Appendix 1.1: Land Management Plan Consultation Record

Consultee	Date contacted	Date response received	Issue raised	Forest District Response
Statutory consultees contacted with LMP brief as well as location, key features, and analysis/concept maps	14.11.2017	From SEPA – 17/02/2017	General comments –	• Meeting with SEPA on Nov 7, 2017 in Smithton • Key issues addressed during a site visit in Culloden Forest, and subsequently in the plan and map prescriptions
		Moray Estate 14/11/2017	Offer to discuss a haul route through their neighboring estate to allow parts of our block locked by the railway line to be thinned and felled. Offer to collaborate on deer management issues.	• Passed on the information to the core team. Thanked the estate for the offer to help and collaborate. We will keep the option of a potential haul route through Moray Estate open, when we plan our operation in Cullernie, which is proposed for 2021.
		From RSBP 21/11/2017	Information and comments on Heronry and Red Kite in various woodland blocks	• Passed on the information to the environment team. Thanked for the information and told him to be in touch • Met on site on March 28, 2018; explained the planning process for the plan, and the operational planning stage for this specific coupe, if it materialises. Assured Phil, he will be contacted personally, when the project reaches the operational planning stage
		Highland Council 7/12/2017	Highland Council's comment on access to and in the woodlands	• Discussed comments with recreation manager. Incorporated ideas and comments into Inverness Woodlands LMP where possible.
Other consultees contacted with LMP brief as well as location, key features, and analysis/concept maps	14.11.2017	none	none	n/a
Brief and Location, Key Features and Analysis and Concept Maps placed on FCS web site.	18/05/2018	n/a	n/a	n/a
Flyers re invitation • to visit consultation events at the Eastgate Shopping Centre on 28th of	week of 11/06/2018	n/a	n/a	n/a

Consultee	Date contacted	Date response received	Issue raised	Forest District Response

June, Tesco Retail Park on Thurs 5th July, and at the Tesco Inshes Retail Park on Fri 6th July,
• to participate in the online consultation,
• distributed in local post offices, shops and restaurants.
• Additionally,
  - **contacted all the statutory stakeholders, community councils and other consultees about the upcoming consultation events**
  - information about consultation events uploaded to associated Facebook websites
  - news release about the upcoming consultation events sent to local papers
  - approached local radio station for broadcasting consultation information				

FES Information and consultation booth at Eastgate and the two Tesco's.	28/06/2018 05/07/2018 06/07/2018	Lots of interest, many questions, see separate summary	**See separate summary**	**See separate summary**

Meeting with Ward 13 – Community Council for Craig Phadraig;
Three councillors and Senior Ward Manager
	25/06/2018	Good discussion; I summarised the main points and sent it out as an email (see text to the right)	**Suggestions by the members of the council:**
			1. Improve internal views:
			  • Remove trees around the fort to the south to allow a better view onto Inverness
			  • Consider building a construct (much like the tower in Culbin); blend it in with the surroundings; 360 degree view
			2. Improve infrastructure for more educational events (e.g. a day out for local schoolkids)
			  • Put in basic infrastructure: composting toilets; picnic tables for a day out (local schools)
			  • contact Abriachen, Woodland Trust; get an idea what they have put in place for outdoor learning;
			  • contact countryside rangers (who are they?); walking groups
			  • get in touch with Highlife Highland
			3. More
			Great Glen Way; signs to inform about Craig Phadraig
				• The planning team has decided not to remove any trees around the open fort site to the south, since many trees need to be removed in order to open up an effective view.
				  - The removal of these trees would very likely be visible on the very prominent eastern slope
				  - the removal would very likely destabilise this currently stable eastern slope of Craig Phadraig
				• Regarding the construction of an elevated viewpoint ("tower): we will be open for funding opportunities for larger scaled projects to improve our woodlands; however, we need to balance opportunities with our own abilities to manage and maintain our facilities; our focus is on improving general

Consultee	Date contacted	Date response received	Issue raised	Forest District Response
				experience.
Email from Local Neighbours inquiring about the limited coverage of a seasonal FC car park ticket	08/07/2018	Local neighbours	*"As the owners of a very active border collie, my wife and I are in the woods practically every day, rain or shine. We walk and cycle in Culbin (both with the dog) and walk in Daviot, Culloden, Ord, Fochabers, Loch Morlich (and other Strathspey locations), Roseisle, Glen Affric and Dog Falls – all of which are in an easy radius from our home in Culloden.* *We don't mind paying something for facilities (such as the toilets at Kintessack and Dog Falls) but less so at sites where these are no facilities. What really bugs us is, having paid for our season ticket for Kintessack, it only works for the 4 locations in Moray.* *Surely FC can be is bit broader in outlook and recognise that anybody who goes to the extent of purchasing a season ticket is a real friend of FC and all it stands for and make the ticket legitimate for Highland-wide parking? It's a real bummer for the likes of us where we are in the cross-fire of 4 separate FC areas."*	Email passed on to Head of Community and Visitor Services; His response: *"I can sympathise with this enquiry but we do need to work with visitor destinations and regardless of where we draw the boundaries there will always be some visitors who wish to travel more widely. Our charged car parks are those where we have added value visitor provision. The Inverness woods have free parking.* *We have previously considered the possibility of moving to a national car park season ticket but decided not to implement this as this would not meet our needs.* *It is useful to receive feedback from our visitors as it helps to inform how we manage facilities and consider improvements and changes to how we manage them....."*
Public consultation event at the Ord Hill car park	09/11/2018	Discussions on site	Good discussions with about 8 members of the public, including local councillor Gordon Adam and Phil Wait from Highland Council; main topic was Ord Hill future management and the proposed phase 1 and 2 clearfell coupes along the prominent south-western slope; the issue of Sitka Spruce (SS) brash left on such a highly visible site were discussed, since SS brash takes a long time to break down;	The proposal for the period of the plan were well received; everyone understood the necessity to start redesigning the slope in reasonably small steps using thinning and clear-felling; the three small clear fell coupes were presented on paper maps (2d), and 3d visualisations; the question of SS brash left on site will be addressed by FES after the felling;
Public consultation event at the Kinmylies Church Hall	10/05/2018	Discussions on site	Good discussions with about 5 members of the public, including local councillors. The question about TPOs on FES ground was raised; additionally people seem to be supportive to build a tower at the fort site to gain a good view across the lay of the land.	Emails sent out to FCS and HC to inquire about potential TPOs on FES ground. Any construct cannot be on the Scheduled Monument site, but needs to be outside; initial talks have started to investigate if such a project is feasible. As stated before, we need to balance opportunities with our own abilities to manage and maintain our facilities; due to budget restraints, our focus is on improving general experience.

APPENDIX 1.2 – Public Consultation Events & Survey Monkey Results
The Woods around Inverness

During 2018, as part of the land management plan consultation for the woods around Inverness, we engaged with visitors and potential visitors to our woodlands. We did this via a SurveyMonkey survey and at four public events (the Scottish School of Forestry, the Eastgate Centre, Tescos Inshes and Tescos Eastfield Way). The SurveyMonkey survey was advertised onsite, via social media, email and promoted at the events.

1. SurveyMonkey Survey Results

Some surveys were conducted face-to-face and then input by staff; the majority were self-completed online by visitors. A total of 149 responses were received to the survey. Overall there was a very positive level of engagement with this survey with many individual comments added, including many positive and supportive comments. See the full survey results for the full data and all the individual comments.

Visit Patterns

140 respondents had visited our woodlands Culloden, Daviot, Craig Phadrig or Ord Hill) within the last year. The most heavily visited was Culloden (76% of respondents had been here in the last year) but Daviot, Craig Phadrig and Ord Hill all recorded visits by over 60% of respondents, showing that many visitors make use of more than one woodland.

Most visitors arrived by car (56%) but 29% walked from home (a very high percentage compared with many FES woodlands). Just one respondent used public transport and one arrived on horse.

Motivations

The main reasons given for visiting the woods were 'exercise' (66%), 'walking' (64%), 'dog walking' (56%) and 'to relax' (54%). 32 responses were received for 'other reasons' which included running and orienteering. 38% of respondents visited the woods daily, with a further 29% visiting weekly – showing very regular use of the woodlands from many of our respondents.

Attitudes

The survey asked if respondents agreed or disagreed that the woodlands were:

- A safe place to visit?
- A nice place to visit?
- Well managed for recreation?
- Well managed for wildlife?
- Well managed for timber production?

The most positive reaction was to 'A nice place to visit', with 98% agreeing or strongly agreeing. 'A safe place to visit' also received a very positive reaction. Although very few respondents disagreed with the other statements, reaction was more mixed with 'Well managed for timber production' having the least favourable reaction – 50% of respondents were 'neutral' on this question. 38 individual comments were received to support these answers, some very detailed and containing valuable insights which should be considered.

Respondents were also asked to rate the following facilities at the woodlands:

- Car parks
- Waymarked Trails
- Information Panels
- Leaflets
- Webpages

Results for all categories were mixed, with car parks and waymarked trails receiving the most positive feedback (over 70% of respondents felt they were 'good' or 'very good'). Leaflets and webpages received the most negative feedback, with over half of the respondents feeling they were 'average', 'poor' or 'very poor'. The individual responses suggest this is largely because respondents have not seen leaflets or the website, as opposed to them being poor quality. 43 individual comments were received to this question.

We asked what would enable or encourage more visits to the woodlands. The responses here were very mixed. 'Off-road paths from housing areas', 'more information onsite' and 'more seating in the woods' received the most positive reaction. There were 42 individual responses received, with the amount of dag waste in the woodlands being highlighted.

There were over 60 individual answers to the question 'Do you have any other comments about these woods or about our management of these woods?' Many responses confirmed the strong connection that people feel with their local woodlands.

Personal characteristics
The majority of respondents were from IV1, IV2 and IV3.

Nearly half the respondents were in the 50-64 age range, and nearly a third was in the 30-49 age range. A small number of responses were received from people under 30, with none from those under 16. 13% of respondents were over 65.

56% of respondents identified as female, 41% as male and 3% preferred not to say.

95% of respondents identified as 'white' with the rest being a mix of 'other' and 'prefer not to say'.

6 respondents identified as having a disability as defined by the Equalities Act 2010.

We are considering all the responses from the survey; here are some of the main themes that emerged:

Issues Raised	FES Response
Dog waste – there were 26 separate comments on the issue of dog waste spoiling visits, the need for better signage and more / better positioned dog waste bins	We recognise that dog waste can be a serious and unpleasant issue for all visitors. We will: • Encourage more dog owners to remove dog waste through better behavioural signage • Consider the provision of dog waste bins at key locations. We need to investigate costs and ease of emptying. We will continue working closely with the Culloden Forest Partnership on this and other issues.

Availability of leaflets – many respondents had not seen our leaflet about the woods of Inverness	Once visitors are onsite the leaflets are not usually needed so we will: • distribute our lealflets better in the local area, to encourage more awareness of the woodlands
Awareness of our webpages - many respondents had not seen our webpages about the woods of Inverness	Our webpages are usually the best place to find up to date information. We will: • promote our website better and include the address on all signage
Tree felling and forest management – there were a number of comments around the need for accurate and up to date information	• We will provide information about current work onsite and on our website
Seating – more seating opportunities were requested by a number of respondents	We know that many visitors could benefit from better seating: • We will look for suitable opportunities to install some new benches along the waymarked trails
Access and trail maintenance – there were a number of comments about the need for access roads, car parks and trails to be better maintained	• We will continue with regular safety checks and continue to maintain facilities to as high a standard as our resources allow.

2. Issues Raised at the Public Consultation Events

Issue raised	Forest District Response
FC to get engaged with Apex work - working with people with criminal convictions or at risk of committing offences	Our visitor service staff has been working with NHS Mid Ross Community Health on a partnership project called "Branching Out", in Craig Phadraig in other woodlands. This program offers ecotherapy for people experiencing mental health problems. Activities include bushcraft, wood working and cooking. Although we would like to engage into more activities, we need to balance opportunities with our own abilities to manage and maintain our core services;
Several comments about missing leaflets in the car parks of the woodlands	Once visitors are onsite the leaflets are not usually needed so we will: • distribute our lealflets better in the local area, to encourage more awareness of the woodlands
More bridges in Culloden.	FES will be open for funding opportunities for larger scaled projects to improve our woodlands; however, we need to balance opportunities with our own abilities to manage and maintain our facilities; our focus is on improving general experience.
Dog waste major issue to many members of the public; either not bagged at all; or in bags, but not put	We recognise that dog waste can be a serious and unpleasant issue for all visitors. We will: • Encourage more dog owners to remove dog waste

in bins; many think there are not enough bins in strategic places; rubbish is an issue as well	through better behavioural signage • Consider the provision of dog waste bins at key locations. We need to investigate costs and ease of emptying.
Quite a few critical comments about former clear-fells, especially in Culloden; avoid clear-fells or at least minimise them.	We will try to avoid clearfells in Culloden Woodlands; the exception being is Cullernie at the very eastern end of this block; the windblow in this coupe will be addressed in 2021; We will clear fell windblown coupes in Culloden Muir, as well as some scheduled clear fells in the eastern part of this block.
Connectivity for city people without transportation; how can they get to the woodlands? Suggestions by the public: • Own FC bus, or in cooperation with the local public transport; • mark and sign the exits to the woodlands; • Sign the way to the woodlands and back to the bus stop.	We would not be able to provide a bus service ourselves but we can promote public transport information via our website. We will consider other options for improving connectivity and discuss with Highland Council.
Don't over-commercialise the Inverness Woodlands	There are no plans to establish third-party coffee shops or other facilities in the four woodlands;
More distance-marked out routes for walking and running	FES will be open for funding opportunities for larger scaled projects to improve our woodlands; however, we need to balance opportunities with our own abilities to manage and maintain our facilities; our focus is on improving general experience.
Fitness park (pull-ups, stretching) along trails (like in central Europe); adventure playgrounds ("Go Ape") in the forests – potentially sponsored by insurance	FES will be open for funding opportunities for larger scaled projects to improve our woodlands; however, we need to balance opportunities with our own abilities to manage and maintain our facilities; our focus is on improving general experience.
Path to the Fort in Ord Hill is unclear, and no interpretation at the Fort. Open up views from the Fort;	We will check the waymarking here. We will maintain interpretation in the car park.
What exactly is for sale in Daviot?	Nothing on our ground; neighbouring private woodland is/was for sale;
More benches or seats in all woodlands	• We will look for suitable opportunities to install some new benches along the waymarked trails
Open up more viewpoints in Craig Phadraig and Ord Hill (also from Fort); undergrowth come back at some existing viewpoints that block the view	We will continue to maintain and increase our key viewpoints to as high a standard as our resources allow.
Minor paths are blocked by trees; health and safety issue	We will concentrate on maintaining our promoted waymarked paths and the gravel road network. Other paths and desire lines are available to use under SOAC but we are not able to commit to maintaining all minor paths.

Entry surface to Craig Phadraig and Ord Hill car park needs attention (potholes)	We will continue with regular safety checks and continue to maintain facilities to as high a standard as our resources allow.
Become more digital: develop an app that be used with Google maps on the smartphone that shows different features and directions as you walk around.	We will continue to consider better ways of promoting our paths. At the moment we are concentrating on improving the website rather than developing Apps. On our website people can link directly to google maps to see bus and walking routes to our forest blocks.
Main walking paths overgrown and encroached by broom, gorse, heather in all woodblocks	We will continue with regular safety checks and continue to maintain facilities to as high a standard as our resources allow.
Repair or replace hand rail over deep burn gully to the north of the Prisoner's stone. Potential danger	We will look at this issue and continue with regular safety checks and continue to maintain facilities to as high a standard as our resources allow.
Resident of Balloch (opposite SSF, adjacent to Cullernie coupe) is worried about view after clear-fell	We will leave broadleave trees along the resident's property fence. Additionally, the resident has some broadleave trees in her garden. This will screen the view in the summer.
Why are we proposing to fell the mature pine in Eastern Culloden Muir?	This coupe has reached its terminal height stage, and its yearly yield has topped, also. In other words: – it has reached the end of its productive life. As the custodian of the public forest lands in Scotland, FES is managing the forests for economical purposes, as well. This stand has reached its end; we need to make room for a new generation of trees.
More car rallies	We do host car rallies in some of our woodlands but would avoid this in the busy woodlands around Inverness
Damage of roads by timber lorries; waiting on council to fix it, by should it not be the responsibilities of the FC?	The public roads are the HC's responsibility to fix. There are initiatives which FES contributes money and time to. Theses initiatives benefit both timber transport and public roads; historically, timber transport roads have not been fixed immediately after a harvesting project, if the road wasn't continued to be used for other harvesting projects; FES usually waited until there was a new need for getting this road back into order. Today, FES has more resources, and is also more flexible to engage with local stakeholders that need the timber transport road to access their own properties.
More native trees and a nature-based activity trail in Culloden;	We will change species in a coupe east of the Culloden road, adjacent to the battlefield; we will remove Sitka Spruce and plant SP and native broadleaves. We will work with Culloden Forest Partnership and explore opportunities to build a nature-based activity trail.

Proposed area of clear-fell (low-quality timber) in in Ord Hill might hold woodcocks; member of public is experienced bird watcher, will survey this block himself; he will get back to FC, if he finds proof of woodcock presence;	Member of public reported back to me that he couldn't find any evidence of this bird species on site.
Windblow in Cullernie coupe major issue for many local residents; remove trees in the near future	Cullernie coupe scheduled for clear-fell in 2021
Forest for sale close to Daviot. Could FC buy it and increase their Daviot forest area?	Contacted estates unit; answer: FC generally buys unforested land in order to plant new trees, subsequently increasing forested land in Scotland; as a result the standing forest close to Daviot was not purchased.
FC / Scotland wide parking permit	See separate email in Appendix 1.1 "Consultation Record" from members of the public, addressed by the National Office.
Information material or signs about forest management practices in the forest (e.g. why was specific species choices for the forest blocks).	We could develop some SignMaker signage to explain certain upcoming management practices in Inverness woodlands
Recreational guidelines on site: Need signs telling dog walkers and cyclists to act responsibly; keep dogs under control at any times	We will use our SignMaker behavioural signage for this.
Design Craig Phadraig similar to Abriachan: adventure trails and play parks, picnic areas for local school classes	We have developed a dog-free education and activity area recently in Culloden Wood. We will consider new developments when resources allow.
	We know that many visitors could benefit from better seating: • We will look for suitable opportunities to install some new benches along the waymarked trails

Each management plan is due for a mid-term review five years after approval. At this review we will revisit and report our progress regarding our responses to the public's comments and issues.

Appendix 2: Tolerance Table

	Adjustment to felling coupe boundaries	Timing of restocking	Change to species	Wind throw or environmental response	Adjustment to road lines
Scottish Forestry's approval not normally required (record and notify SF)	<10% of coupe size	Up to 5 planting seasons after felling (allowing fallow periods for Hylobius).	Change within species group E.g. Scots pine to birch, Non-native conifers e.g Sitka spruce to Douglas fir, Non-native to native species (allowing for changes to facilitate Ancient Woodland policy).		Departures of up to 60m from the centre of the roadline
Approval by exchange of letters and map	10-15% of coupe size	5 years +	Change of coupe objective likely to be consistent with current policy (e.g. from productive to open, open to native species).	Up to 5 ha	Departures of greater than 60m from the centre of the roadline
Approval by formal plan amendment	>15% of coupe size		Major change of objective likely to be contrary to policy, E.g. native to non-native species, open to non-native,	More than 5 ha	As above, depending on sensitivity

Forest Enterprise Scotland
Managing the National Forest Estate

Forestry Commission Scotland
Coimisean na Coilltearachd Alba

APPENDIX 4

Inverness Woodlands
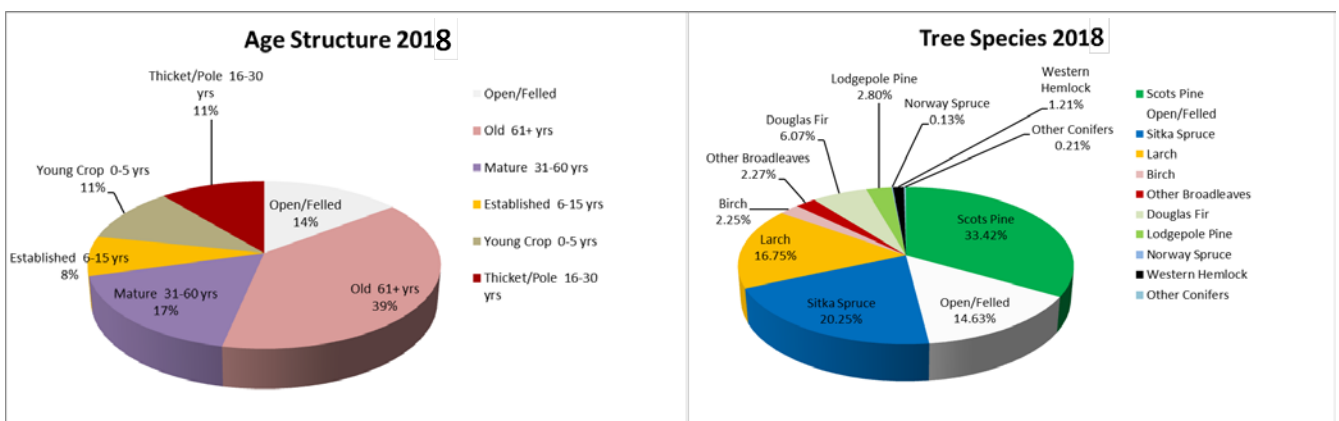## Land Management Plan Brief

Vision

An easily accessible and well promoted network of productive woodlands around Inverness that provide an attractive environment for recreation, education, health and wellbeing and are widely used by local people and visitors.

1. **Project Background**

   Inverness Woodlands Land Management Plan (LMP) is an amalgamation of **Culloden Woodlands, Ord Hill, Craig Phadrig and Daviot**. Inverness Woodlands now stretch from the Black Isle in the north to Daviot in the south, and from the Western edge of the city of Inverness to Cawdor in the east. Inverness woodlands cover an area of approx. 1,156 ha of largely mixed coniferous forest.

   All the forest blocks experience a high recreational use, their significance for bio-diversity, however, can be improved. Additionally, Daviot and parts of Culloden Woodlands have commercial significance, as well. Sitting within the catchments of the River Nairn, Daviot forest plays a significant role in water management. Parts of Ord Hill and Craig Phadrig form very prominent features of the local landscape in around Inverness.

   Current growing stock:

2. Project Objectives /Outcomes

A Land Management Plan delivered in accordance with United Kingdom Forestry Standard (UKFS) and the United Kingdom Woodland Assurance Standard.

A Land Management Plan which delivers against the relevant objectives of the Inverness, Ross and Skye District Strategic Plan and Scotland's National Forest Estate and Strategic Directions.

A Land Management Plan that delivers value for money and is achievable within current management and financial resources.

To develop enhance relationships with stakeholders and the local community and provide opportunity for greater involvement during this plan revision.

2.1   Strategic objectives for Inverness woods based on IRS Strategic plan 2014-2017

- **Healthy**:
    - Reduce risk to people and the environment through sustainable forest management, whilst building resilience for a changing climate.

- **Productive**:
    - Optimise the productive potential of the existing forest and develop native timber production over the long term.

    - Take a more pro-active approach in commercial and recreational thinning activities to ensure a continuous forested landscape for the future, especially in visually prominent areas

    - Avoid large scale, clear-fell-based industrial forestry management principles to highly recreational areas, such as west of the railway line in Culloden Woodlands. Apply more social forestry management guidelines, but respond swiftly to impacts like wind blow.

