units	Range	Details
Coupe reference	Numbers or letters e.g. Coupe1 or 123456.	The forecast will use the first 6 characters only if the coupe reference is longer.	A grouping of stands to be worked as part of one operation[1]. A coupe can only occur in one fell period. A coupe can have only one type of management in any one period. A coupe may have different management types in different periods.

[1] Coupes are regarded as discrete and recognisable areas on which felling / thinning / open habitat management occurs as a single continuous management operation (for example clearfell) or in sequence (shelterwood felling); to bring about an intended habitat, either forest or open. The forecast will present thinning and felling volume for each coupe.

Field	Units	Range	Details
			A fell period can have 0 or more coupes
Period 1	A year range e.g. 2009 – 2013	First year of the first period should be the year of submission of the application. The range should cover 5 years.	A five-year period representing the range of years in which the proposed intervention will take place[2]. The periods align with the periods in the forest plan. The periods must not overlap. The periods must be consecutive.
Management Model in Period 1	Code	Fell – clearfell; Thin – thin; LISS Fell – LISS clearfell; LISS Thin – LISS thinning. Selected from a picklist.	Required for all operations and stands.
Period 2	A year range e.g. 2014 – 2018	First year of the first period should be the year following the last year of the first period. The range should cover 5 years.	A five-year period representing the range of years in which the proposed intervention will take place[3]. The periods align with the periods in the forest plan. The periods must not overlap. The periods must be consecutive.
Management Model in Period 2	Code	Fell – clearfell; Thin – thin; LISS Fell – LISS clearfell;	Required for all operations and stands.

[2] The Forestry Commission publishes a quinquennial forecast of softwood availability showing average annual production. This forecast is based on fixed 5-year periods namely 2007-2011; 2012-2016 etc. There is no requirement for the 5-year period in a forest plan to align with the periods used for publishing the forecast.

[3] The Forestry Commission publishes a quinquennial forecast of softwood availability showing average annual production. This forecast is based on fixed 5-year periods namely 2007-2011; 2012-2016 etc. There is no requirement for the 5-year period in a forest plan to align with the periods used for publishing the forecast.

Field	Units	Range	Details
		LISS Thin – LISS thinning. Selected from a picklist.	
Planned Felling Year	Whole number	Must be in the range of the period.	Indicative year of felling[4]. If this is left blank for felling operations, the forecast will assume the coupe is felled in the mid-year of the period. Leave blank for thinning operations.

Stand data

The data in this section describe the current stand. The data are described in the following table. All of these data are required for the forecast calculations.

The forecast program can use either:

- distinct stand details or
- details amalgamated across the coupe where stands have the same basic information.

There can be a mix of stand and amalgamated data in the spreadsheet, however the forecast can only report felling volume by stand (as delineated on a stock map) if stand details have been entered.

Field	Units	Range	Details
Species	Code e.g. SS	Selected from a picklist.	Species list taken from the Forestry GIS Data Transfer Standard[5]. Use a specific species where possible rather than the general mixed species and other species categories.
Planting Year	Whole number e.g. 1970	1800 to year of submission of application.	Year in which the crop was planted or re-spaced if naturally regenerated.
General Yield Class	Whole even number	0 – 34, selected from a picklist.	Index of potential mean annual

[4] Although a planned felling year is entered here, this is to inform the forecast calculation. The felling timing sequence must not compromise the UKFS.
[5] http://www.oasis-open.org/apps/org/workgroup/forest/

Field	Units	Range	Details
			volume growth rate[6].
Wind Hazard Class	Whole number	1 – 6, selected from a picklist.	Indicates likelihood of wind damage.
Previously Thinned		Y or N, selected from a picklist.	Enter Y if the stand has been thinned prior to the submission of the application otherwise N.
Net Area (ha)	In hectares with two decimal places e.g. 9.87 hectares	From 0.1 ha. Whilst there is no upper limit, for all practical purposes assume this to be 999.9 ha. Please split larger stands.	The productive area of the stand i.e. exclude any permanent open space or "holes".

Restructuring areas

The data in this section will be used to report on forest change (including afforestation and deforestation) therefore the details of the planned stands must be completed.

The details here are the net area of the various species that will replace the stands planned on being felled in the next 10 years. Please note that, as a consequence of restructuring, the total area of the replacement crops may differ from the productive (net) area of the original stand as entered in Column L of the Data Input worksheet. However, the total area of the replacement crops and the other land should always be equal to the gross area of the original stand (not shown elsewhere in the forecast data spreadsheet).

Where Natural regeneration is anticipated the appropriate proportion of the existing stand structure should be allocated to natural regeneration irrespective of species.

Field	Units	Range	Details
Sitka Spruce	In hectares with one decimal place e.g. 9.87 hectares	From 0.1 ha.	Net area.
Other Conifer	In hectares with one decimal place e.g. 9.87 hectares	From 0.1 ha.	Net area.
Mixed Broadleaves	In hectares with one decimal place e.g. 9.87 hectares	From 0.1 ha.	Net area.
Native	In hectares with	From 0.1 ha.	Net area.