- **Treasured**:
    - The forests around Inverness to be promoted as a key asset for the city and its people; forests considered to be easily accessible, have outstanding views, and to be a venue for events.

    - Promote a proactive approach in connecting and linking the people with Inverness' surrounding woodlands

    - Maintain the scenic aspects of the wooden hillsides that are prominent from parts of the city and surrounding areas

    - Maintain and improve the internal design of the woodlands to provide views to the city and the sea.

- **Access**:
    - Working with partners we will raise awareness of the forests around Inverness as an easy-to find, easy-to-access asset and event venue.

- **Cared for**:
    - Restoration and maintenance of a few natural reserves within Inverness Woodlands.

3. Project Scope

3.1   Key features and known issues that will influence the development of management proposals for the whole plan area

- *Recreation (High Priority)*

    All woodlands are very important recreational facilities within IRS District. The proximity to the city of Inverness makes the forest accessible to a high number of visitors throughout the year. Maintenance and upgrades to the recreational facilities in each block will be carried out, if necessary. All of these forests are managed as WIAT woods, and there is a Visitor Experience Plan (2012) in place that covers them all. The formal facilities feature on the FCS web site and in the leaflet 'Explore the Forests of Inverness'. The 'All Forests' visitor survey of 2012 reported 72k visitors to Culloden Forest annually, 54k to Daviot, 38k to Craig Phadrig and 14k to Ord Hill.

    - Culloden Woods: One way-marked walk start from the car park at Tower Road, Smithton. The forest is well used mostly by local people; walkers, mountain bikers, and horse riders.

    - Ord Hill: Ord Hill is used by a local orienteering group and provides two way marked trails, and a car park. The district also intends to increase the level of interpretation relating to the Iron Age fort on the summit of Ord Hill. There are also several impressive viewpoints looking south to Inverness over the Moray Firth, which will be enhanced through ongoing maintenance and thinning operations.

    - Craig Phadrig: Craig Phadrig has two way marked footpaths and a car park. There is interpretation in place relating to the Iron Age fort on the summit of Craig Phadrig, which along with the fort on Ord Hill guard the entrance to the Beauly Firth. There are also several impressive viewpoints to the Beauly Firth and the south and west of Inverness. Craig Phadrig can be seen as the backdrop to the city of Inverness from most locations within the city to a greater or lesser extent.

    - Daviot: There is one way marked trail, the "The Daviot Fitness Trail" which is a circular trail starting and finishing at the car park (Tourist Information closed now) next to the A9, but with links to Milton of Leys, Daviot village and to General Wade's Military road.

- *Community (High Priority)*

    Forests with high recreational value are always in the focus of the public. As a result, public consultation usually engages a lot of stakeholders and interest groups in and around Inverness; consultation effort and stakeholder engagement will have to be carried out very intensively.

    - Culloden Woods: The Culloden Forest Partnership is a community initiative set-up between the Forestry Commission and Inverness College UHI to facilitate community management of Culloden forest. Aiming to use the forest resource for education, research, recreation and community capacity building the partnership is currently engaging with the communities to identify issues and develop plans.

- *Landscaping (Medium - High Priority)*

    - Culloden Woods (medium): The Forest is not particularly prominent in the landscape. All the views of the forest are close up and the internal landscape is more important because of the sense of grandeur created by the mature Douglas fir trees.

    - Ord Hill (high): The forest forms the northern backdrop to Inverness, being prominent from much of the town and surrounding area, particularly the Kessock Bridge and the Merkinch and Longman areas of Inverness, as well as the A9 and A96 trunk roads. The topography of the site allows extensive views of the eastern face of the woodland, with the heavily wooded conifer area merging with broadleaves rolling down to the shoreline. The visual impact of felling operations on the southern face can be immediate and dramatic; for this reason, much of this southern and

eastern section of Ord Hill will be managed using Low Impact Silvicultural Systems. Clearfells on this face need to be planned and carried out carefully in conjunction with the landscape architect;

- <u>Craig Phadrig (high):</u> The forest forms part of the western backdrop to Inverness, being prominent from much of the town and surrounding area. The northern side of the forest is prominent rising up from the shore of the Beauly Firth when viewed from North Kessock waterfront. By using a variety of thinning prescriptions and Low Impact Silvicultural Systems, tree cover will be maintained over the majority of the forest area.

- <u>Daviot (medium/high):</u> The southern end of Daviot forest is prominent in the landscape and easily viewed from the A9 when travelling north. The eastern side of Daviot is seen when travelling north or south on the A9; together with the privately owned Daviot Wood to the east, this creates a corridor of trees through which the A9 passes over Drumossie Muir.

- *Timber Production and Transport (Medium priority)*

  All woodlands will be managed as sustainable timber producing areas. All harvesting operations will continue to be carried out in accordance with all relevant environmental standards and adhere to health and safety regulations. The use of competent local contractors will be maximised where possible, providing quality local employment. The main harvesting system to be carried out is clear fell; thinning is to be carried out throughout the woodlands (with a better focus on early and regular events), and Continuous Cover management will be identified where appropriate. All timber haulage from the forest plan area will be routed in accordance with the Highland Timber Transport Group agreed routes map.

  <u>Culloden Woods:</u> the size of these clear fells is to be kept small, due to the recreational pressure and interest of the great variety of stakeholders. Access is poor in some parts (west of the railway line), and there is a lack of stacking space in areas. As a result, timber is stockpiled in winter along the forest road in Culloden Moor as this affords easier access for lorries.

  <u>Ord Hill</u>: whilst timber production is not a top priority, Ord Hill continues to yield good quality conifer timber. Where the predicted yield is poor, a redesign of the tree crop composition is in order (north-western part of the forest block). Western Hemlock is abundant in the central part, which creates opportunities to work with a tree species that regenerates easily. Ord Hill is serviced by an internal forest road network, which is in need of upgrading in some parts.

  <u>Daviot</u>: Whilst the forest has been used recreationally, sustainable timber production remains a high priority. The whole block has potential for growing quality timber. Early thinnings and better control of the growing crops in the future should be a major target.

- *Water (Medium priority)*

  <u>Culloden Woods:</u> There are several significant watercourses which flow through Culloden Woodlands. The red burn is particularly prone to sudden spates. Management of the water flow into this burn is particularly important. Riparian zone enhancement and planting of broadleaves should improve water quality and help with flow control. Flood Risk Management working group established which brings all interested stakeholders together and works on a strategy to avoid future damage of flood events.

  <u>Ord Hill and Craig Phadrig:</u> Whilst there are no significant watercourses in Ord Hill, water management and quality will continue to be a major consideration when planning and carrying out forest operations, bearing in mind the proximity of the forest to the shoreline of the Moray Firth Special Area for Conservation. The woodlands do contain a few small water courses and numerous man made drains and roadside ditches which all carry high volumes of water during periods of heavy rainfall.

Daviot: The main consideration in Daviot is protecting water quality in the River Nairn. This is an important river for spawning salmonids. The Nairn flows along the southern boundary of Daviot forest.

- *Education (Medium – high priority)*
Culloden Woods: FCS have close links with the Scottish School of Forestry, and will continue to liaise with them regarding use of Culloden Woodlands as an educational resource.

- *Biodiversity (Medium priority)*
There are no identified PAWS areas in the management plan area, and only small pockets of Natural Reserves. Biodiversity still ranks reasonably high with respect of birds of prey, red squirrel, broadleave woodlands and long-term retention of old conifer stands.

- *Archaeology (Medium – high priority)*
Culloden Woods (medium): There are a number of recognised and well-known unscheduled documents within the public forest estate (e.g. St Mary's well).
Ord Hill (high): Ord Hill Fort is a scheduled Ancient Monument; it will continue to be managed in accordance with the Scheduled Ancient Monument Management Plan, compiled in conjunction with Historic Scotland.
Craig Phadrig (high): Craig Phadrig Fort is a scheduled Ancient Monument; it will continue to be managed in accordance with the Scheduled Ancient Monument Management Plan, compiled in conjunction with Historic Scotland.
Daviot: The two most notable are not actually in FCS ownership. They are the Iron Age Fort of Dun Davie and Wade's Military Road.

4. **Inclusion** (Key documents to be produced)

- Management map

- Future habitat & species map

- CSM6 maps

- Water map

- Deer management plan

- SSSI management plan

- Open habitat management prescriptions

- Landform analysis & plan visualisations

- Summary of activities

- Appropriate Assessment

- Prior notification determination

5. Exclusion

- Detailed site specific management plans (work plan)

6. Project Organisation

LMP Team: responsible for undertaking the revision;

Joachim Boehm	Planning Forester
Colin Leslie	Environment Forester
Martin Macpherson, Duncan Manson	Operations Forester
Kelly McKellar	Civil Engineer
Keith Black	Planning Coordinator
Russell Cooper	Wildlife Ranger Manager
Brian Duff	Recreation Forester
Marcin Baranski	FM Forester
Ruairidh MacLennan	Land Agent

Project Sponsor	Doug Mitchell	Planning Manager
Strategic direction	Forest District Management Groups	
Forestry Commission Scotland	Martin MacKinnon	Development and operations advisor

7. Time frame

Initial consultation (Screening)	October 2017
Draft plan completion	February 2018
Detailed consultation	July – September 2018
Review of commentary & amendments	September 2018
Internal review	October 2018
Submission	November 2018

8. Risks

- Unstable timber markets and future windblow events could influence management proposals

9. Stakeholders

Statutory Stakeholders:

- Scottish Natural Heritage
- Scottish Environmental Protection Agency
- Highland Council
- Beauly Fisheries
- Knockbain Community Council
- Smithton and Culloden Community Council
- Westhill Community Council
- Strathnairn Community Council
- Croy Community Council
- Balloch Community Council
- Kirkhill and Bunchrew Community Council
- Muirtown Community Council
- Inverness West Community Council
- Inverness South CC

Other Interest:

- RSPB
- Scottish Water
- Scottish and Southern Energy
- UHI
- Ross's Quarry
- Historic Environment Scotland
- National Trust

Neighbouring Landowners:

- Drynie Woodlands Ltd. (Ord Hill)
- Moray Estate (Culloden)
- Dalcros Estate (Culloden)
- Daviot: Tomfat Woodlands (Woodland Trust); Inverenie Woodlands; Avoch House

Appendix 5: Review of previous Plan

The objectives and management prescriptions within the former Forest design plan areas were influenced by the rationales of the Inverness Forest District Strategic Plan;

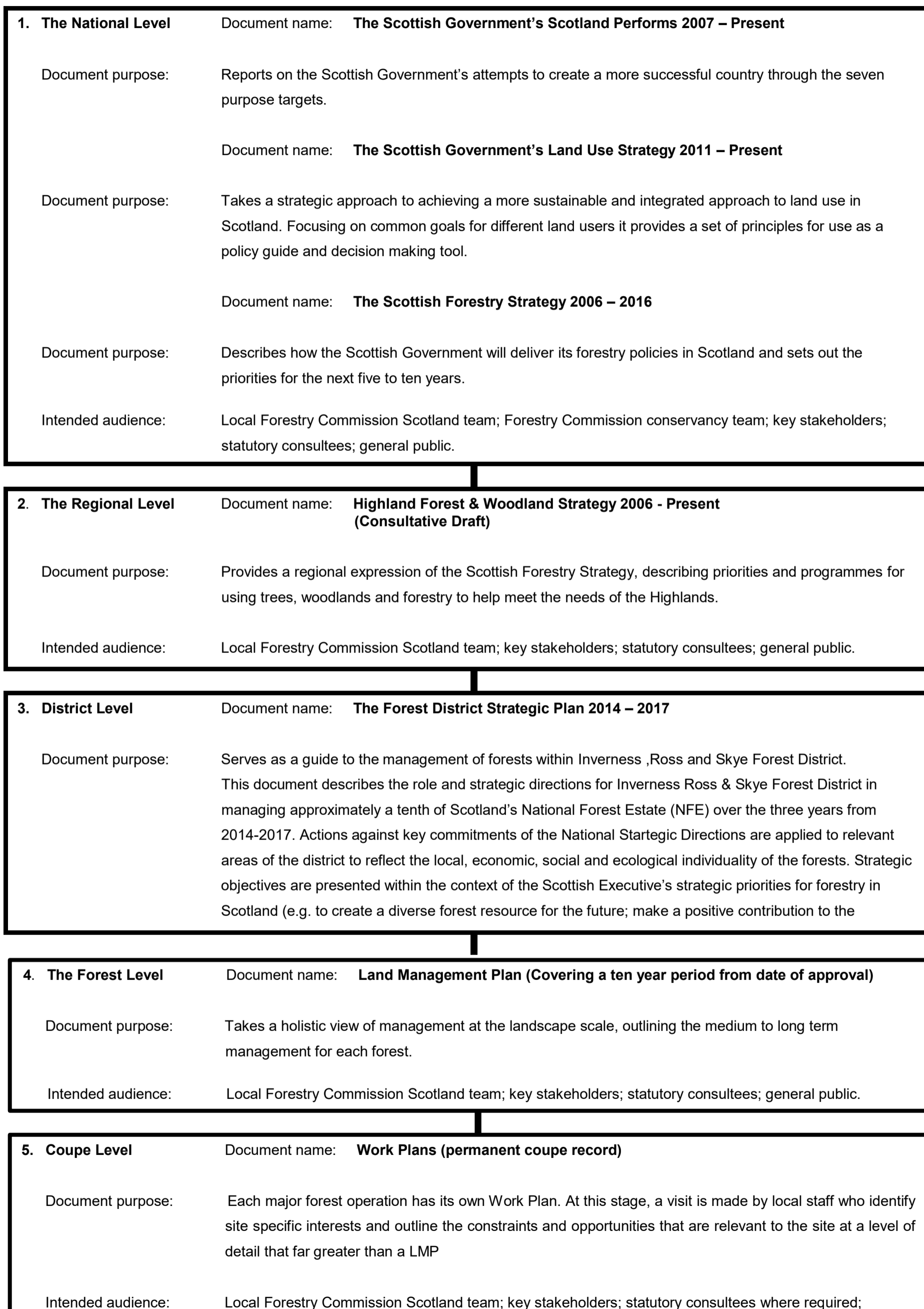The table below details a full review against the stated FDP objectives.

Objective	Review against progress
Community & other stakeholders Embrace, value and accommodate the input and participation of stakeholders, neighbours, and particularly the local community to work together in the spirit of the partnership.	Consultation exercises with local communities and active interest groups have been carried throughout the life of the plan. Additionally, regular communication has occurred between forest managers and the community and interest groups on a range of issues including; • Manage Culloden woodlands in conjunction with the Culloden Forest Partnership, a community initiative set-up aiming to use the forest resource for education, research, recreation and community capacity building. • Orienteering events work in Ord Hill has continued to develop community aspirations. • Branching out activities in Craig Phadraig have continued. The program offers ecotherapy for people experiencing mental health problems. Activities in Craig Pahdraig have included bushcraft, wood working and cooking.
Biological diversity: To protect, create and expand habitats, which will encourage native flora and fauna.	• Forest District deadwood policy has been implemented throughout the plan area. • Western Hemlock h has been monitored and controlled through periodic removal of young trees in Ord Hill • Natural regeneration is occurring in places, although hampered by deer browsing.
Landscape Creation of a forest which blends with and enhances the landscape	Coupes in Culloden and Daviot not very visible from major viewpoints in the plan area, so no elaborate visual design approach necessary. Some parts in Ord Hill and Craig Phadraig are highly visible and prominent in the landscape. Felling in the last decade was mainly determined by terminal height and maturity (Daviot, Craig Phadraig), windblow (Culloden) and re-design of the south-westerly slope of Ord Hill.

Water Safeguard private supplies specific habitats and natural watercourses	• Quality and quantity of drinking water from private supplies has been maintained. • No decrease in the quality of the watercourses that have their catchment in the forest. • Forest and water guideline followed during operations.
Soil Maintain soil integrity, structure and fertility	Forest and soil guidelines have been adhered to during all forest operations, minimal rutting on operational sites and minimal silt deposition along watercourses and drains has been practiced in all recent operations.
Recreation Maintain status quo or improve facilities	• The promoted waymarked path system has been redesigned in the last decade in all four woodlands; additional waymarked trails have been added on in Daviot. • Visitor zone thinning has been carried out in Ord Hill, and Craig Phadraig • Car park facilities in Craigh Phadraig and Ord Hill improved;
Timber production Economically viable production of timber within all environmental constraints and guidelines	Timber has continued to be removed from the plan area. A total of 1629 ha has been felled for the production of timber. Site planning has detailed environmental considerations and has closely liaised with local neighbours to ensure good practice is maintained. Some prematurely phased felling has taken place to accommodate windblown areas due to storms
Archaeology Safeguard all archaeological sites and enhance their value to the public	Significant historic environment features (such as scheduled monuments, listed buildings, designed landscapes, historic battlefields and the most significant undesignated features) have been protected and managed following the UKFS *Forests and historic environment* guidelines (2011).

Appendix 6: The Forest Planning Framework in Scotland

FC Scotland prepares Land Management Plans within the following planning framework:

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1. The National Level

Document name: **The Scottish Government's Scotland Performs 2007 – Present**

Document purpose: Reports on the Scottish Government's attempts to create a more successful country through the seven purpose targets.

Document name: **The Scottish Government's Land Use Strategy 2011 – Present**

Document purpose: Takes a strategic approach to achieving a more sustainable and integrated approach to land use in Scotland. Focusing on common goals for different land users it provides a set of principles for use as a policy guide and decision making tool.

Document name: **The Scottish Forestry Strategy 2006 – 2016**

Document purpose: Describes how the Scottish Government will deliver its forestry policies in Scotland and sets out the priorities for the next five to ten years.

Intended audience: Local Forestry Commission Scotland team; Forestry Commission conservancy team; key stakeholders; statutory consultees; general public.

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2. The Regional Level

Document name: **Highland Forest & Woodland Strategy 2006 - Present (Consultative Draft)**

Document purpose: Provides a regional expression of the Scottish Forestry Strategy, describing priorities and programmes for using trees, woodlands and forestry to help meet the needs of the Highlands.

Intended audience: Local Forestry Commission Scotland team; key stakeholders; statutory consultees; general public.

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3. District Level

Document name: **The Forest District Strategic Plan 2014 – 2017**

Document purpose: Serves as a guide to the management of forests within Inverness ,Ross and Skye Forest District.
This document describes the role and strategic directions for Inverness Ross & Skye Forest District in managing approximately a tenth of Scotland's National Forest Estate (NFE) over the three years from 2014-2017. Actions against key commitments of the National Startegic Directions are applied to relevant areas of the district to reflect the local, economic, social and ecological individuality of the forests. Strategic objectives are presented within the context of the Scottish Executive's strategic priorities for forestry in Scotland (e.g. to create a diverse forest resource for the future; make a positive contribution to the

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4. The Forest Level

Document name: **Land Management Plan (Covering a ten year period from date of approval)**

Document purpose: Takes a holistic view of management at the landscape scale, outlining the medium to long term management for each forest.

Intended audience: Local Forestry Commission Scotland team; key stakeholders; statutory consultees; general public.

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5. Coupe Level

Document name: **Work Plans (permanent coupe record)**

Document purpose: Each major forest operation has its own Work Plan. At this stage, a visit is made by local staff who identify site specific interests and outline the constraints and opportunities that are relevant to the site at a level of detail that far greater than a LMP

Intended audience: Local Forestry Commission Scotland team; key stakeholders; statutory consultees where required;

APPENDIX 7: KEY POLICIES & GUIDANCE

- UK Forestry Standard 2011
- UK Woodland Assurance Standard 2012
- Equality Act 2010
- Control of Substances Hazardous to Health Regulations 2002
- Provision and Use of Work Equipment Regulations 1998
- Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995
- The Highways act 1980
- Management of Health and Safety at Work Regulations 1999
- Health and Safety at Work Act 1974
- Occupier's Liability (Scotland) Act 1960
- Land Reform (Scotland) Act 2003
- Employers Liability (Compulsory Insurance) Act 1969

- UK Forestry Standard 2011
- UK Woodland Assurance Standard 2012
- World Soil Charter
- European Soil Charter
- The Waste Management Licensing Regulations 1994
- Control of Pesticides Regulations 1986
- Integrated Pollution Prevention and Control Directive 2008
- Environmental Liability Directive 2004
- Control of Pesticides Regulations 1986
- The Scottish Soil Framework 2009

- UK Forestry Standard 2011
- UK Woodland Assurance Standard 2012
- The UN Framework Convention on Climate Change
- The Kyoto Protocol
- EC Directive 2003/87/EC
- Climate Change (Scotland) Act 2009

- UK Forestry Standard 2011
- UK Woodland Assurance Standard 2012
- Policy on Control of Woodland Removal 2008
- Environmental Impact Assessment (Forestry) (Scotland) Regulations 1999

- UK Forestry Standard 2011
- UK Woodland Assurance Standard 2012
- Wildlife and Natural Environment (Scotland) Act 2011
- Conservation (Natural Habitats) Amendment (Scotland) Regulations 2007
- Nature Conservation (Scotland) Act 2004
- Deer (Scotland) Act 2003
- Protection of Badgers Act 1992
- EC Birds Directive 2009
- Convention on Biological Diversity 1992
- EU Habitats Directive 1992

- UK Forestry Standard 2011
- UK Woodland Assurance Standard 2012
- EU Water Framework Directive 2000
- Water Environment and Water Services (Scotland) Act 2003
- Water Environment (Controlled Activities) (Scotland) Regulations 2005
- Water Environment (Diffuse Pollution) (Scotland) Regulations 2008
- Environmental Protection Act 1990

- UK Forestry Standard 2011
- UK Woodland Assurance Standard 2012
- UNESCO World Heritage Convention
- Ancient Monuments and Archaeological Areas Act 1979
- European Convention on the Protection of the Archaeological Heritage Valetta 1992
- Planning (Listed Buildings and Conservation Areas) (Scotland) Act 1997
- Treasure Trove Scotland

SOILS

People

Landscape

Biodiversity

WATER

Climate Change

Land Management Plan

Outlines the medium to long term management objectives presenting a sustainable approach to the future management of each forest.

Historic Environment

Forest Enterprise Scotland
Managing the National Forest Estate

Forestry Commission Scotland
Coimisean na Coilltearachd Alba

Appendix 8: Management prescriptions on the National Forest Estate- Native Woodland

Soil Group	Soil Types Relevant to IRS FD	Characteristics	Aim*	Species Prescription for Habitat Types Predominating in IRS Forest District
1	Brown Earths	Soils with typically good aeration and drainage throughout the profile and well-incorporated organic matter. These soils are mainly * fertile and allow deep rooting. Likely vegetation to be encountered includes fine grasses, holcus, bracken, bramble, foxgloves, violets and a diverse range of herbs. * However Podzolic Brown earths where nutrients have been leached are "Very Poor"	NW	W19 Juniper wood with sorrel on 1, 1u, 1z and 1b from sheltered sites up to sub alpine areas with DAMS < 22 W18 Scots pine with heather on 1z in cool to warm with DAMS < 18 W11 Upland oak-birch with bluebell on 1, 1u and 1z in cool to warm with DAMS < 18
3 & 4	Podzols & Ironpan Soils	Developed on Acid * soils with high rainfall where nutrients are flushed into the lower horizons of the soil profile. Frequently induration or an impenetrable pan will prevent good drainage, resulting in a need to break this impediment with suitable cultivation that will allow freer draining and greater rooting depth. Vegetation common to these soils are ericaceous plants, grasses including deschampsia flexuosa, nardus, carex and molinia. Light bracken and feather mosses may also be present. * NOT fertile soils	NW RW	W18 Scots pine with heather on 3, 3m, 4, 4z and 4b Not in Sub-alpine climate, (Cool to Warm) DAMS < 18. W19 juniper wood with sorrel on 3 and 4b Possible up to Sub-alpine zone W17 Upland oak-birch with blaeberry on 3s and 3ms Mainly in Lower Cool to warm climate zone. DAMS < 18.
5	Groundwater Gleys	Dominant vegetation is commonly Deschampsia caespitosa, Holcus, salix spp and herbs. Occuring where a shallow water table causes waterlogging and therefore subject to compaction and poorly oxygenated. The soil is permeable but is affected by a fluctuating ground-water table. Moderate nutrient availability.	NW RW	W7 Alder-ash with yellow pimpernel on 5 and 5f Cool to Warm. Sheltered to Moderatedly exposed. (DAMS <16)
6	Peaty Gleys	Very Poor to medium nutritional availability, these soils are indicated by Molinia, Calluna and Erica spp, with sphagnum prevalent in the North and West. High winter water table can be expected and good drainage will be required to achieve best results.	NW	W18 Scots pine with heather on 6z "moist" to "fairly dry" W4 Birch with purple moor-grass on 6 and 6b. Cool to Warm. DAMS < 18.
7	Surface Water Gleys	Differing from groundwater gleys in that waterlogging is caused not by a high water table, but by induration preventing adequate drainage leading to a seasonally fluctuating water table. Resulting anaerobic conditions will restrict rooting. Indicative vegetation includes Holcus, Juncus, Nardus and Deschampsia caespitosa. Again poor to moderate nutritional availability can be expected. Drainage will be required along with micro site cultivation such as mounding.	NW	W11 Upland oak-birch with bluebell on 7b W18 Scots pine with heather on 7z possibly on margins leading to drier knolls. W7 Alder-ash with yellow pimpernel on 7, 7b and 7z Cool to Warm. Sheltered to Moderatedly exposed. (DAMS <16)
8	Flushed Basin Bogs	Juncus spp are prevalent. A shallower peat type, nutrient rich and containing some mineral grains. Peat is black in colour.	NW	W4 Birch with purple moor-grass on 8b and 8c.
9	Molinia Bogs	Often existing on hillsides where flushing is more pronounced. Moderate nutrition available.	NW	W4 Birch with purple moor-grass on 9a, 9b, 9c and 9d suitable for the transitional areas at the margins between productive forest blocks and peatland restoration sites.
			OG	9e Trichophorum, Calluna, Eriophorum, Molinia Bogs will not be planted or restocked - restoration of peatland.
10	Unflushed Flat or Raised Bogs	Sphagnum dominated bogs, formed as peat levels rose to form a dome, reliant on precipitation for moisture and nutrients. Mineral grains are absent and the peat is reddish-brown and tends to be deeper.	OG	10b Upland flat or raised bogs – priority areas for peat restoration.
11	Unflushed Blanket Bogs	Calluna, Eriophorum, Trichophorum Bogs including the hill peats located on upland plateaux and hillsides deeply dissected by burns.	OG	11a A rare peatland type mainly restricted to the driest eastern uplands
			OG	11b,c,d Unflushed blanket bogs - priority areas for peatland restoration
14	Eroded Bogs	Very poor nutritional status characterised by bog asphodel, deer grass, bog cotton etc. Can be dominated by either deep and frequent eroded areas (haggs) or frequent pools of standing water (flows). Very deep peat.	OG	14 & 14h Hagged bogs – unsuitable for forestry or woodland – peatland habitat
			OG	14w Pooled bogs – common across Northern Scotland forming the 'Flows' – peatland.
15	Littoral Soils	Formed on coastal sands and shingles, such as the dunes found at Morrich More near Tain. The category is split into shingle (15s), dunes (15d) and then sands with varying water table depths (15e,w,g,i). These sands can be distinguished by various levels of mottling. Coastal grasses and heathland plants predominate.	NW	W16 Lowland oak-birch with blueberry limited to "Warm" climate

*NW – Native Woodland Expansion / RW – Riparian Woodland Expansion / OG – Managed Open Ground e.g. peatland restoration

NB – These prescriptions must be adopted within the local context set out in the main body of this FDP. Climate must be included as a determining factor in final species selection.
- Planting will generally become a mosaic of the woodland types recommended above, dictated by local conditions and agreed after "75% Site Completion Visits"
- Particular note should be made of the inadvisability of planting the peatland types 10 – 14 that may predominate on marginal FD sites
- No native woodland type likely to be suitable on sites wetter than SMR "Very Moist" and veg indicating SNR <4.5

- Due to Chalara fraxinea no new planting / restocking of Ash will be undertaken, this will be reviewd with new guidance from Forestry Commission Plant Health.

- Natural regeneration of Ash will be accepted where it occurs.

References:

Kennedy F (2002) *The Identification of Soils for Forest Management,* Edinburgh: HMSO

Pyatt, G; Ray, D; Fletcher, J (2001) *An Ecological Site Classification for Forestry in Great Britain; Bulletin 124,* Edinburgh: FCS

Rodwell J.S. and Paterson G.S. (1994) *Creating New Native Woodlands; Bulletin 112,* London: HMSO

Thompson, R (2009) *Management of PAWS on the National Forest Estate in Scotland,* Edinburgh: FCS

Appendix 9: Management prescriptions on the National Forest Estate - Productive Forestry

Soil Group	Soil Types Relevant to IRS FD	Characteristics	Species Prescription for Commercial Restocking
1	Brown Earths	Soils with typically good aeration and drainage throughout the profile and well-incorporated organic matter. These soils range from very rich to poor and usually allow deep rooting. Likely vegetation to be encountered includes broad leaved grasses, (e.g. Yorkshire fog, Bent), bracken, bramble, foxgloves, violets and a diverse range of herbs.	Douglas Fir on Poor (must be without heather) to Rich fertility with Moist to Dry soil moisture. Desirable intimate or group mixture; European Larch*, Norway Spruce or Western Red Cedar. Generally in sheltered areas with sufficient rainfall Sitka or Norway Spruce on Poor to Medium fertility with Wet to Fresh soil moisture. Desirable intimate or group mixture; each other or European/Hybrid Larch Scot's Pine in Podzolised areas on Poor to Medium fertility with Moist to Dry soil moisture. Desirable intimate or group mixture; Japanese/Hybrid or European Larch* European Larch on Medium to Rich fertility with moist to Moderately Dry soil moisture. Desirable intimate or group mixture; Scot's Pine or Douglas Fir Japanese/Hybrid Larch* on Poor to Medium fertility with Very Moist to Fresh moisture. Desirable intimate or group mixture; Scot's Pine Sycamore on Medium to Rich fertility with Moist to Fresh soil moisture. Desirable intimate mixture: Ash† or European Larch* Where improved climatic conditions allow: Sessile Oak on Medium to Rich fertility with Moist to Slightly Dry soil moisture. Pedunculate Oak (Local seed source if possible) on Medium to Rich with Very Moist to Fresh soil moisture. Desirable intimate/group or blocky mixtures include; Norway Spruce, European Larch*, Western Red Cedar, Silver Birch or Ash Silver Birch on Poor to Medium with Very Moist to Fresh soil moisture. Desirable intimate or group mixture: Oak or Scot's Pine *Ash on Rich fertility with moist to Fresh soil moisture and less acidic sites. Mix in groups with; Sycamore, Oak or Beech
3	Podzols	Develop on unfertile acid soils with high rainfall where nutrients are flushed into the lower horizons of the soil profile. Very poor fertility. Induration or an impenetrable pan will prevent good drainage, resulting in a need to break this impediment with suitable cultivation that will allow freer draining and greater rooting depth. Vegetation common to these soils are ericaceous plants, grasses including Wavy hair, Matt and Purple moor grass. Light bracken and feather mosses may also be present.	Scot's Pine with Moist to Dry soil moisture. Desirable mixture; intimate mixture with Hybrid Larch* Sitka Spruce with Wet to Moist soil moisture. Mix with; Lodgepole Pine in wetter areas or Japanese/Hybrid Larch* Japanese/Hybrid Larch* with Very Moist to Fresh soil moisture Where improved climatic conditions allow: Sessile Oak (not on 3m) with Moist to Fresh soil moisture. Desirable mixture; Hybrid Larch, Scot's Pine or limited Norway Spruce
4	Ironpans	Develop on free draining acid soils with high rainfall. The transfer of aluminium and iron in solution down through the soil profile develops an ironpan that is impervious to water and root penetration. Breaking of the ironpan is desirable, so as to allow drainage of the site and a potential increase in soil rooting volume and nutrient availability. Vegetation and fertility is similar to that of Podzols above	Scot's Pine with Moist to Dry soil moisture. Desirable mixture; Japanese/Hybrid Larch Japanese/Hybrid Larch* with Very Moist to Fresh soil moisture. Desirable mixture; Scot's Pine Lodgepole Pine in elevated areas with Wet to Fresh soil moisture Sitka or Norway Spruce (4 & 4b) with Wet to Fresh soil moisture. Desirable intimate or group mixture; Lodgepole Pine in wetter areas or Japanese/Hybrid Larch or Scot's Pine. Sycamore (4b only) with Moist to Fresh soil moisture. Consider intimate mixture with Japanese/Hybrid Larch* Cultivation that includes amelioration of the ironpan will be considered.
5	Groundwater Gleys	Dominant vegetation is commonly Tufted hair grass, Willows and herbs. Occurring where a shallow water table causes waterlogging and therefore subject to compaction and poorly oxygenated. The soil is permeable but is affected by a fluctuating ground-water table. Moderate nutrient availability.	These areas are generally presumed to be open or riparian zones.. Where rooting depth is adequate: Sitka or Norway Spruce on Medium to Rich fertility with Very Wet to Moist soil moisture. Consider adding blocks of Downy Birch and Alder Intimate mix of Downy Birch and Common Alder on Poor fertility with Very Wet to Moist soil moisture
6	Peaty Gleys	Very Poor to Rich nutritional availability, these soils are indicated by Purple moor grass, Calluna and Cross-leaved heath, with sphagnum prevalent in the North and West. High winter water table can be expected and good drainage will be required to achieve best results.	Sitka Spruce on Poor to Medium fertility with Wet to Fresh moisture. Experience in IRS FD suggests this crop will rarely establish as a pure stand without fertiliser input. Intimate mix with Lodgepole Pine in wetter and poorer areas or with Japanese/Hybrid Larch* in more Pozolised areas. Consider adding blocks of Downy Birch Downy Birch on Poor to Medium fertility with Very Moist to Fresh soil moisture

7	Surface Water Gleys	Differing from groundwater gleys in that waterlogging is caused not by a high water table, but by lateral surface-water movement through the soil profile developing a seasonally fluctuating water table. Resulting anaerobic conditions will restrict rooting. Indicative vegetation includes Tussock grass and Creeping Buttercup. Again poor to moderate nutritional availability can be expected. Drainage will be required along with micro site cultivation such as mounding.	Sitka or Norway Spruce on Medium fertility with Wet to Fresh soil moisture. Desirable mixture; each other, Japanese/Hybrid Larch* or with Lodgepole Pine in wetter poorer areas Where improved climatic conditions allow: Pedunculate Oak on 7b Medium to Rich fertility with Moist to Fresh soil moisture. Desirable group or blocky mixture; Norway Spruce	
8	Flushed Basin Bogs	Rushes are prevalent. A shallower peat type, nutrient rich and containing some mineral grains. Peat is black in colour.		
9	Molinia Bogs	Often existing on hillsides where flushing is more pronounced. Moderate nutrition available.	Please note that there is a presumption against planting areas of deep peats where reasonable productive growth rates are not achievable due to intact hydrology and/or challenging climate. Forestry Commission Scotland has developed guidelines for dealing with these soil types. Where areas of deeper peat are encountered in intimate mosaic with more favourable soils Sitka Spruce (QSS) will be favoured in a mixture with Lodgepole Pine of disease resistant provenance or hybrid larch. On these more nutritionally challenged sites a proportion (up to 20%) of soil improving species such as birch will be considered.	
10	Unflushed Flat or Raised Bogs	Sphagnum Moss dominated bogs, formed as peat levels rose to form a dome, reliant on precipitation for moisture and nutrients. Mineral grains are absent and the peat is reddish-brown and tends to be deeper.		
11	Unflushed Blanket Bogs	Calluna, cotton-grass, deer grass bogs including the hill peats located on upland plateaux and hillsides deeply dissected by burns.		
14	Eroded Bogs	Very poor nutritional status characterised by bog asphodel, deer grass, bog cotton etc. Can be dominated by either deep and frequent eroded areas (haggs) or frequent pools of standing water (flows). Very deep peat.		
15	Littoral Soils	Formed on coastal sands and shingles, such as the dunes found at Morrich More near Tain. The category is split into shingle (15s), dunes (15d) and then sands with varying water table depths (15e,w,g,i). These sands can be distinguished by various levels of mottling. Coastal grasses and heathland plants predominate.	Corsican cannot be considered due to the current DNB moratorium on planting therefore Scot's Pine either pure or in intimate, group or blocky mixture with Birch. Downy/Silver Birch depending on climate	

NB – These prescriptions <u>must</u> be adopted within the local context set out in the main body of this Forest Design Plan. Climate, (along with soils) must be included as **the** determining factor in final species selection.

- Planting will generally become a mosaic of the species recommended above and will include areas of non-productive open ground and broadleaf riparian zones. Species choide will be dictated by local conditions and agreed after site visits by management staff.

- No commercial forestry type likely to be suitable on sites wetter than SMR "Very Moist" and vegetation indicating SNR <4.5

- Origin for SS is QSS. However where conditions are sub-alpine then ASS is preferred

- Mixed stands mean that each species occupies at least 20% of the canopy. Blocky areas should aim to cover the area that 3-4 mature trees would cover. Mixtures may need management to favour one or more species. Intimate mixtures of broadleaves with Sitka Spruce or Scot's Pine will normally result in the conifer's dominating overtime so planitng in blocks is often the better option.

- * Due to current plant health restrictions there will be no planting of Larch species, Ash or Lodge pole pine (with the exemption of Alaskan provenance Lodge pole pine), this will reviewed throughout the life of the plan in accordance with industry best practice.

- For new plantations of productive conifers, UKWAs recquirement section 3.3.2 (proportions of different species depending on site suitability) will be met.

References:

Kennedy F (2002) *The Identification of Soils for Forest Management,* Edinburgh: HMSO

Pyatt, G; Ray, D; Fletcher, J (2001) *An Ecological Site Classification for Forestry in Great Britain; Bulletin 124,* Edinburgh: FCS

Savill, P.S. (1991) The Silviculture of Trees used in British Forestry, Oxfordshire: CAB International

Mason, B (2006) Managing Mixed Stands of Conifers and Broadleaves in Upland Forests of Britain, Information Note, Edinburgh: FCS

Wilson, S (2011) Using alternative conifer species for productive forestry in Scotland, Glasgow: Bell & Bain Ltd

http://www.forestry.gov.uk/fr/INFD-8CVE4D

APPENDIX 10: Restock Species Prescriptions

Legend	Species * * First species mentioned in the label will be established as the leading species (>50%) on site, the second species represented < 50% on site.	Prescription
	Sitka spruce	100% Sitka spruce planted at 2700 stems per hectare (sph) in order to achieve 2500 sph at year 5
	Sitka spruce/ Lodgepole pine	This is Sitka spruce and Lodgepole pine planted at 2700sph in order to achieve 2500 sph at year 5.
	Sitka spruce/ Scots pine	This is Sitka spruce and Scots pine planted at 2700 sph in order to achieve 2500 sph at year 5.
	Sitka spruce/ Conifer	This is Sitka spruce in mixture with any other conifer species at 2700 sph to achieve 2500 sph at year 5.
	Conifer/ Broadleaves	This will be any conifer planted in mixture with broadleaves at 2700 sph in order to achieve 2500 sph at year 5. There will be native broadleaves planted in groups within the mixture, these will be small groups planted at 1100sph. This will offer a mixed type woodland to reduce the landscape impact.
	Conifer	Productive conifer of any species planted 100% at 2700 sph in order to achieve 2500 sph at year 5.
	Conifer/Birch	This is any conifers planted in mixture with birch at 2700 sph in order to achieve 2500 sph at year 5.
	Conifer / Scots Pine	This is any conifers planted in mixture with scots pine at 2700 sph in order to achieve 2500 sph at year 5.
	Conifer / Sitka Spruce	This is any conifers planted in mixture with sitka spruce at 2700 sph in order to achieve 2500 sph at year 5.
	Birch	100% birch planted either at 2700 stems per hectare (sph) in order to achieve 2500 sph at year 5; or planted at 1600 sph (none productive). Along riparian zones this will mostly be in groups with open space surrounding.
	Birch / Broadleaves	This is birch planted in mixture with any broadleaves at 2700 sph in order to achieve 2500 sph at year 5, or as unproductive at 1600 sph.
	Birch / Scots Pine	This is birch planted in mixture with scots pine at 2700 sph in order to achieve 2500 sph at year 5.
	Birch / Sitka Spruce	This is birch planted in mixture with sitka spruce at 2700 sph in order to achieve 2500 sph at year 5.
	Broadleaves	Planting of mixed broadleaves (native at 1600 sph, non-productive; 2700 sph – productive)). Along riparian zones this will mostly be in groups with open space surrounding. On the peatland areas this will be peat edge woodland where planting will only be targeted to the drier soils and will be at least 20% forest cover.
	Broadleaves / Birch	This is any broadleaves (other than birch) planted in mixture with birch at 2700 sph in order to achieve 2500 sph at year 5.
	Broadleaves / Conifer	This is any broadleaves planted in mixture with any conifers at 2700 sph in order to achieve 2500 sph at year 5.
	Broadleaves / Scots Pine	This is any broadleaves planted in mixture with Scots Pine at 2700 sph in order to achieve 2500 sph at year 5.
	Douglas Fir	100% Douglas Fir planted at 2700 stems per hectare (sph) in order to achieve 2500 sph at year 5
	Douglas Fir / Conifer	This is douglas fir planted in mixture with any other conifer species at 2700 sph in order to achieve 2500 sph at year 5.
	Douglas Fir / Norway Spruce	This is douglas fir planted in mixture with Norway spruce at 2700 sph in order to achieve 2500 sph at year 5.
	Douglas Fir / Sitka Spruce	This is douglas fir planted in mixture with sitka spruce at 2700 sph in order to achieve 2500 sph at year 5.
	Larch	100% Larch planted at 2700 stems per hectare (sph) in order to achieve 2500 sph at year 5
	Oak	100% oak planted either at 2700 stems per hectare (sph) in order to achieve 2500 sph at year 5; or planted at 1600 sph (none productive). Along riparian zones this will mostly be in groups with open space surrounding.
	Norway Spruce	100% Norway spruce planted at 2700 stems per hectare (sph) in order to achieve 2500 sph at year 5
	Norway Spruce / Conifer	This is norway spruce planted in mixture with any other conifer species at 2700 sph in order to achieve 2500 sph at year 5.
	Norway Spruce / Douglas Fir	This is norway spruce planted in mixture with douglas fir at 2700 sph in order to achieve 2500 sph at year 5.
	Scots Pine	100% Larch planted at 2700 stems per hectare (sph) in order to achieve 2500 sph at year 5
	Scots Pine / Birch	This is scots pine planted in mixture with birch at 2700 sph in order to achieve 2500 sph at year 5.
	Scots Pine / Broadleaves	This is scots pine planted in mixture with broadleaves at 2700 sph in order to achieve 2500 sph at year 5.
	Scots Pine / Conifer	This is scots pine planted in mixture with any other conifer species at 2700 sph in order to achieve 2500 sph at year 5.
	Scots Pine / Douglas Fir	This is scots pine planted in mixture with douglas fir at 2700 sph in order to achieve 2500 sph at year 5.
	Scots Pine / Norway Spruce	This is scots pine planted in mixture with norway spruce at 2700 sph in order to achieve 2500 sph at year 5.
	Scots Pine / Sitka Spruce	This is scots pine planted in mixture with sitka spruce at 2700 sph in order to achieve 2500 sph at year 5.

APPENDIX 11: Alternative Restock Prescriptions

Legend	Species	Prescription
	Productive Broadleaves	100% broadleaves planted at 2700 stems per hectare (sph) in order to achieve 2500 sph at year 5
	Mix of Productive Broadleaves and Conifers	This will be conifers planted at 2700 sph in order to achieve 2500 sph at year 5. There will be native broadleaves planted in groups within the mixture, these will be small groups planted at 2700 sph, as well. This will offer a mixed type woodland to reduce the landscape impact. This allows thinning to be undertaken in the future to improve the final crop trees and select the most appropriate species, the mixed species can have a benefit on the yield and it also spreads the risk in case of pathogens/ climate change.
	Productive Conifers	100% conifers spruce planted at 2700 stems per hectare (sph) in order to achieve 2500 sph at year 5
	Unproductive Broadlaeves	Planting of mixed native broadleaves at 1600 sph (none productive). Along riparian zones this will mostly be in groups with open space surrounding. On the peatland areas this will be peat edge woodland where planting will only be targeted to the drier soils and will be at least 20% forest cover. See Map 8 showing the peatland prescriptions.

APPENDIX 12

Deadwood management

Summary guidance for FES staff

1. POLICY CONTEXT AND FOREST CERTIFICATION REQUIREMENTS

This document summarises the policy and management guidance that Forest Enterprise Scotland (FES) staff need to follow in relation to deadwood. It describes the approach that FES staff should adopt when planning and delivering the deadwood resource on the national forest estate (NFE). This document should be regarded as a FES-specific supplement to the Forestry Commission Scotland (FCS) Practice Guide entitled: *Managing deadwood in forests and woodlands (Humphrey & Bailey, 2012)*, which provides fuller details on some of the following content.

Current government policy (Box 1) requires FES to create a deadwood resource within forests and woodlands on the NFE, and many deadwood-dependent species are listed on the government's Scottish Biodiversity List. Furthermore, the Scottish Forestry Strategy (SFS) implementation plan (2015-18) includes mean deadwood volume as a progress indicator for delivery of the SFS. All of these policy objectives are reinforced by the requirements of forest certification, and this guidance complies with the United Kingdom Woodland Assurance Scheme (UKWAS) Fourth Edition; this is the certification scheme under which FES is certified.

Box 1

The UK Forestry Standard (UKFS) sets out the governments' approach to sustainable forest management in the UK. The UKFS Guideline document entitled: 'Forests and biodiversity' requires the following good forestry practice for deadwood:

23. Leave a proportion of standing and fallen deadwood: concentrate it in areas of high ecological value, where there is existing deadwood and where linkages can be provided between deadwood habitats – avoid uniform distribution across management unit.

24. Retain existing veteran trees and select and manage suitable individuals to eventually take their place

The UKWAS Fourth Edition has the following *requirements*:

I.   The owner/manager shall plan and take action to accumulate a diversity of both standing and fallen deadwood over time in all wooded parts of the WMU [woodland management unit], including felled areas.

II. The owner/manager shall identify areas where deadwood is likely to be of greatest nature conservation benefit, and shall plan and take action to accumulate large dimension standing and fallen deadwood and deadwood in living trees in those areas.

In addition, the UKWAS Fourth Edition gives the following *guidance*:

- The owner/manager should refer to deadwood guidance produced by relevant statutory conservation agencies, forestry authorities and others when identifying areas of greatest nature conservation benefit and when planning actions to accumulate deadwood.