[6] Yield Class is an index of the potential mean annual volume growth rate (increment) and productivity of a species of tree on a particular site under a specific management regime, as estimated from a measurement of top height at a given stand age.

Field	Units	Range	Details
Broadleaves	one decimal place e.g. 9.87 hectares		
Caledonian Scots Pine	In hectares with one decimal place e.g. 9.87 hectares	From 0.1 ha.	Net area.
Natural Regeneration	In hectares with one decimal place e.g. 9.87 hectares	From 0.1 ha.	Net area.
Other Land	In hectares with one decimal place e.g. 9.87 hectares	From 0.1 ha.	Include any open space or unplantable area in the next rotation.

Optional stand data

If you have entered crop information for the individual stands as shown on a stock map, then enter the references to the stands. This will be dependent on how your stands are identified. Record either the compartment, sub-compartment and component number for the stand details, or a stand id and a crop element.

The stand assessments are very detailed, however if they are provided they can be used to inform the forecast and improve its accuracy. Therefore all the columns in this section are optional. However, for the forecast to be able to use them, they MUST HAVE BEEN ASSESSED AFTER THE MOST RECENT THINNING in the stand and MUST ALL HAVE BEEN ASSESSED AT THE SAME TIME.

Field	Units	Range	Details
Compartment, sub-compartment / stand ID	Numbers or letters e.g. 1234A.	The forecast will use the first 5 characters only if the compartment and sub-compartment reference is longer.	Optional information to be used only if you wish to receive forecast output by stand[7].
Component / Crop Element	Whole number e.g. 1.	The forecast will use the first 1 character only if component reference is longer.	Optional information to be used only if you wish to receive forecast output by stand.
Spacing at planting	In metres with one decimal place e.g. 2.4 metres	1 m to 12 m	If regeneration, enter spacing after any respacing operation.
Number of stems per hectare	Whole number e.g. 1234	1 to 12,000	Most recent assessment.

[7] The sub-compartment is a discrete, homogeneous area within a compartment. In general this is the smallest mappable unit and will normally be a minimum of 0.5 ha. Where a sub-compartment has a mixture of crops, the details should be entered on separate lines i.e. as separate components.

Field	Units	Range	Details
			If the stand has been thinned, this must be after the most recent thinning intervention.
Mean dbh of the stand	In centimetres with one decimal place e.g. 51.2 centimetres	7 cm to 300 cm	Most recent assessment. If the stand has been thinned, this must be after the most recent thinning intervention.
Basal area per hectare	In square metres with one decimal place e.g. 36.9 m^2	0.4 m^2 to 180 m^2	Most recent assessment. If the stand has been thinned, this must be after the most recent thinning intervention.
Assessment year	Whole number e.g. 2006	planting year to year of submission of application	Year in which the stand assessments (number of stems per hectare, mean dbh and basal area per hectare) were made.

Validation

The forecast calculations rely on all the necessary data being present. The spreadsheet will be validated before the forecast is run.

Some tips on using the spreadsheet

In order to help with the entry of data in the spreadsheet, it contains some drop-down lists and some validation. Whilst this assists with the entry of data, it does mean there are some restrictions on:

Inserting Rows and Columns

In order to maintain the integrity of the spreadsheet, it is not possible to insert or cut either rows or columns. However, you can copy and paste data from another application or Excel workbook (see below).

Copy/Paste:

It is possible to copy and paste data into the grant scheme spreadsheet. However, a few words of caution:

The spreadsheet has been designed to minimise data input by providing, where possible, drop-down lists, for example with Species. The data is validated so as to maintain consistent values. However, it is not possible to validate values that have been copied from another source and errors can be introduced, e.g. copying a non-existent species "SX"
As well as overriding list validation, copying data from other spreadsheets will override formatting and also other validation, such as area e.g. copying "Fell" into the net area column.

If you have any queries or problems either with using the spreadsheet or concerning the data to be entered, please contact the Case Officer in your local Forestry Commission Scotland Conservancy office.

On completion of the spreadsheet

Please return the spreadsheet to the Case Officer in your local Forestry Commission Scotland Conservancy office.

Appendix 1 – Forecast Outputs

The following forecast results will be returned in spreadsheet format:

- Thinning Volume Table
- Felling Volume Table
- Thinning plus Felling Volume Table
- Felling Sub-compartments
- Felling Coupes

Total volumes are to 7cm top diameter, overbark standing.

All volumes in the diameter class breakouts are calculated using standard assortment tables.

Thinning Volume Table

A breakdown of the production arising from the planned thinning interventions. The volume is presented as average annual production in each of the five year periods, and is broken down into standard species groupings:

- Scots pine;
- Corsican pine;
- Lodgepole pine;
- Sitka spruce;
- Norway spruce;
- Larches;
- Douglas fir;
- Other conifers;
- Broadleaves.

Felling Volume Table

As for the thinning volume table, but shows the volume arising from planned felling interventions.

Thinning plus Felling Volume Table

As for the thinning volume table, but shows the volume arising from both planned thinning and felling interventions.

Felling Sub-compartments

Summary of the net area and the total volume for each sub-compartment unit.

Felling Coupes

Summary of the thinning and felling volume arising from each coupe.