- Current evidence suggests that, over the long term, deadwood (not including stumps, which are usually retained after felling) should accumulate to roughly 20 m^3 per hectare averaged – though not uniformly distributed – across the WMU.

- In most hectares there should be a few standing and fallen stems contributing to the overall deadwood provision.

- Deadwood management should not conflict with safety of the public or workers or the health of the woodland.

The UKWAS guidance of $20m^3ha^{-1}$ is an average and deadwood will not be evenly dispersed across a WMU. For example, ancient semi-natural woodlands and natural reserves will have much more than $20m^3ha^{-1}$ and productive stands will have much less.

Mueller & Buetler's (2010) review found published thresholds ranging from 10 to 80 m^3/ha for boreal forests, and from 10 to 150 m^3/ha for lowland forests. A threshold is a critical volume of deadwood above which a deadwood–dependent species (or group of species) is more likely occur. These threshold studies are useful for giving an indication of the range of deadwood volumes that are ecologically significant. Encouragingly, Humphrey *et al* (2003) demonstrated that even 'normal' plantation management systems in the UK seem to deliver enough deadwood to satisfy the UKWAS guidance. However, their measurements included low stumps (left after felling), which are explicitly excluded from the UKWAS guidance. Nevertheless, this finding is encouraging from the perspective of FES, which has to follow UKWAS guidance.

2. DEADWOOD MANAGEMENT PRINCIPLES

Deadwood provides a habitat and food resources for thousands of species of animals, plants, bryophytes, lichen and fungi (and unknown but enormous numbers of microbes). This habitat is 'partitioned' into innumerable ecological niches, with each species occupying a different niche according to parameters such as tree species, diameter, age, and exposure (the drying effects of sun and wind). Furthermore, because the physical nature of deadwood changes through time due to processes of decay, different assemblages of organisms use a piece of deadwood at different stages of decay. Deadwood is therefore a diverse and dynamic habitat and different organisms require different kinds of deadwood spread differently through space and time. This is problematic for woodland managers trying to create the 'best' deadwood resource to enhance biodiversity on their land. Simply put, it is impossible for managers to provide habitat for all saproxylic (deadwood dependent) species all the time.

Given there is no single 'solution' to providing deadwood habitat, it is best to adopt a set of management principles when planning and delivering deadwood on the NFE. The following set of principles reflects the consistent findings of research across various deadwood taxa and will maximise the overall biodiversity benefits that can be accrued by FES. The principles have been developed with experts from SNH and the underpinning science is expanded upon in Appendix 1.

1. *Retain and create as much deadwood as possible and create new deadwood on a continuing basis.*

2. *Retain and create as many kinds of deadwood as possible.*

3. *Favour native tree species when creating and retaining deadwood.*

4. *Favour the retention and creation of large-diameter deadwood.*

5. *Retain and create high stumps and snags (standing deadwood) within woodland and permanent open areas (but not on clear fells that will be restocked).*

6. *Design the distribution of deadwood to maximise connectivity at the WMU and coupe scale.*

2.1 How to create deadwood

UKWAS guidance recommends the creation of snags. However, FES staff <u>must not</u> kill standing trees using techniques like ring barking and chemical injection to create standing deadwood, irrespective of where this 'artificial' deadwood is located. The potential liabilities and health and safety implications associated with such features are too significant for FES. Cutting of high stumps by harvesting machines is also no longer acceptable because the machines are not designed for such work and the safety of the machine operators may be compromised. This means that snags will not be created on the NFE. Therefore, the creation of deadwood, to augment retained, naturally-occurring deadwood, should be achieved using only the methods listed below to create 'new' deadwood and 'future' deadwood:

Creating new deadwood

- Retaining large-diameter (> 20cm) logs at the edge of coupes following operations.

- Retaining smaller-diameter logs in deadwood piles at the edge of the coupe.

- Creating brash piles at the edge of coupes.

- For specific, project-based reasons (e.g. to create standing deadwood for a single-species project) creating high stumps or standing deadwood using a qualified and certified arboriculturist, or a qualified chainsaw operator if creating high stumps of 1.5m or less. This is an expensive option and is only recommended for the purposes of creating habitat for an endangered species on a very small scale.

- For specific, project-based reasons, drilling tree stumps to create water-filled holes for larvae e.g. pine hoverfly *Blera fallax*.

Creating future deadwood

- Retaining damaged and dying trees wherever possible (providing they do not pose an obvious health and safety risk).

- Retaining wind-blown trees in appropriate locations

- Retaining individual live trees or small groups of live trees on clear fell sites. These are likely to be damaged by wind or blown over at some point and are therefore 'future' deadwood.

Note – Ongoing research suggests that deadwood that dies naturally is more valuable for biodiversity than deadwood that is created by cutting or killing of the tree. This is because trees that go through the entire process of dying and the subsequent decay stages support a wider spectrum of species, in successional stages. Trees that are killed artificially can be colonised rapidly by a small number of generalist species that subsequently inhibit colonisation by more specialist species. Research in Finland is detecting this pattern in fungal communities on deadwood. FES guidance on deadwood management will be revised in light on new research, but meantime the focus is on deriving deadwood from trees that die through natural processes.

3. DEADWOOD MANAGEMENT ON THE NFE THROUGH THE WORK PLAN PROCESS

Retaining and creating deadwood is probably the most cost-effective method of enhancing biodiversity on the national forest estate. FES Environment staff are responsible for ensuring the delivery of deadwood on the NFE, and should therefore make deadwood management a priority and allocate sufficient time and resource for this work. The overall objectives of deadwood management on the NFE are: i) to minimise the operational inconvenience caused by deadwood; ii) to satisfy UKWAS and other policy requirements; and iii) to maximise the biodiversity gains by adopting the management principles listed in Appendix 1.

The following flowchart summarises the approach FES Environment staff should follow to manage deadwood at the coupe level via the Work Plan process, and further details are provided in Sections 3.1 to 3.4:

> **Deadwood management in coupes on the NFE via the Work Plan process**

> Obtain Deadwood Ecological Potential (DEP) class of coupe from the national deadwood layer (Section 3.1)

> Specify the appropriate deadwood management prescription for the coupe in the Work Plan (High, Medium or Low - Section 3.2)

> Visit the site and identify specific features and opportunites to create deadwood and include these in the contract maps, which form part of the Work Plan

> If possible, mark valuable deadwood features (see Table 2) in the coupe with tape

> Liaise with FES harvesting managers and contractors to ensure the deadwood management prescription is followed - attend 75% completion meeting

3.1 WMU deadwood ecological potential classes

The UKWAS term 'woodland management unit' (WMU) equates to an FES Land Management Plan (LMP), and therefore a WMU may include several individual blocks. For each WMU, all areas have been assigned the appropriate 'deadwood ecological potential' (DEP) class in a national deadwood layer, based on different woodland management categories (see Table 1). This layer is available on ForesterWeb and also on forest district servers. A map showing the DEP classes for the whole WMU should be included in Land Management Plans at the time of the plan production or revision (see Map 1 below).

Table 1 – Deadwood Ecological Potential classes of FES woodland management categories

Deadwood ecological potential (DEP) class	FES woodland management categories included in this DEP class
High	Natural reserves, ancient semi-natural woodlands, native pinewoods, riparian buffers along watercourses, PAWS with high ecological potential, wood pasture.
Medium	Minimum intervention areas of broadleaved woodlands, PAWS, LEPOs, long-term retentions, LISS coupes.
Low	All other stands (i.e. stands where timber production is the priority)

Map 1 – Deadwood Ecological Potential map for Achnashellach Land Management Plan
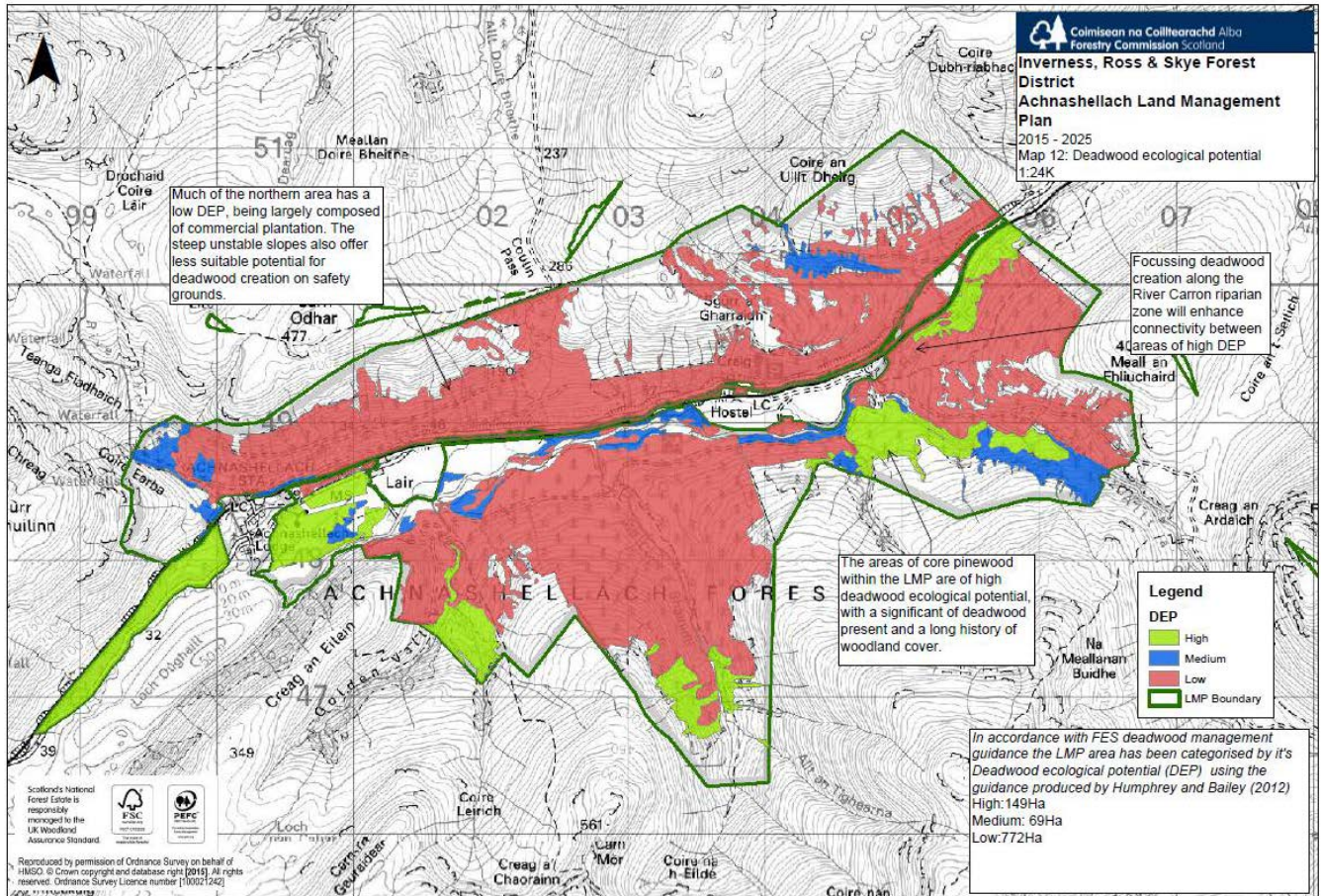
3.2 Deadwood management prescriptions for coupes

When a coupe comes up in the Work Plan process, apply the appropriate deadwood management prescription (High, Medium or Low). The deadwood management prescriptions for each DEP class are shown in Table 2 below; this is a simplified and <u>FES-specific</u> version of the measures detailed in Table 2 of Humphrey & Bailey's (2012) FCS Practice Guide.

Wherever possible during pre-operational surveys, identify particularly valuable features and record these features in work plans, so that they can be included in contracts and retained during operations. Particularly valuable features should be marked using tape prior to commencement of operations. Liaise with FES harvesting managers and contractors to ensure deadwood management prescription is followed and that valuable features are retained during harvesting

Particularly valuable features are veteran and dying trees; large-diameter standing deadwood, particularly of native species; and deadwood from native broadleaves. These deadwood types are under-represented on the NFE and increasing their abundance is a priority.

Table 2 – DEP class deadwood management prescriptions

DEP class	Deadwood management prescription
High	1. Retain all existing veteran trees and deadwood apart from that which is a health and safety risk [a] 2. Retain all wind blow apart from that which is a health and safety risk 3. Deadwood distributed throughout the coupe 4. Seek opportunities to create particularly valuable deadwood e.g. import some large-diameter logs from nearby coupes when they are thinned or clear felled
Medium	1. Retain all existing veteran trees and deadwood apart from that which is a health and safety risk 2. Only harvest wind blow of significant value or which poses a health and safety risk 3. Seek opportunities to create particularly valuable new deadwood e.g. when felling big trees, retain some large diameter logs at the edge of the coupe 4. Where wind blow is harvested, retain some blown trees in a group as 'future deadwood' [b]
Low	***During thinning*** 1. Retain all existing deadwood apart from that which is a health and safety risk 2. Take obvious opportunities to create particularly valuable new deadwood e.g. when felling big trees, retain one or two large diameter logs at the edge of the coupe 3. Where wind blow is harvested, take opportunities to retain a few blown trees in a group as 'future deadwood' in a location that will not restrict future operations e.g. in the corner of a coupe ***During clear felling*** 1. Retain all deadwood and living trees in areas that are uneconomic or too difficult to harvest (e.g. wet, steep or rocky areas) 2. Where an obvious opportunity arises, create new deadwood in a location that will not restrict future operations e.g. a pile of logs and brash in the corner or along the edge of a coupe ***Additional notes for Low DEP class areas*** 1. Deadwood should only be retained in areas that will not restrict future operations 2. Standing deadwood (snags) should not be retained on clear fells, except in areas that will not restrict future operations and that do not pose a health and safety risk e.g. in the corner of a coupe 3. Large diameter (>20cm) deadwood logs and snags are particularly scarce on the NFE. Take opportunities to retain this kind of deadwood. When harvesting large diameter trees, seek opportunities to retain some standing deadwood, if safe to do so, and consider retaining a few large-diameter logs on site in a location that will not restrict future operations. 4. Large diameter deadwood from native broadleaves is particularly scarce. When harvesting large diameter native broadleaves, retain standing deadwood, if safe to do so, and retain some large diameter logs on site in a location that will not restrict future operations.

Notes for Table 2: a. A health and safety risk equates to deadwood that has the potential to fall on recreation routes, or other places likely to be used by people, or buildings, or other infrastructure; b. These retained, living trees will have a high likelihood of being damaged by wind, or blown over, and dying naturally, thereby becoming high-value deadwood.

3.3. Riparian zones and in-stream deadwood

Riparian zones often have large accumulations of deadwood and are an important resource in terms of planning linkages between High and Medium DEP class areas. The deadwood in riparian zones can make a significant contribution to the overall deadwood volume in a WMU, and regeneration or planting of riparian trees should be a priority to provide future deadwood.

The maintenance and management of buffer strips of riparian trees, and the consequent input of woody debris, influences a wide range of physical habitat characteristics within watercourses; including light, temperature, flow, sediment transport and substrate conditions, thereby promoting high levels of biodiversity within the river environment (Gurnell *et al* 1995).

Photo 1 – Riparian woodland with abundant deadwood.

Riparian woodland is the main source of inputs of large woody debris into watercourses, which has beneficial impacts for many species, including fish (Howson *et al* 2012). Inputs of large woody deadwood are probably inadequate in most areas of the NFE (i.e. below natural levels of input) and the direct input of woody debris into watercourses should be employed as a management action – particularly into watercourses used for breeding by trout and salmon and where riparian deadwood is limited or absent. The design and management of riparian woodland to sustain the delivery of large woody debris to watercourses is an explicit action in the UK Forestry Standard Guidelines on forests and water. Further advice on large woody debris input to watercourses is available from the FES ecologists.

Photo 2 – Fallen trees are a major source of woody material within rivers. Such natural events are important for the ecology of fish and invertebrates.

3.4 Visitor Zoning Operations

The FC Practice Guide (Humphrey & Bailey, 2012; pages 15 to 16) gives advice on minimising risks to public and worker safety. Where dangerous trees, wind blow or dead stems have to be removed from within priority Visitor Zoning areas:

- Retain as many as possible on site.
- Move the stems to an area where they would provide significant ecological benefit (as identified above).
- Alternatively, they could be cut into manageable blocks and moved out of site as per the visitor zoning guidance.
- Larger diameter native species are likely to provide the highest benefit and retention of these stems on site should be a priority.
- Opportunities should be taken to retain significant native standing deadwood in place and use them as a focus for highlighting their biodiversity benefit through interpretation. This will always have to be weighed up against H&S and the practicalities of doing so.

The health and safety of people on site and members of the public is paramount. Environment staff should work with CRT staff to ensure standing deadwood within one tree length of roads, tracks and paths are risk assessed. Two documents provide guidance in this regard: OGB1 and the NTSG guidance entitled 'Common sense risk management of trees' (see references). New paths and tracks should be designed to avoid veterans (important future deadwood) and areas of minimum intervention where possible.

Antisocial behaviour is not sufficient reason for removing or minimising deadwood in WIAT sites. Following guidelines above, retention on-site of large diameter lengths of broadleaf, particularly native species, moved to shady damp areas (protected by shrubs such as bramble) will reduce potential for burning.

4. GLOSSARY

Ecological niche – The place occupied by an organism within an ecosystem, including its habitat and its effect on other organisms and the environment

Saproxylic – Pertaining to species that live on or in deadwood for at least part of their life cycle

Snag – Standing dead tree

Species diversity – A measure of the diversity within an ecological community that incorporates both species richness and the evenness of species' abundances

Species richness – The number of species within an ecological community or within an otherwise defined area or volume

Woodland Management Unit – The area to which management planning documentation (e.g. Forest Design Plan or Land Management Plan) relates. A WMU is a clearly defined woodland area, or areas, with mapped boundaries, managed to a set of explicit long term objectives.

5. ACKNOWLEDGEMENTS

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APPENDIX 1 – RESEARCH-BASED DEADWOOD MANAGEMENT PRINCIPLES

1. ***Retain and create as much deadwood as possible and create new deadwood on a continuing basis***. As explained above, UKWAS guidance recommends about 20m^3/ha, which is an average, but in some sites much higher volumes will exist or the creation of higher volumes per hectare will have even greater ecological gains. As the deadwood volume increases, so does the deadwood diversity and therefore the species richness and diversity of associated organisms. For example, Mueller & Buetler (2010) demonstrated that the number of critically endangered saproxylic beetle species was positively correlated with the amount of deadwood available in their sampling plots. They recommended establishing several forest stands with deadwood amounts >20 to 50 m^3/ha within a network (WMU). Constant inputs of new deadwood are necessary to maintain a spectrum of ages and stages of decay into the future – so new deadwood needs to be created on a continuing basis. This is necessary because deadwood changes continually. For example, Makinen *et al* (2006) found that all Scots pine, Norway spruce and birch stems (snags) had fallen down by forty years after their death. Veteran trees are important in this regards as they represent future deadwood, and have the potential to capture the entire spectrum; starting with newly dead wood when the veteran dies.

2. ***Retain and create as many kinds of deadwood as possible.*** As the number of kinds of deadwood increases in an area, the number of microhabitats increases. Consequently, the species richness and diversity of associated organisms increases. For example, Hjalten *et al* (2010) showed that there were clear differences in saproxylic beetle assemblages between different deadwood substrate types. Brunet & Isacsson (2009) conclude that for high species diversity there is a requirement for snags in different stages of decay, size and degree of sun exposure. Therefore, FES managers should attempt to create and maintain deadwood of as many different ages (from newly dead to nearly completely decayed), heights (stumps to high snags), sizes (from small branches on the ground to large-diameter snags), types (snags, logs, stumps, log piles, felling debris etc), and degree of exposure (always shaded at one extreme to always exposed to direct sunlight at the other) as possible. In addition, deadwood from a wide range of tree species should be retained to support more exacting species of fungi (Hielmann-Clausen 2003), bryophyte (Rothero 2008), lichen and invertebrate. There is no exact recipe for the provision of this varied resource, so FES managers should simply aim for as much variety at the coupe level as is reasonably possible, taking advantage of the available opportunities.

3. ***Favour native tree species when creating and retaining deadwood.*** Deadwood retention and creation should utilise native tree species wherever possible. However,

deadwood from non-native tree species is still valuable and is certainly better than no deadwood.

4. ***Favour the retention and creation of large-diameter deadwood.*** Numerous studies show that bigger snags and logs support more species, particularly rare species. For example, Brin *et al*. (2011) showed that more indicator saproxylic species were observed in large logs than in small logs. Studies in Scandinavia (e.g. Kruys et al 1999) confirm that decaying logs >20cm provide a much richer habitat for bryophytes than smaller diameter logs. This is thought to be due to larger logs holding more moisture, providing a greater range of micro-habitats, decaying more slowly and being less likely to become over-grown by competitive vegetation. One informative conclusion of Humphrey *et al* (2003) was that large diameter, well-decayed deadwood, which is particularly valuable for biodiversity, occurs at a very low frequency and volume in most forest and stand types in the UK. The UKWAS Standard defines large as greater than 20cm diameter.

5. ***Retain and create high stumps and snags within woodland and permanent open areas (but not on clear fells that will be restocked).*** Several studies (e.g. Hjalten *et al* 2010) indicate that there are clear differences in species' assemblage composition between substrate types e.g. low stumps compared to high stumps. Low stumps left after harvesting provide important habitat for many deadwood species, including fungi and beetles. However, the higher parts of high stumps and high snags (>2m high) support different species, and can be particularly important for lichens (see Photo 3).

High snags (frequently called standing deadwood) on clear fell sites are much less valuable for deadwood species in Scotland. This is because of the extreme exposure makes the wood unsuitable for most deadwood species. Additionally, in Scotland, we have a much-reduced invertebrate fauna due to past extinctions, and none of the remaining species are dependent on exposed deadwood snags. Exposed wood is good for some lichens, but replanting of clear fells means that snags will shaded by dense conifers within a relatively short timescale and lichens cannot survive without light. Snags on clear fells are not important for birds

Therefore, it is important to retain and create (but see Section 2.1) high stumps and snags within woodland and permanent open areas, in order to provide habitat for a wide range of species. Snags on clear fells are ecologically much less important and are a significant constraint on operational activity. Snags should not be retained on clear fells that will be restocked, except in locations that will not constrain future operations e.g. along the edges or in the corner of coupes.

Photo 3 – Naturally-occurring Scots pine 'bones' within woodland and open woodland are particularly important for lichens in Scotland. These valuable features should be retained (unless they pose a health and safety risk e.g. by being close to tracks).

6. ***Design the distribution of deadwood to maximise connectivity at WMU and coupe scales.*** Numerous papers indicate that the spatial distribution and connectedness of the deadwood resource is an important determinant of occurrence of many saproxylic species. Studies of saproxylic beetles show that they respond to habitat factors (e.g. amount of deadwood) at different spatial scales i.e. at both the forest stand and landscape scales. For example, Bergman *et al* (2012) showed that some beetle species respond to both local (e.g. forest stand) and landscape (e.g. forest block) habitat factors. In this study, 16 oak-dependent saproxylic species showed a clear relationship with substrate (snag) density at scales ranging from 52m to >5200m. How large and connected areas of High deadwood volumes (>20 to 50 m^3/ha) need to be is still unknown for most groups, even though some information indicates that the surroundings also play an important role (Oakland *et al* 1996). Several research projects (e.g. Franc *et al* 2007, Ranius & Roberge 2011) recommend concentrating deadwood into a network of low-intensity-management sites within a more intensively-managed-forest matrix.

APPENDIX 2 – EXAMPLES OF GOOD DEADWOOD MANAGEMENT

Retain and create as much deadwood as possible and create new deadwood on a continuing basis.

Photo 4 – A long-term retention on a hillside that will be subject to wind blow, which will cause many of the trees to die naturally at different times. This will create large amounts of deadwood on a continuing basis for many years.

Photo 5 – Retention of native tree species within a crop of exotic tree species. Such retentions act as 'life boats' for many species of invertebrates, fungus and lichens, allowing them to persist in the coupe. The retention also facilitates and maintains dispersal of many species within a forest block. Many of the trees in the retention will be subject to wind damage, which will create a range of deadwood habitats on the tree and on the ground. The trees will be damaged and will die at different times, thereby providing a range of deadwood habitats at different stages of the decay process. This is a far more valuable way of creating deadwood than retaining lots of dead and bark-less snags across a restock.

Photo 6 – A large retention of wind thrown trees and six living trees at the edge of a coupe. The blown trees will die at various times in the future, thereby creating inputs of new deadwood on a continuing basis. Dying trees are extremely valuable deadwood habitats. This is because changing assemblages of species colonise the wood as it goes through the varying decay stages: from weakened and dying, to recently dead, and right through to the stage where the tree is almost decomposed. So, from death to decomposition, each tree provides a spectrum of changing habitats that are invaluable for literally thousands of species. The standing trees are likely to snap in the wind and die or blow down and die. Either way, it creates very valuable deadwood habitat in the future.

Retain and create as many kinds of deadwood as possible.

Photo 7 – Log and brash piles created in a corner of a coupe that was not going to be restocked. This 'deadwood centre' provides habitat for many species of invertebrate, fungus and lichen. In addition, such features are often used as resting places or breeding sites by protected species such as otters and pine martens, and reptiles and amphibians. By providing these features in appropriate locations (e.g. in riparian zones or at the edge of permanently open ground), it minimises the likelihood that protected species will rest or breed in the middle of productive areas. This reduces the constraints associated with these widely-distributed species.

Photo 8 – A 'deadwood centre' at the edge of a productive coupe. The opportunity to create this feature arose because of the accumulation of different types of deadwood in a location that will not hinder future operations. Off cuts have been placed in the deadwood centre and a few living pines with poor form have been retained. These will likely be damaged by wind at some stage and are therefore 'future deadwood'. Having ongoing inputs of new deadwood over time is important because different species use different decay stages of deadwood.

Photos 9, 10 and 11 – Examples of deadwood retained in locations that will not impinge on future operations. In all cases, a variety deadwood has been collected into 'deadwood centres' along of edge of coupes that will be restocked in the future. The bottom photo shows an area with a retained snag, a large-diameter stump with retained log section, and a variety of brash and small diameter deadwood.

Favour native tree species when creating and retaining deadwood.

Photo 12 – Retained birch snag. Deadwood from native tree species is more valuable than deadwood from non-native tree species.

Photo 13 – Rot holes in dead and dying broadleaf are very valuable habitats for a range of saproxylic species.   Such habitats are very scarce on the NFE and should be retained.

Photo 14 – Retained Scots pine snags following removal of spruce crop.

Favour the retention and creation of large-diameter deadwood.

Photo 15 – Large-diameter deadwood supports remarkable biodiversity but is rare on the NFE. Large diameter deadwood from native broadleaves is particularly valuable and scarce.

Photo 16 – These large diameter and flared butts are valuable deadwood habitat, but have been left over the drain at roadside. In such cases, ask the machine operator to lift them into the edge of the adjacent coupe.

Photo 17 – Large diameter, windblown tree left in-situ on the boundary of two productive coupes. An extremely valuable and ever-changing habitat, left in a location that will not hinder future operations.

Retain and create high stumps and snags (standing deadwood) within woodland and permanent open areas (but not on clear fells that will be restocked)

Photo 18 – High stumps resulting from trees snapping should be retained during thinning operations (unless they pose a health and safety risk e.g. by being close to tracks).

Photo 19 – High stumps with cavities are particularly important for a range of birds, mammals and invertebrates and should be retained.

Photo 20 – Snapped trees such as this provide a range of deadwood habitats, including dying branches. These trees are likely to die standing and go through much of the decay process whilst standing. This provides different habitat to stems on the ground. On clear fells, retain any such trees along edges of coupes.

Design the distribution of deadwood to maximise connectivity at the WMU and coupe scale.

Photo 21 – A network of retentions of dead, dying and living trees (future deadwood) in Galloway Forest Park.

Some species have extremely limited dispersal ability (e.g. see Jackson *et al* 2012), and habitat fragmentation occurs for some saproxylic insects at a local scale through the isolation of single deadwood pieces (Schiegg 2000). Therefore, as a general rule, deadwood at the coupe level should have a high level of connectivity to benefit such species. In practice, this means that there should only be a few metres between individual logs and snags, or that it should be clumped and touching or nearly touching in the case of felling debris such as branches and logs (Photo 18). This approach is compatible with minimising operational inconvenience as deadwood can be clumped along coupe edges or in corners.

Photo 22 – Felling debris and logs clumped to ensure habitat connectivity for dispersal-limited species.

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APPENDIX 14

Smithton and Culloden (Potentially Vulnerable Area 01/20)

Local Plan District	Local authority	Main catchment
Highland and Argyll	The Highland Council	Inverness coastal

Summary of flooding impacts

River 37%

Surface water 63%
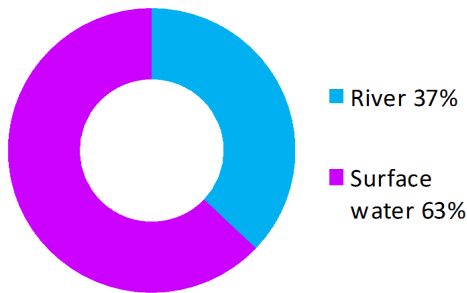
At risk of flooding

- 30 residential properties
- 10 non-residential properties
- £33,000 Annual Average Damages

(damages by flood source shown left)

Summary of objectives to manage flooding

Objectives have been set by SEPA and agreed with flood risk management authorities. These are the aims for managing local flood risk. The objectives have been grouped in three main ways: by reducing risk, avoiding increasing risk or accepting risk by maintaining current levels of management.

Many organisations, such as Scottish Water and energy companies, actively maintain and manage their own assets including their risk from flooding. Where known, these actions are described here. Scottish Natural Heritage and Historic Environment Scotland work with site owners to manage flooding where appropriate at designated environmental and/or cultural heritage sites. These actions are not detailed further in the Flood Risk Management Strategies.

Summary of actions to manage flooding

The actions below have been selected to manage flood risk.

Flood protection scheme/works	*Natural flood management works*	*New flood warning*	*Community flood action groups*	*Property level protection scheme*	*Site protection plans*
Flood protection study	*Natural flood management study*	*Maintain flood warning*	Awareness raising	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning policies

Smithton and Culloden (Potentially Vulnerable Area 01/20)

Local Plan District	Local authority	Main catchment
Highland and Argyll	The Highland Council	Inverness coastal

Background

This Potentially Vulnerable Area is approximately 14km^2. It includes Smithton, Culloden and Westhill (shown below). The A96, A9 and B9006 pass through the area.
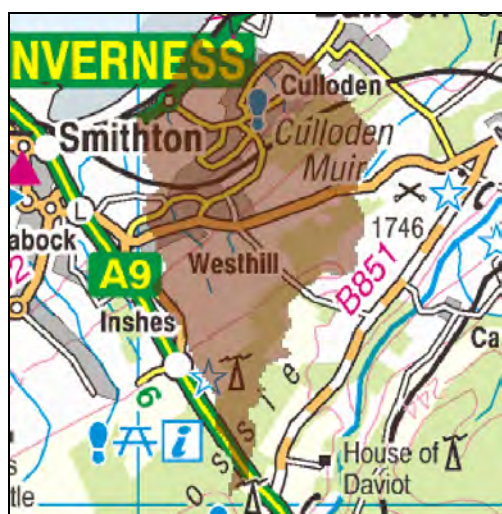
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There are a series of small rivers in this area. These generally flow north and discharge into the Moray Firth.

There are approximately 30 residential and 10 non-residential properties at risk of flooding.

The Annual Average Damages are approximately £33,000 with the majority caused by surface water.

River 37%

Surface water 63%
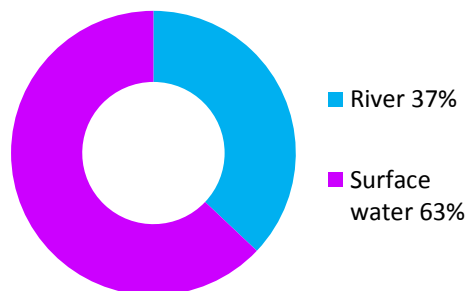
Figure 1: Annual Average Damages by flood source

Summary of flooding impacts

Some of the smaller watercourses in Smithton and Culloden were not included in the assessment of river flooding due to their small catchment size. Flood risk from these burns is included in the assessment of surface water flooding. Considering historic flooding in Smithton and Culloden, it is likely that overall flood risk is currently underestimated.

The risk of flooding to people and property, as well as to community facilities, utilities, the transport network, designated sites and agricultural land is summarised in Table 1.

Roads, including the A96 and the A9, and both the Inverness to Aberdeen and the Inverness to Perth railway lines have a risk of flooding in several locations.

The damages associated with floods of different likelihood are shown in Figure 2. For this Potentially Vulnerable Area the highest damages are to residential properties followed by damages to roads.

The location of the impacts of flooding is shown in Figure 3.

| | 1 in 10 | 1 in 200 | 1 in 1000 |
	High likelihood	Medium likelihood	Low likelihood
Residential properties (total 4,600)	<10	30	40
Non-residential properties (total 180)	<10	10	10
People	20	60	80
Community facilities	0	0	0
Utilities assets	<10	<10	10
Transport links (excluding minor roads)	Roads at 40 locations Rail at 10 locations	Roads at 70 locations Rail at 10 locations	Roads at 80 locations Rail at 10 locations
Environmental designated areas (km^2)	0	0	0
Designated cultural heritage sites	4	4	4
Agricultural land (km^2)	0.1	0.1	0.2

Table 1: Summary of flooding impacts[1]
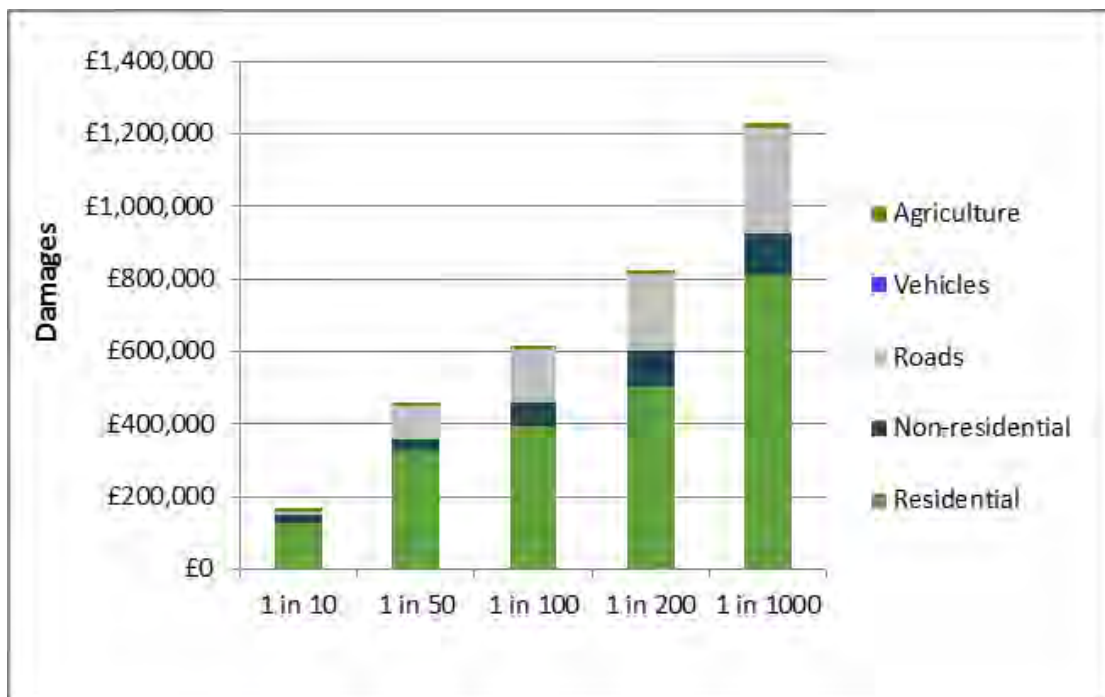
Figure 2: Damages by flood likelihood

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[1] Some receptors are counted more than once if flooded from multiple sources
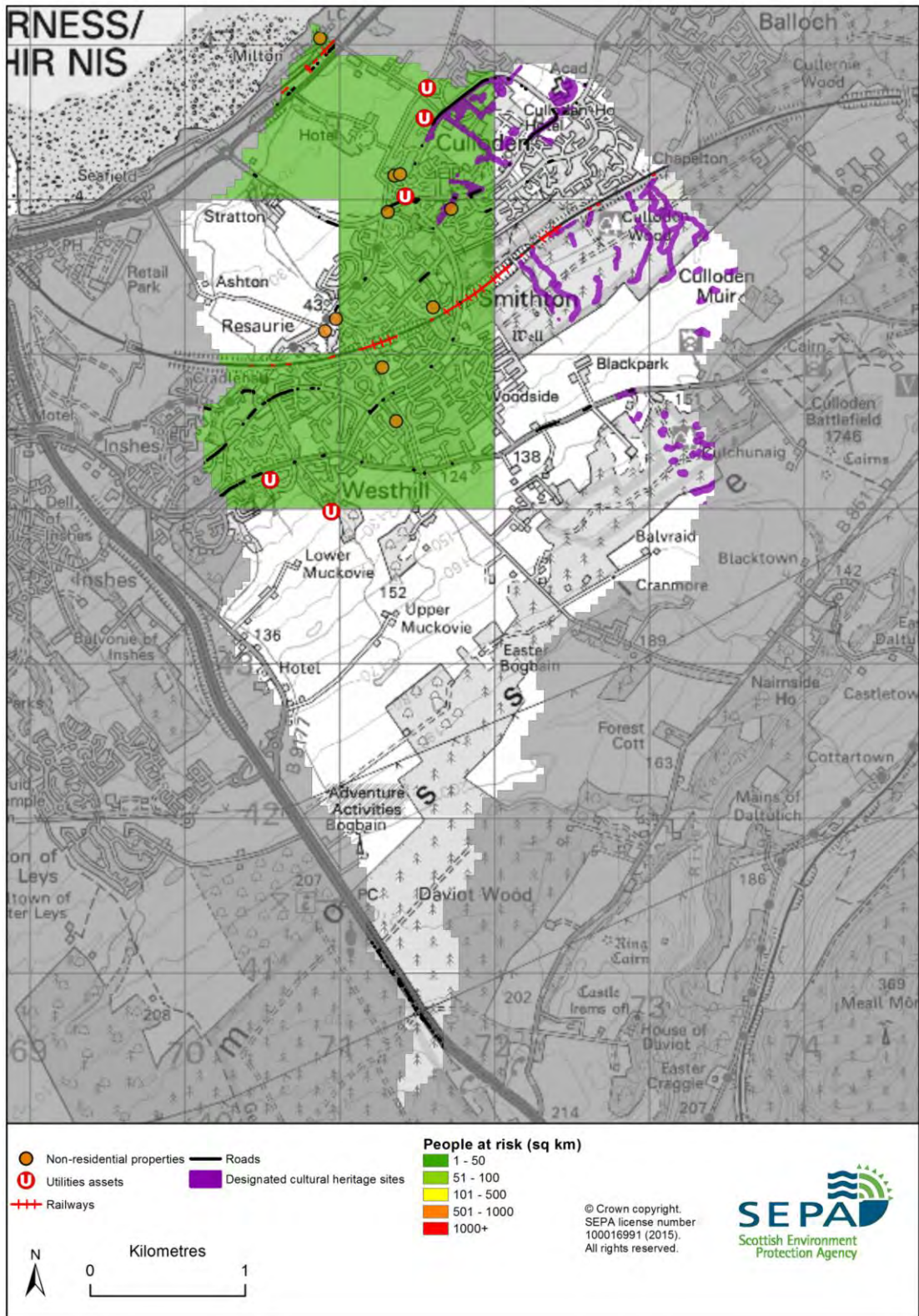
Figure 3: Impacts of flooding

History of flooding

There have been 12 recorded floods since 1993, including 2002, 2004, 2005, 2006, 2007 and 2011.

The sources of flooding include the Scretan Burn, a tributary of Cairnlaw Burn, a tributary of Culloden East Burn, Smithton Burn, Culloden Burn West, Culloden Burn South and Tower Burn. The flooding was exacerbated in many instances due to blockages of culverts with debris and gravel from bed and bank erosion during high flows.

Objectives to manage flooding in Potentially Vulnerable Area 01/20

Objectives provide a common goal and shared ambition for managing floods. These objectives have been set by SEPA and agreed with flood risk management authorities following consultation. They were identified through an assessment of the underlying evidence of the causes and impacts of flooding. Target areas have been set to focus actions; they do not necessarily correspond to areas at risk in SEPA's flood map. The objectives below have been set for Smithton and Culloden Potentially Vulnerable Area.

Target area	Objective	ID	Indicators within PVA
Smithton and Culloden	Reduce risk from surface water flooding in Smithton and Culloden	102001	* See note below
Applies across Highland and Argyll Local Plan District	Avoid an overall increase in flood risk	100001	• 30 residential properties • £33,000 Annual Average Damages
Applies across Highland and Argyll Local Plan District	Reduce overall flood risk	100002	• 30 residential properties • £33,000 Annual Average Damages
Applies across Highland and Argyll Local Plan District	Organisations such as Scottish Water, energy companies and Historic Environment Scotland actively maintain and manage their own assets, including the risk of flooding. These actions are not detailed further in the Flood Risk Management Strategies.		

* This objective will be monitored using surface water flood risk across the Potentially Vulnerable Area. For 01/20 there are 30 residential properties at risk and Annual Average Damages of £21,000.

Actions to manage flooding in Potentially Vulnerable Area 01/20

Actions describe where and how flood risk will be managed. These actions have been set by SEPA and agreed with flood risk management authorities following consultation. Selection of actions to deliver the agreed objectives was based on a detailed assessment and comparison of economic, social and environmental criteria. The actions shaded and then described below have been selected as the most appropriate for Smithton and Culloden Potentially Vulnerable Area.

Selected actions

Flood protection scheme/works	Natural flood management works	New flood warning	Community flood action groups	Property level protection scheme	Site protection plans
Flood protection study	Natural flood management study	Maintain flood warning	Awareness raising	Surface water plan/study	Emergency plans/response
Maintain flood protection scheme	Strategic mapping and modelling	Flood forecasting	Self help	Maintenance	Planning policies

Action (ID):	FLOOD PROTECTION SCHEME/WORKS (1020010006)		
Objective (ID):	Reduce risk from surface water flooding in Smithton and Culloden (102001)		
Delivery lead:	The Highland Council		
Priority:	National:		Within local authority:
	20 of 42		1 of 3
Status:	Under development	Indicative delivery:	2016-2021
Description:	The Smithton and Culloden Flood Protection Scheme is undergoing detailed design and consists of the replacement of culverts, sediment and debris management and temporary flood storage. The scheme will protect communities affected by flooding on a number of occasions in recent years and is being designed to a 1 in 200 year standard of protection including an allowance for climate change.		
Potential impacts			
Economic:	The proposed works would result in a potential reduction in flood risk to 132 residential properties and could potentially avoid damages of £19 million. The benefit cost ratio of the proposed works is 2.4.		
Social:	Approximately 290 people may directly benefit from the Smithton and Culloden Flood Protection Scheme. A reduction in flood risk would have a positive benefit to the health and wellbeing of the community and socially vulnerable people.		
Environmental:	Flood protection works can have both positive and negative impacts on the ecological quality of the environment depending on how they are designed. There is potential for impacts on habitats and changes to channel morphology. Opportunities to mitigate any environmental		

Environmental:	impacts should be identified as part of the study through the design and timing of works.

Action (ID):	**SURFACE WATER PLAN/STUDY** (1020010018)		
Objective (ID):	Reduce risk from surface water flooding in Smithton and Culloden (102001)		
Delivery lead:	The Highland Council		
Status:	**Ongoing**	Indicative delivery:	**2016-2021**
Description:	The area must be covered by a surface water management plan or plans that set objectives for the management of surface water flood risk and identify the most sustainable actions to achieve the objectives. An integrated catchment study will be carried out to support the surface water management plan process and improve knowledge and understanding of surface water flood risk and interactions with other sources of flooding e.g. with the sewer network, watercourses and the sea.		

Action (ID):	**STRATEGIC MAPPING AND MODELLING** (1000020019)		
Objective (ID):	Reduce overall flood risk (100002)		
Delivery lead:	Scottish Water		
Status:	**Not started**	Indicative delivery:	**2016-2021**
Description:	Scottish Water will review the assessment of flood risk within the highest risk sewer catchments to improve knowledge and understanding of surface water flood risk.		

Action (ID):	**FLOOD FORECASTING** (1000020009)		
Objective (ID):	Reduce overall flood risk (100002)		
Delivery lead:	SEPA		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	The Scottish Flood Forecasting Service is a joint initiative between SEPA and the Met Office that produces daily, national flood guidance statements which are issued to Category 1 and 2 Responders. The service also provides information which allows SEPA to issue flood warnings, giving people a better chance of reducing the impact of flooding on their home or business. For more information please visit SEPA's website. The Potentially Vulnerable Area is within the 'Easter Ross and Great Glen' flood alert area.		

Action (ID):	**SELF HELP** (1000020011)		
Objective (ID):	Reduce overall flood risk (100002)		
Delivery lead:	—		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Everyone is responsible for protecting themselves and their property from flooding. Property and business owners can take simple steps to reduce damage and disruption to their homes and businesses should flooding happen. This includes preparing a flood plan and flood kit, installing property level protection, signing up to Floodline and Resilient Communities initiatives, and ensuring that properties and businesses are insured against flood damage.		

Action (ID):	**AWARENESS RAISING** (1000020013)		
Objective (ID):	Reduce overall flood risk (100002)		
Delivery lead:	Responsible authorities		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	SEPA and the responsible authorities have a duty to raise public awareness of flood risk. Improved awareness of flood risk and actions that prepare individuals, homes and businesses for flooding can reduce the overall impact. SEPA will undertake flood risk education and awareness raising activities. In addition, SEPA will engage with community resilience groups and participate in property level protection events delivered by the Scottish Flood Forum where possible. Local authorities will be undertaking additional awareness raising activities. Further details will be set out in the Local FRM Plan.		

Action (ID):	**MAINTENANCE** (1000020007)		
Objective (ID):	Reduce overall flood risk (100002)		
Delivery lead:	The Highland Council, asset / land managers		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Local authorities have a duty to assess watercourses and carry out clearance and repair works where such works would substantially reduce flood risk. They produce schedules of clearance and repair works and make these available for public inspection. Scottish Water undertake inspection and repair on the public sewer network. Asset owners and riparian landowners are responsible for the maintenance and management of their own assets including those which help to reduce flood risk.		

Action (ID):	**EMERGENCY PLANS/RESPONSE** (1000020014)		
Objective (ID):	Reduce overall flood risk (100002)		
Delivery lead:	Category 1 and 2 Responders		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Providing an emergency response to flooding is the responsibility of many organisations, including local authorities, the emergency services and SEPA. Effective management of an emergency response relies on emergency plans that are prepared under the Civil Contingencies Act 2004 by Category 1 and 2 Responders. The emergency response by these organisations is co-ordinated through regional and local resilience partnerships. This response may be supported by the work of voluntary organisations. The Highland Council has two flood monitors in this area. One is on the Tower Burn and the other is on the Smithton Burn. Both monitors are in locations where culverts are prone to blockage. The flood monitors provide early warning of increasing water depths, which could lead to flooding.		

Action (ID):	**PLANNING POLICIES** (1000010001)		
Objective (ID):	Avoid an overall increase in flood risk (100001) Reduce overall flood risk (100002)		
Delivery lead:	Planning authority		
Status:	**Existing**	Indicative delivery:	**Ongoing**
Description:	Scottish Planning Policy and accompanying Planning Advice Notes set out Scottish Ministers' priorities for the operation of the planning system and for the development and use of land. In terms of flood risk management, the policy supports a catchment-scale approach to sustainable flood risk management and aims to build the resilience of our cities and towns, encourage sustainable land management in our rural areas, and to address the long-term vulnerability of parts of our coasts and islands. Under this approach, new development in areas with medium to high likelihood of flooding should be avoided. For further information on the application of national planning policies see Annex 2.		

Appendix 15 Forestry & Water

The Scottish Environmental Protection Agency (SEPA) is implementing the Water Framework Directive (WFD) in Scotland. This is a legal framework for the protection, improvement and sustainable use of all water bodies in the environment across Europe. All significant water bodies across Scotland have been assessed for ecological and chemical status and catchment plans have been drawn up to ensure water bodies are brought up to an acceptable level. IRSFD lies entirely within the Scotland River Basin Management Plan Area and the LMP area is located within the Isle of Skye Coastal catchments.

FES recognise the importance that the proposed forest restructuring, felling, restocking etc., including the proposed road construction within this LMP, does not lead to any deterioration of the water bodies or water dependent areas within the plan area and any of the neighbouring water bodies.

There are no forestry related pressures on any of the water bodies.

The potential impact of future run of river hydro proposals will be assessed through individual planning applications submitted by the developer and are not included as part of the LMP.

Rhododendron ponticum is the only invasive non-native species (INNS) recorded within the plan area. These are only present at low levels and as such there are no plans to undertake control of these species, they will however be monitored and action will be taken if they start to threaten native species and habitats.

As standard all forestry and associated Civil Engineering (new road creation, bridges and culverts) operations must comply with the Forest and Water Guidelines 2011 and The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (CAR). The requirement for registration or SEPA authorisation for projects will be undertaken at the site planning (work plan) stage and this level of information is not detailed in the LMP. Routes for forest road creation are provided at a 1:20000 scale on Map 5: Management.

A link to further information on the Forest and Water Guidelines (2011) and the Water Environment (Controlled Activities) (Scotland) Regulations 2011 is located below;

Forestry Commission - UKFS - Water

SEPA Water Regulations

Table -Summary of water bodies, status & pressures

River Name	River Number	Overall Condition in 2016
River Nairn	20205	Moderate
Rough Burn	23398	Moderate
Caledonian Canal	20238	Good
Tributary of Ardersier Burn	20246	Good

The role of forestry and woodland in natural flood management is increasingly being recognised as a sustainable means of protection which can deliver multiple benefits. The plan has been developed in accordance with current best practice (UKFS). Clearfelling is being phased with an aim to gradually restructure the forest where possible. Felling coupe size has been considered to achieve an appropriate balance between operational practicality, environmental impact and cost effectiveness; this has included consideration of any potential downstream effects on flood risk.
A central aim of the restocking of the next rotation (outlined on **Map Series 4: Future Habitat and Species**) is to restore riparian woodland and manage these areas under lower intervention post establishment. This will provide a long-term protective buffer along the significant watercourses and contribute to flood mitigation through increased hydraulic roughness and protection against siltation.
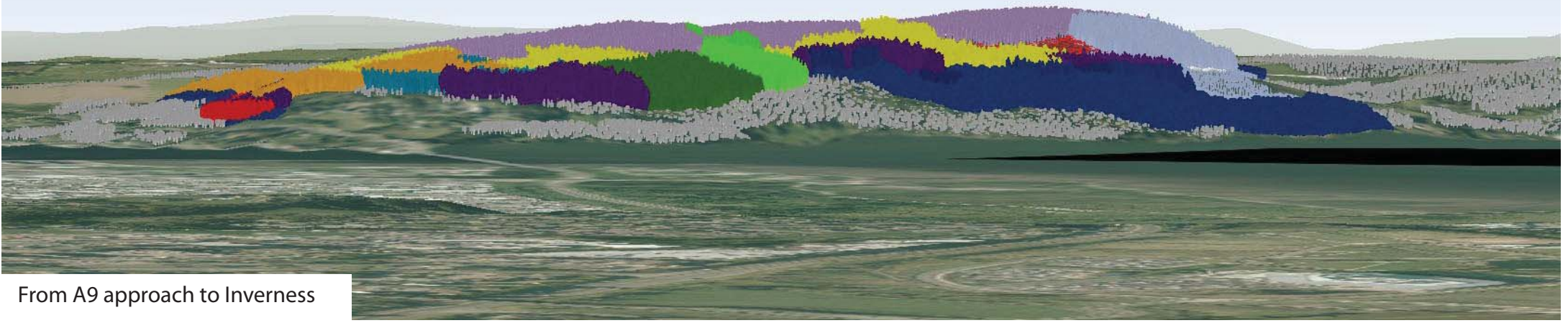
Historic drainage which does not meet UKFS will be addressed as following;

- During forest road maintenance and upgrade operations the associated forest road drainage will be assessed and where necessary realigned to ensure that water is discharged slowly into buffer areas.
- At the restocking stage active forest drains which do not meet UKFS standard will be remediated to meet the current standard.
- At the restocking stage inactive (blocked) forest drains, which did not meet
- UKFS standard, will be left to revegetate.

At the restocking stage consideration will also be given to remediate any forest drains which flow directly into watercourses, where practicable and reasonable to do so.

Branches and tree tops (lop and top) produced by felling and thinning operations are not considered as waste in terms of this plan, because the material will be incorporated in the brash mat to aid machine traction and flotation thus protecting fragile soils. Additionally material will be retained on site to achieve deadwood objectives. Other branches and material left after harvesting contribute to the functional ecology of the woodland and are an important feature of nutrient recycling that will increase biodiversity and may assist future productive woodland establishment. Where the felling to recycle of non-native species occurs the arisings have subsequent use including protecting vulnerable native tree regeneration from grazing mammals and again, contributing to the functional ecology of the woodlands.

APPENDIX 16 - 3D Visualisations



From A9 approach to Inverness

Forest at this end of the hill is retained.

From road linking Smithton to A96

From road next to Stadium
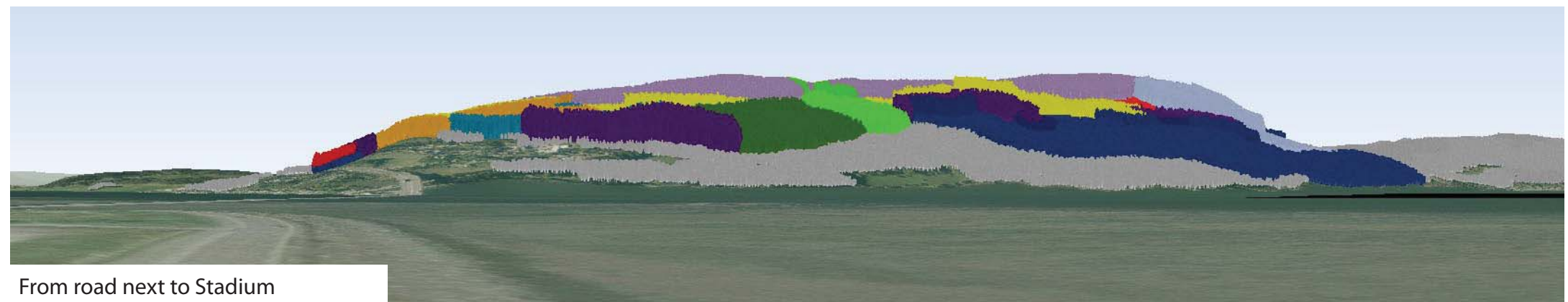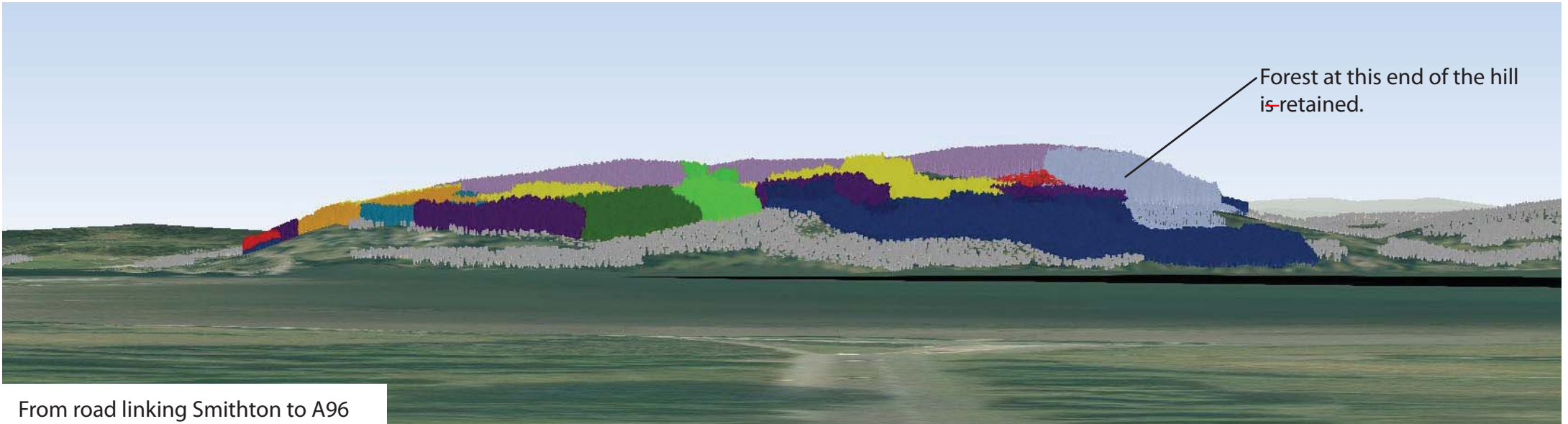
Ordhill is a landmark feature which dominates the skyline beyond Inverness. It is also a popular destination for locals who enjoy use the forest for informal recreation. They identify the internal landscape, and views out to the firths as important. The forest also forms the setting of the scheduled monument. Our aim is to minimise impact on visitors to Ordhill and views from in and around Inverness.

Option 4:
This option combines elements from a range of options, with smaller coupes than the current approved plan. Visualisations above show forest schematic for date 2024. Although no one is going to see the forest in this multi-coloured form, the colouring of coupes identifies the basic shapes. Further work would be required on the timing of the phasing to avoid adjacency and issues such as wind blow.

Critical analysis of option:
Felling coupes appear as interlocking shapes which stretch across the hillside. Their linear forms relate to the overall shape of Ordhill's landform, with coupe edges mostly adopting diagonal lines across the slope. Their scale and level of complexity is appropriate to the setting.

This option takes successful elements from the existing plan, but reduces the scale of the clear fells, thus reducing the impact of future fellings on the internal landscape. As the coupes will appear fairly large to visitors in the forest, it would be beneficial to retain small group of stable trees (including broadleaves) near paths. These will assist in breaking up views into felled areas and increase diversity along the side of the path. (Trees to be retained would be marked by the District before the felling is carried out).

This option identifies the retention of the forest on the eastern, most striking, end of the hill for landscape reasons. Other options have identified that felling below the hill top would have a long term significant negative impact on views from most of Inverness. The shape of the retained forest area sits more comfortably with the landform at the eastern end of it.

Option 4 is the selected scenario to manage the prominent slopes in Ord Hill for the period of this plan.
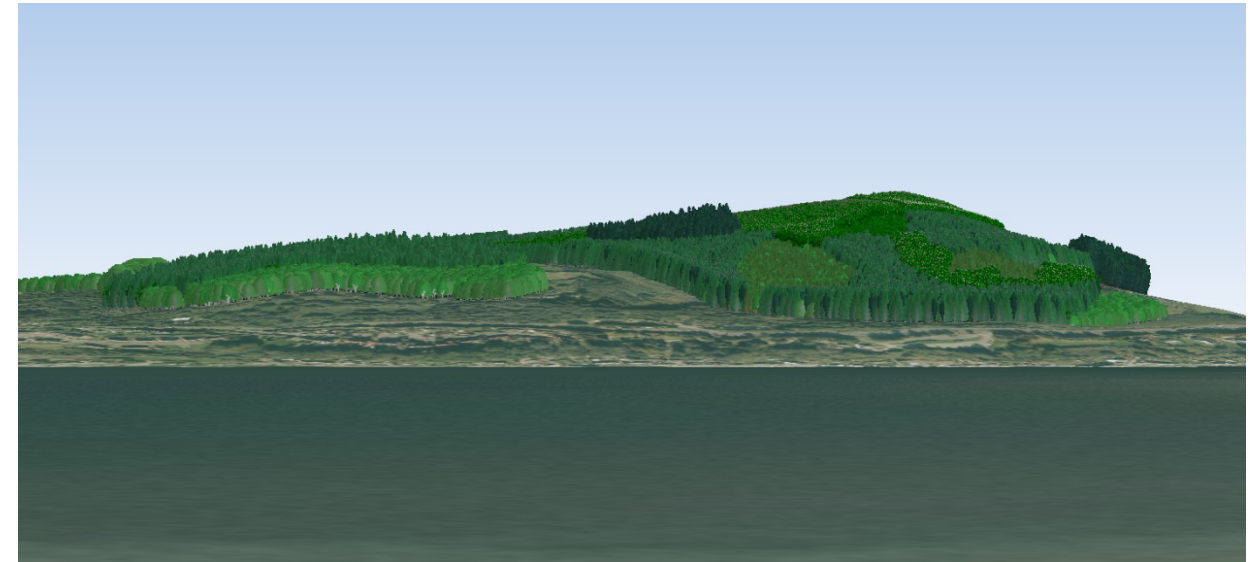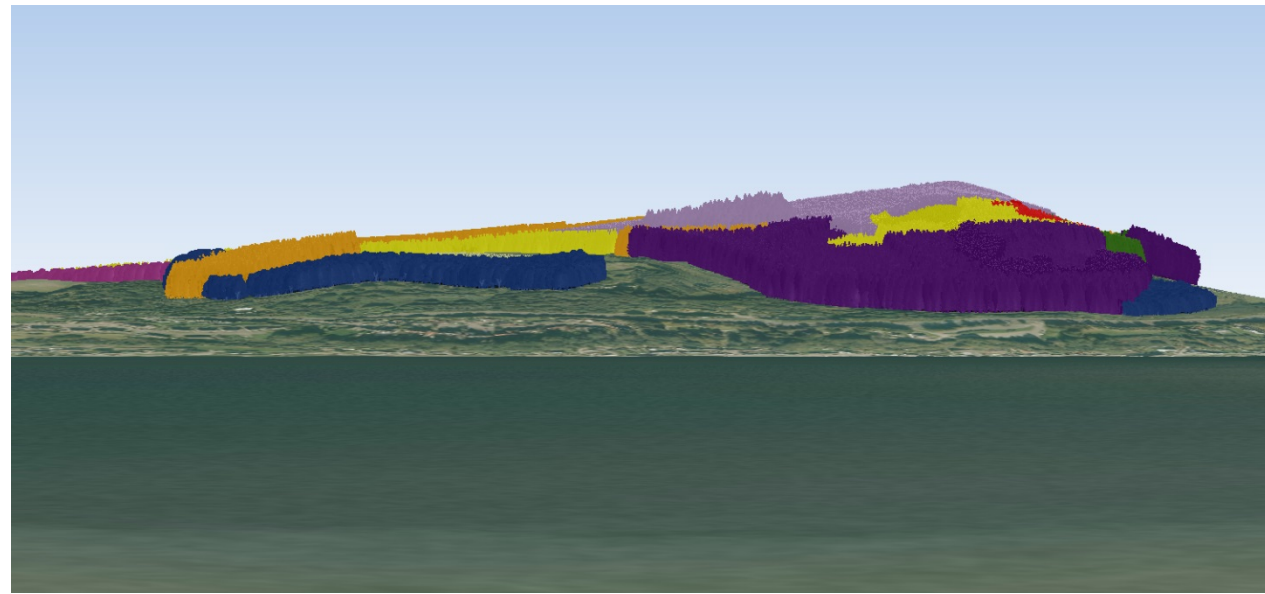
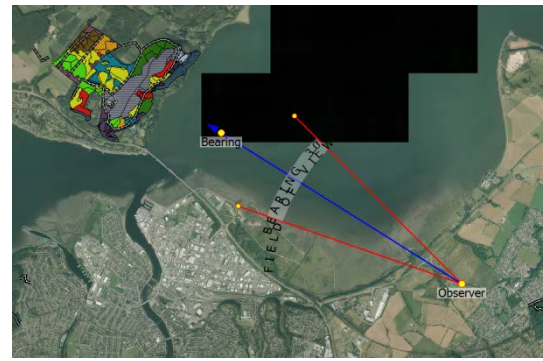# From A9 approach to Inverness
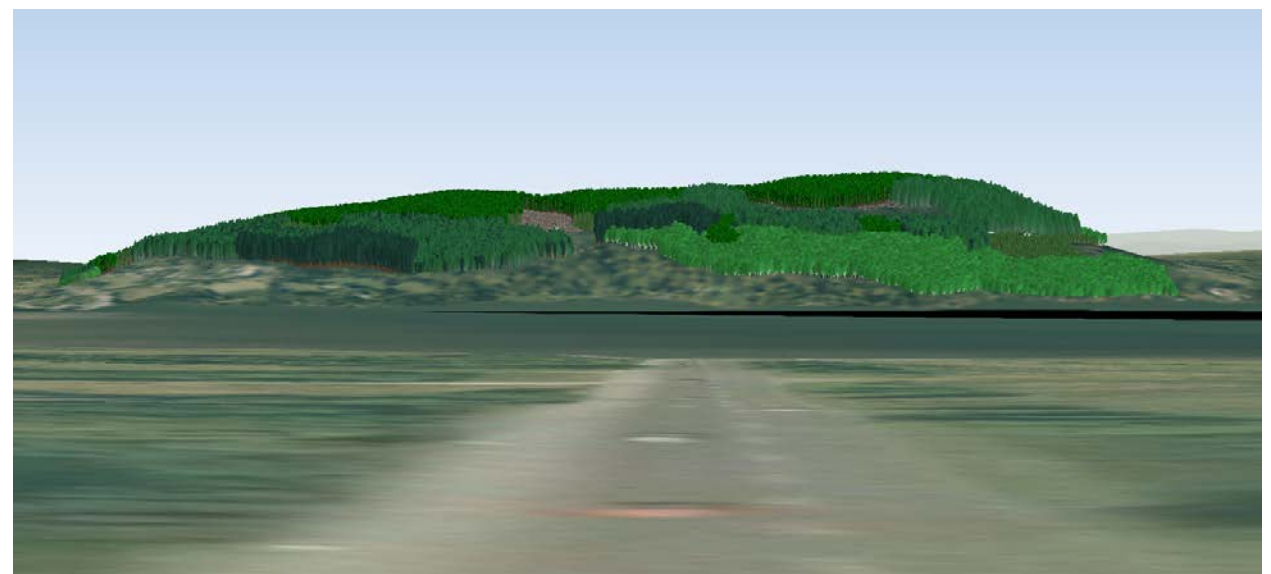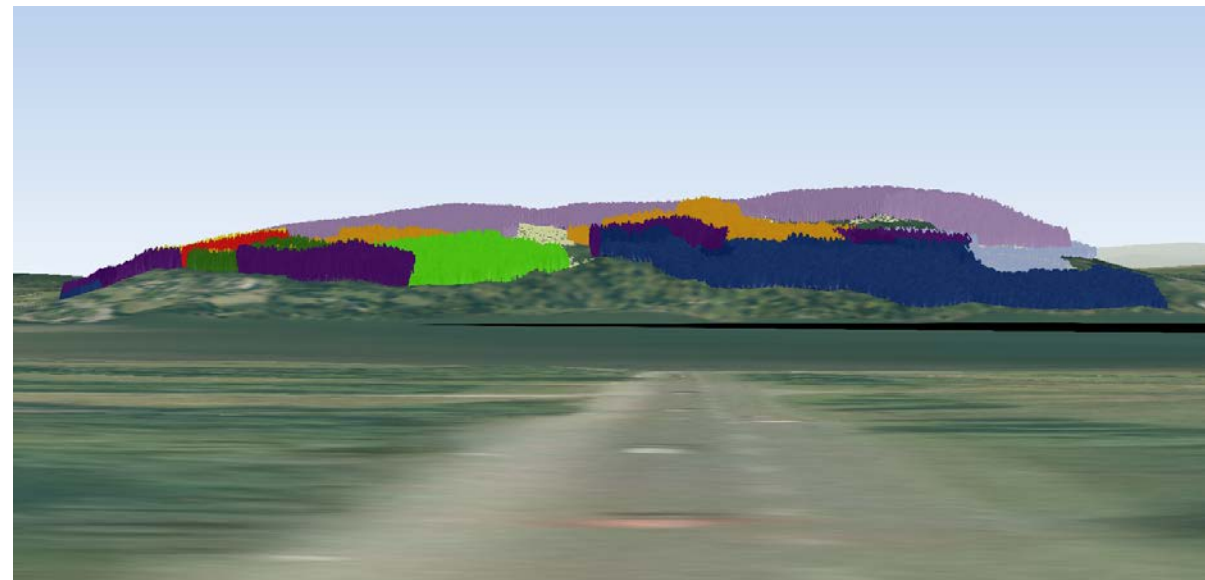
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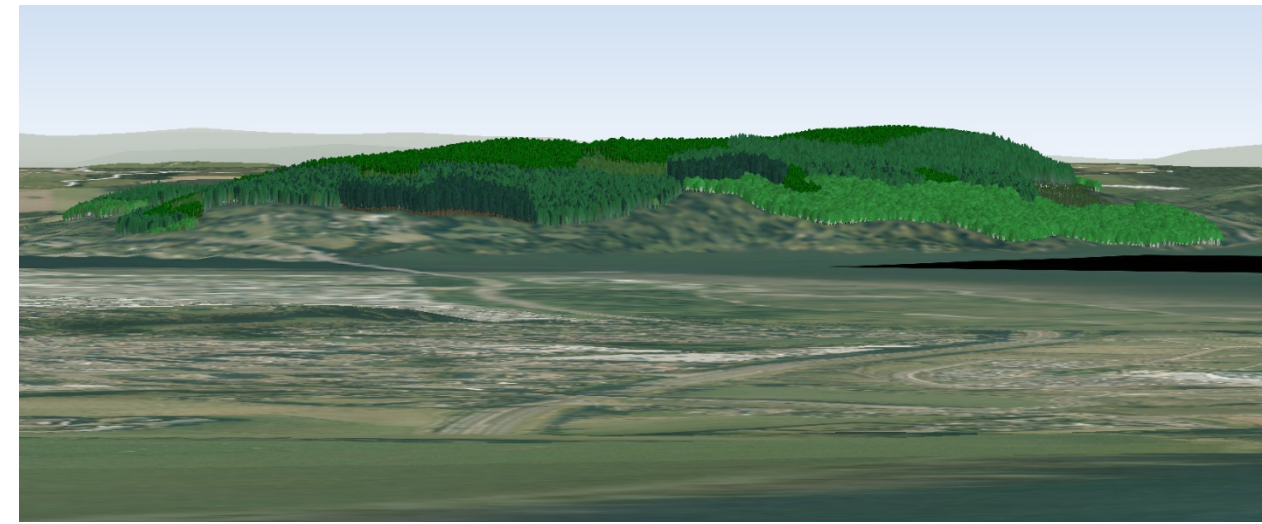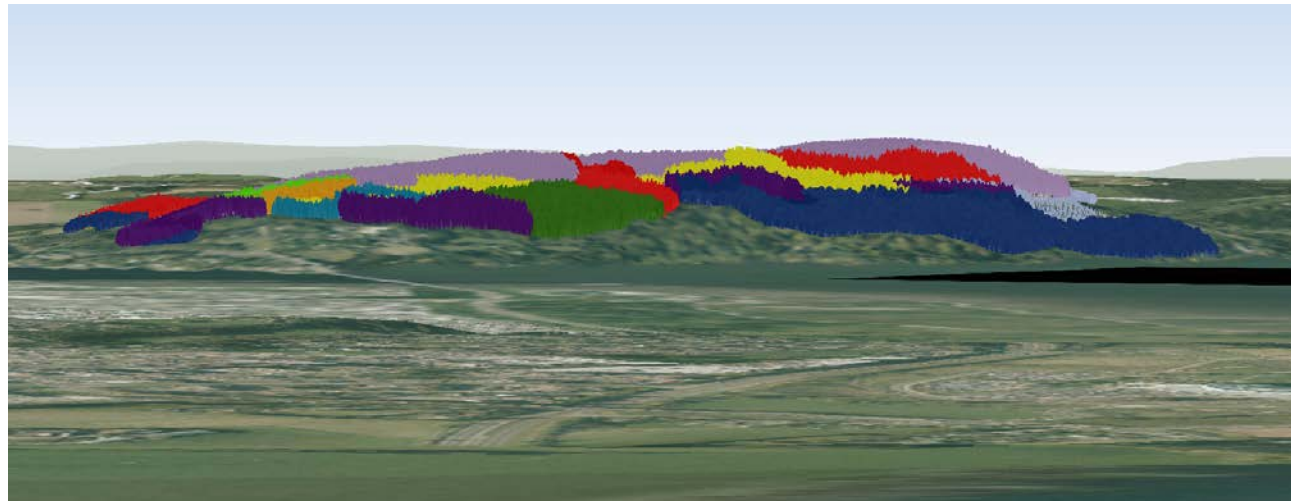
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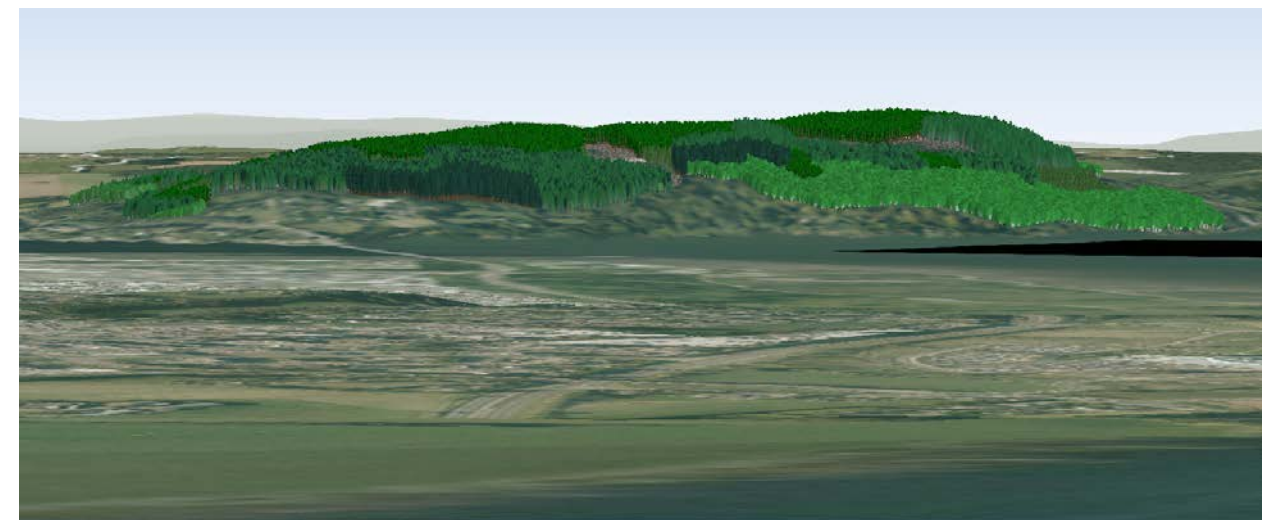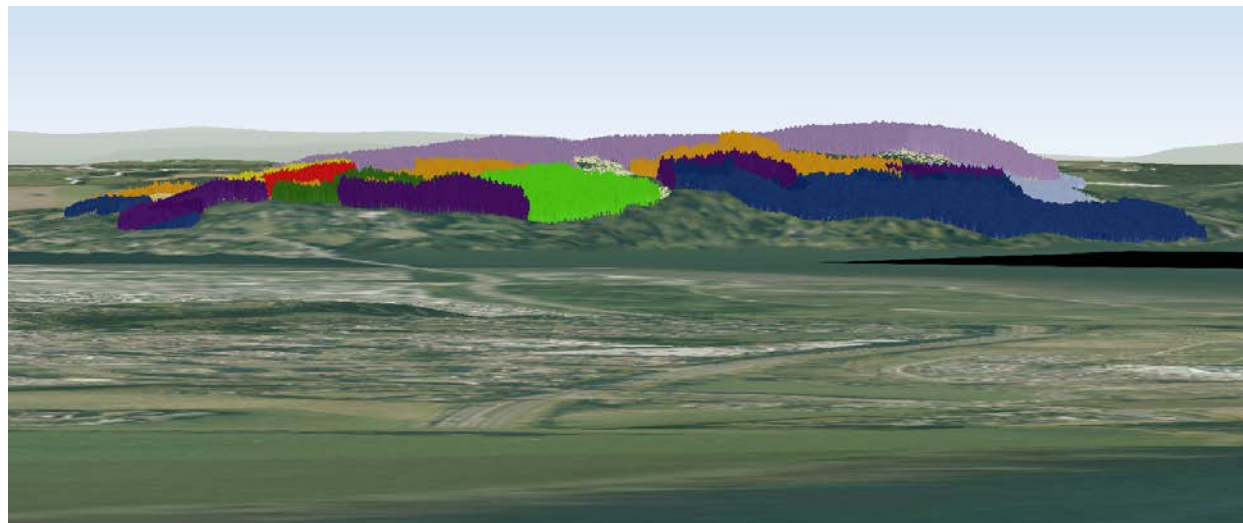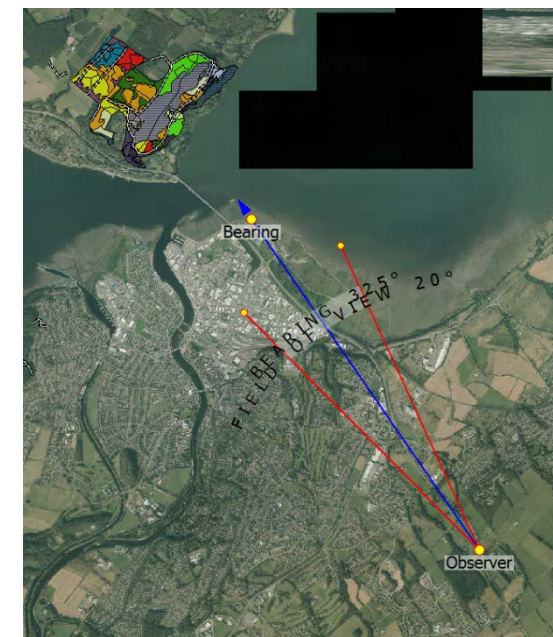
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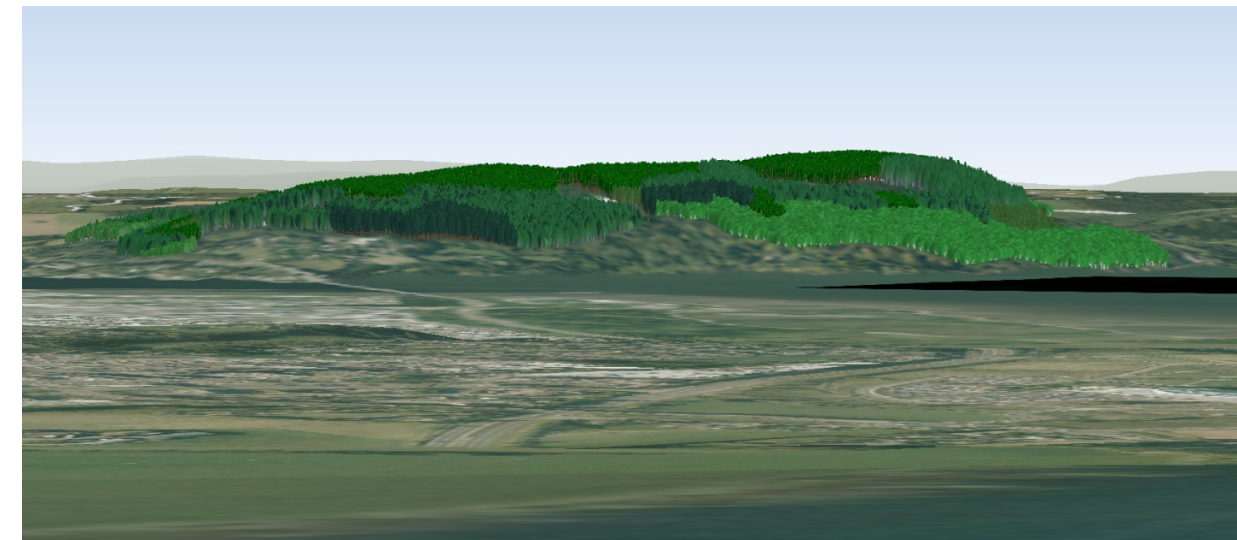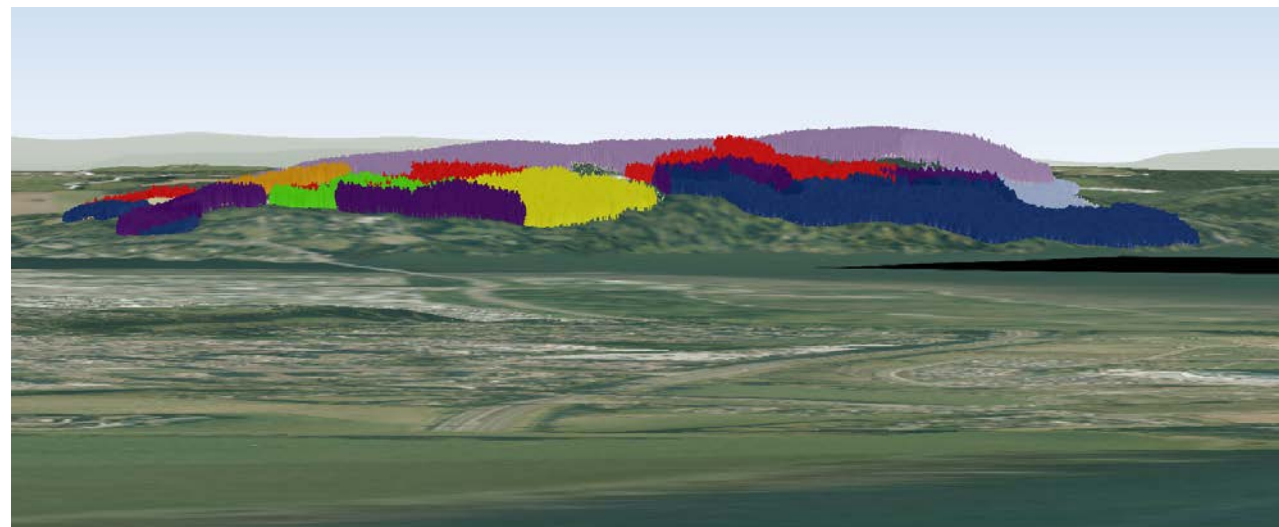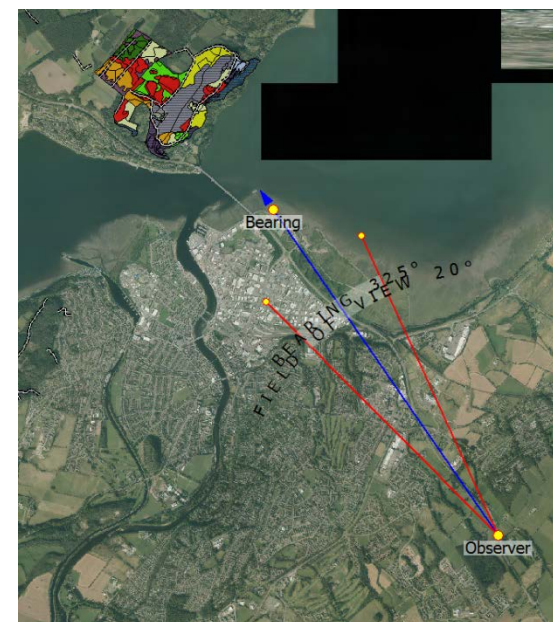
From end of Canal

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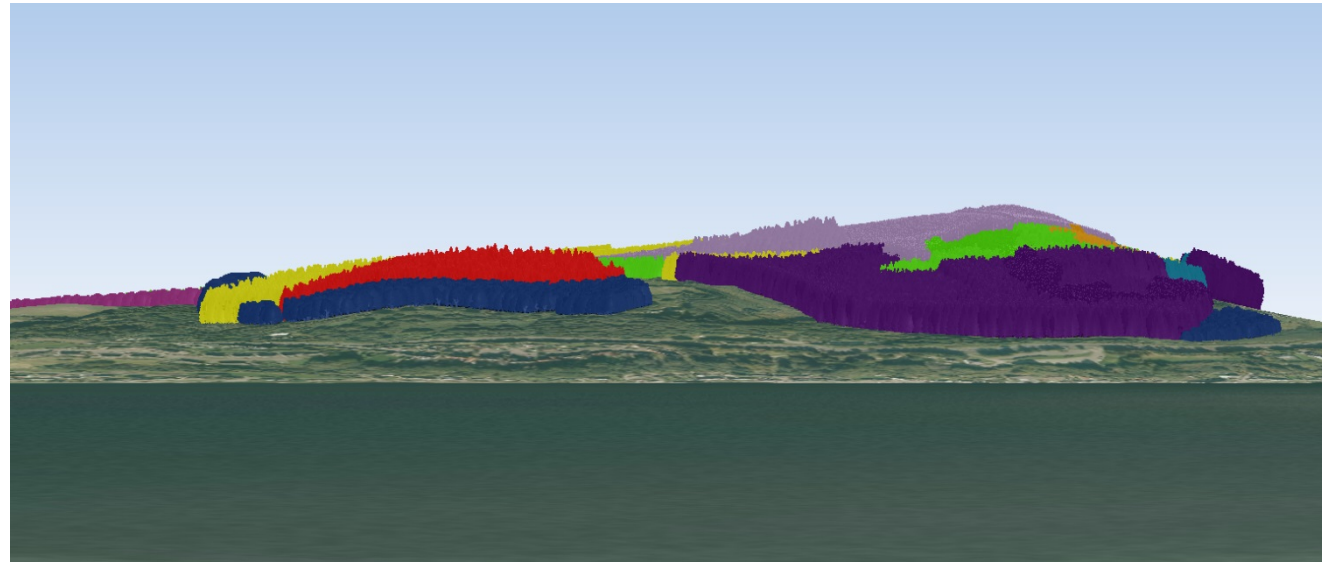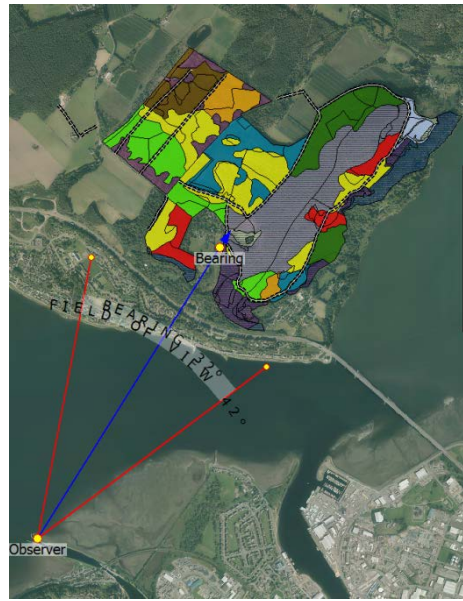
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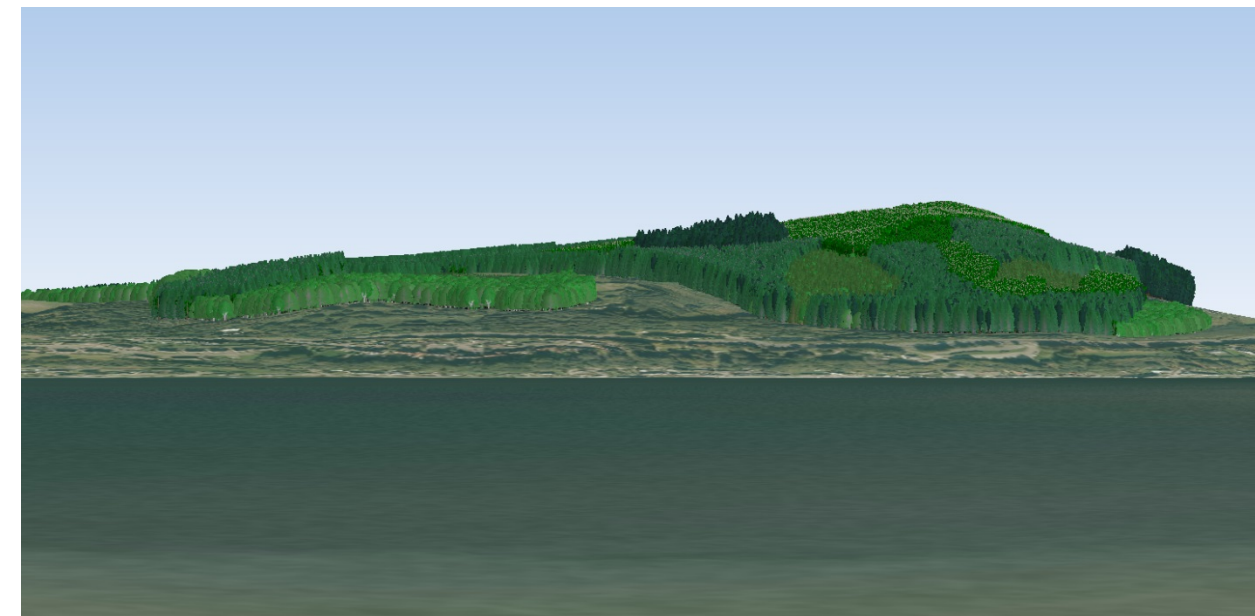
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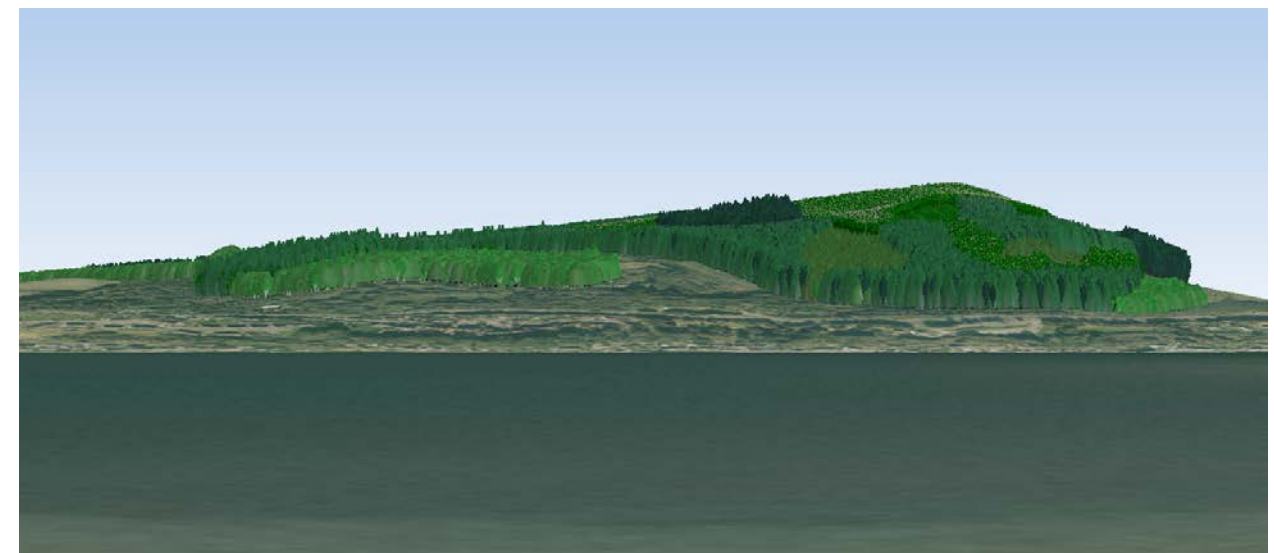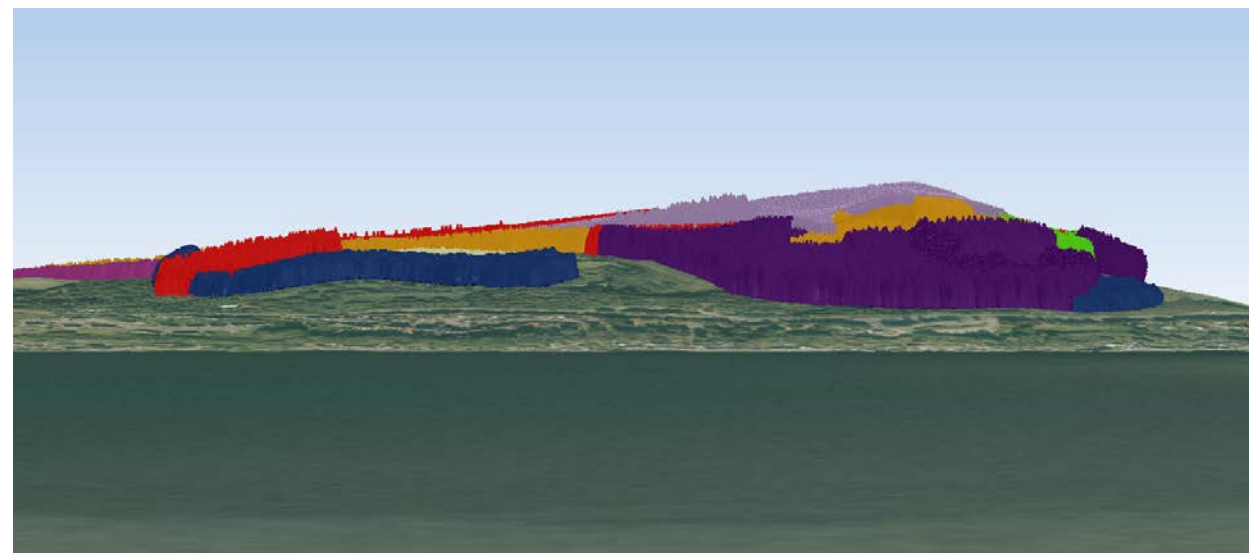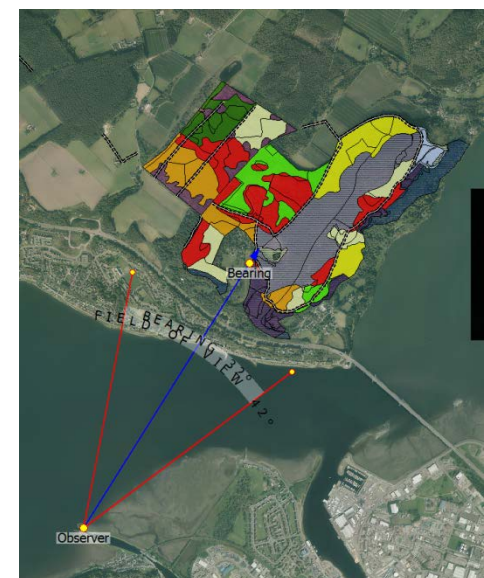
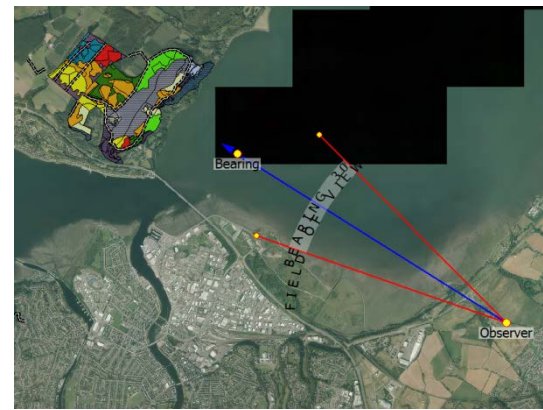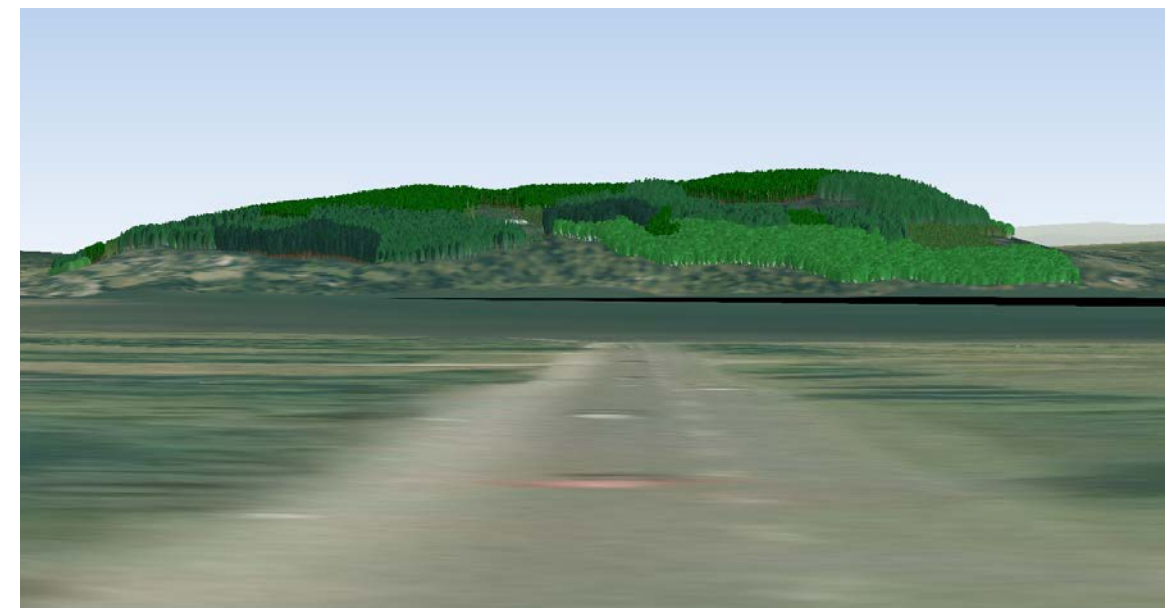# From road linking Smithton to A96

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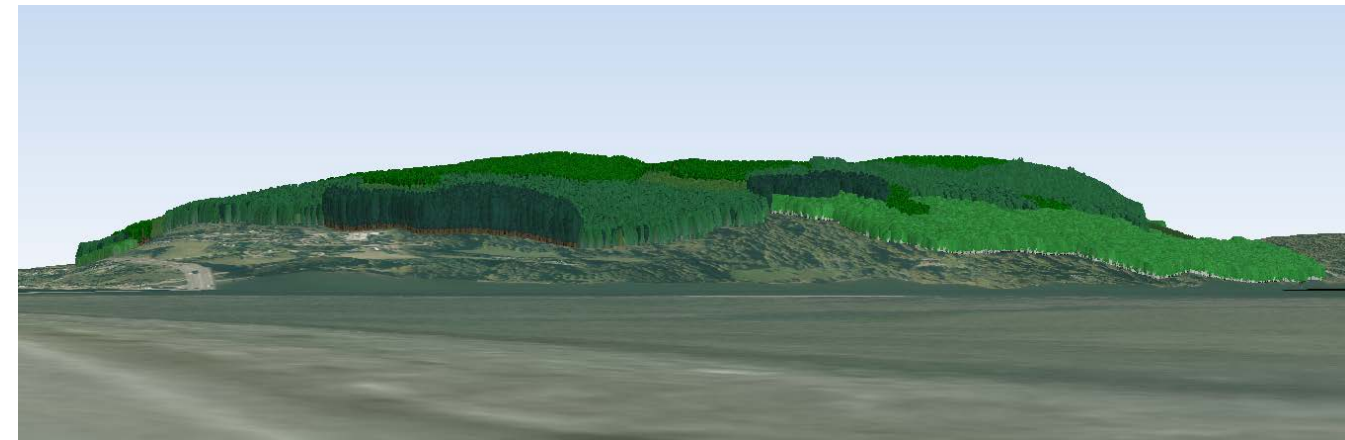

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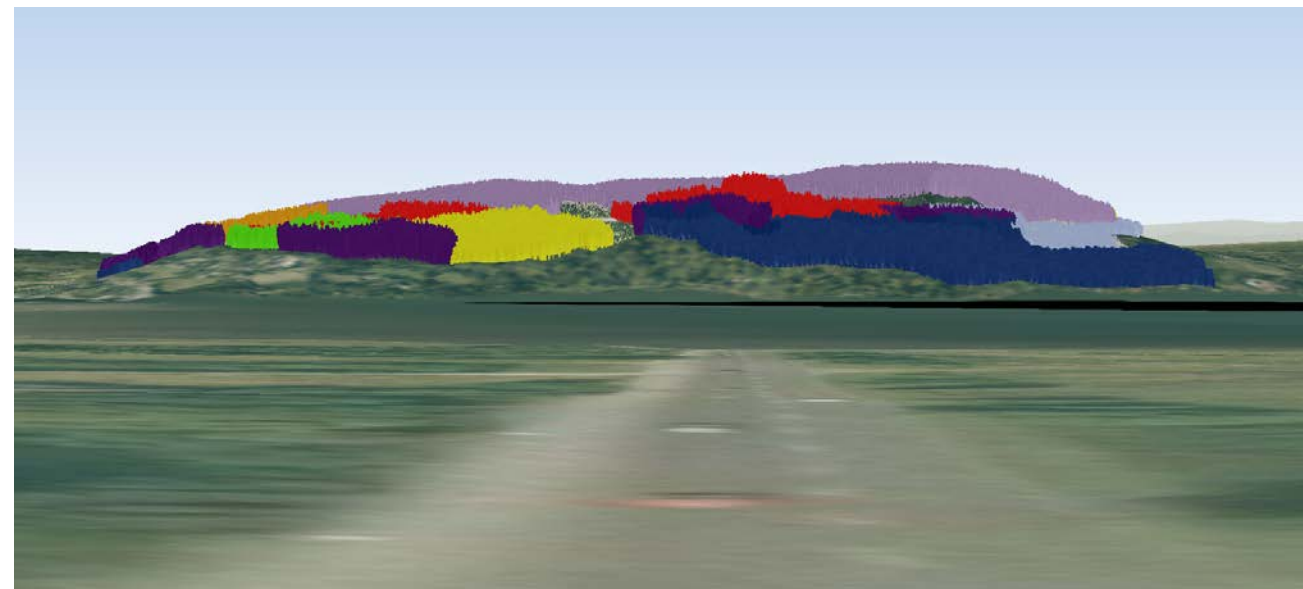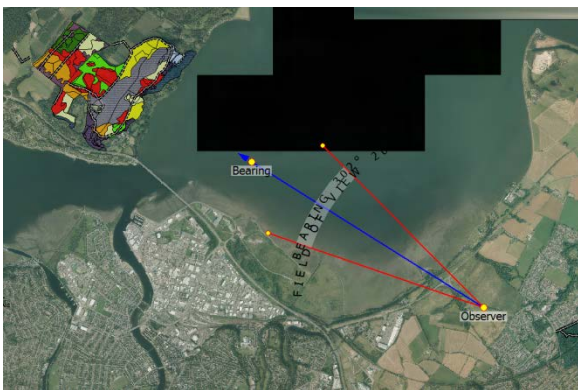
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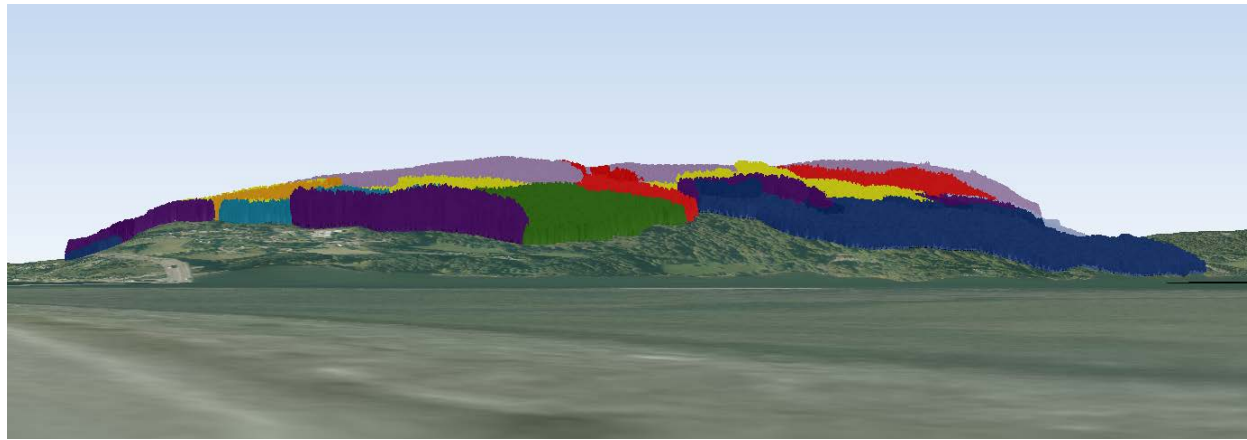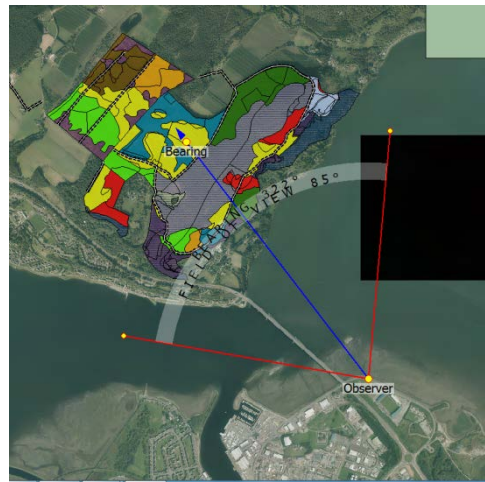
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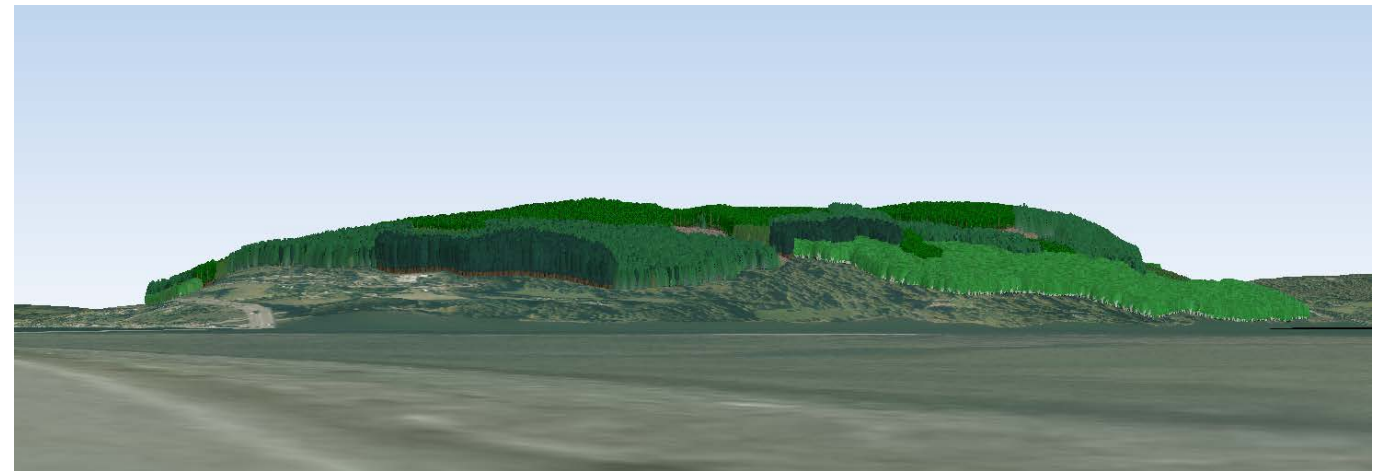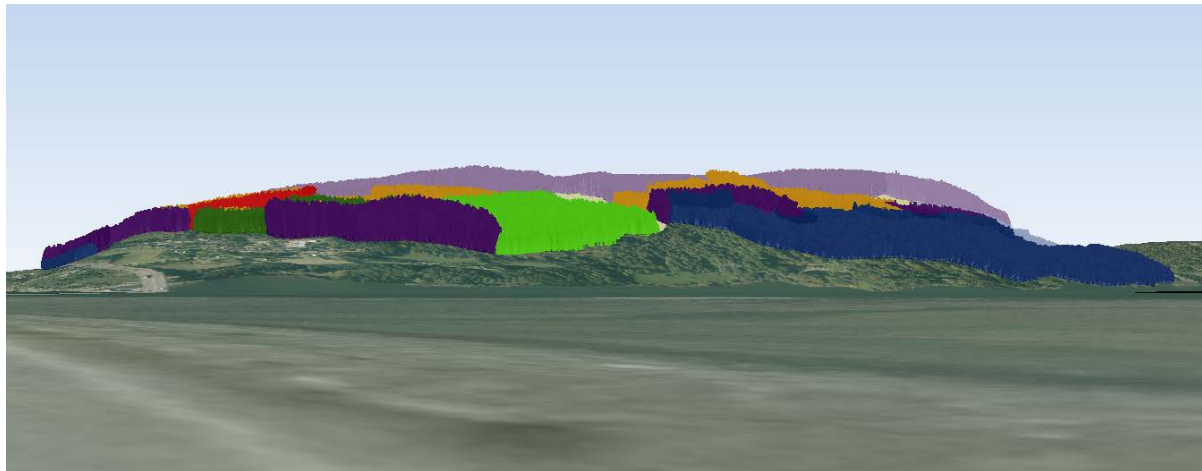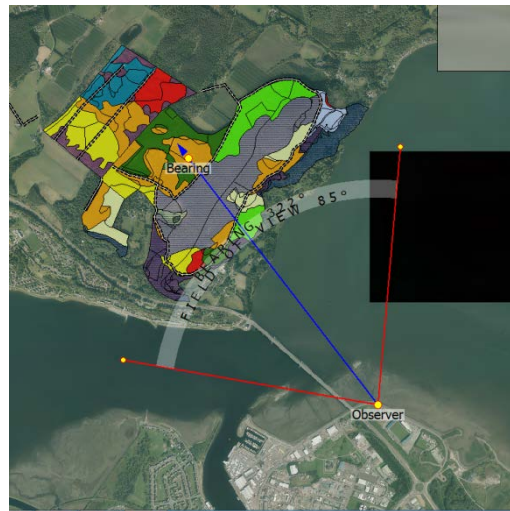
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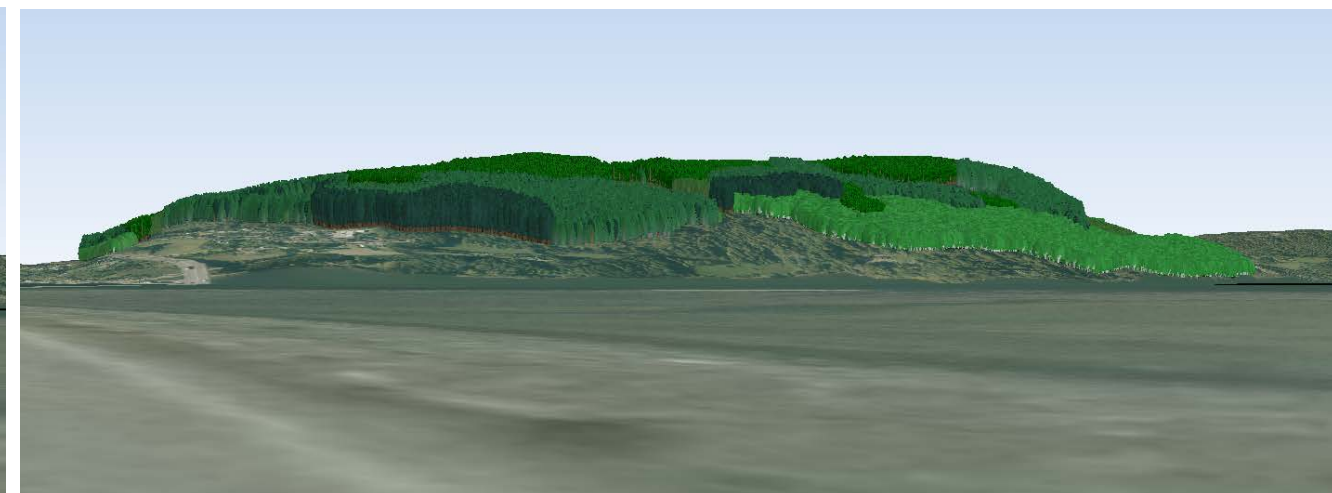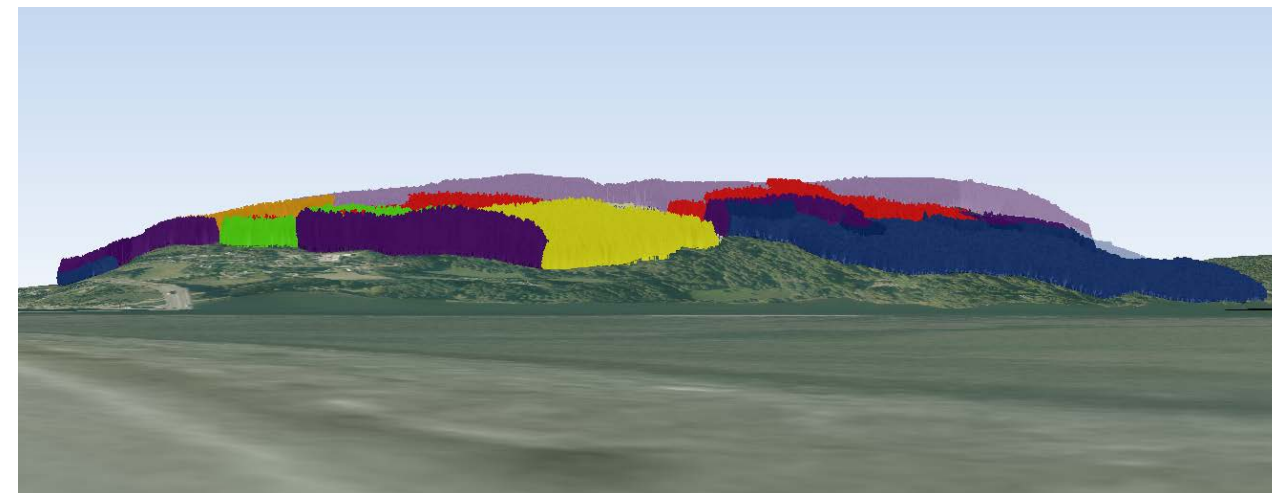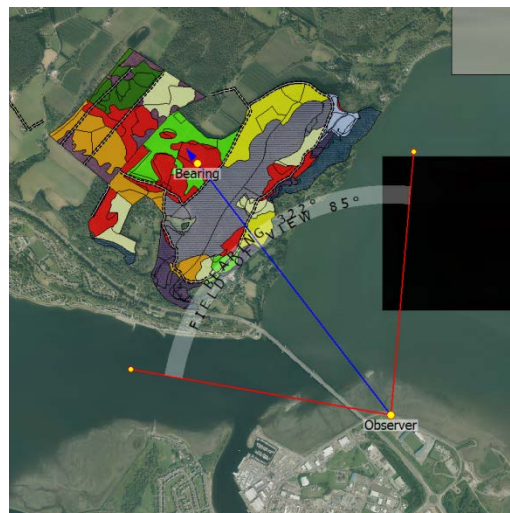
APPENDIX 17

<table>
<tr><td colspan="2" align="center">North region
Deer management unit plan
Inverness woods</td></tr>
<tr><td>Deer Management Unit Name:</td><td>Woodland within the design plan- Culloden, Daviot, Craig Phadraig and Ord hill.</td></tr>
<tr><td>Deer species present</td><td>Roe, a small numbers of Sika and an occasional Red in Daviot</td></tr>
<tr><td>Associated Deer Management Group:</td><td>none</td></tr>
<tr><td>Main Objectives & Key Issues of Unit:</td><td>Establishment of commercial crop including broadleaves

No deer fences but consideration given to using tubes on broadleaves where deer numbers cannot be adequately culled. Prior to each new planting the deer team will advise of the protection method most likely to be successful and feasible

Neighbours get problems due to deer in these areas both commercial forestry at Daviot and garden plants at Craig Phadraig

Road traffic accidents involving deer have also occurred</td></tr>
<tr><td>Deer Management Methods & Resources Used:</td><td>A mixture of FCS rangers and contract stalkers</td></tr>
<tr><td>DMU Area & Current Forest Structure Plus Forecast of Structure in 10 Years:</td><td>Structure-design plan</td></tr>
<tr><td>Population Assessment Method Used:</td><td>Dung counting used but limitations on accuracy due to the relatively small size of the forests and the mobile nature of the surrounding deer population</td></tr>
<tr><td>Population Modelling:</td><td>Not used due to the high movement between FC and neighbours woodland and agricultural land</td></tr>
<tr><td>Cull Targets:</td><td>Targets set yearly and are dependent on the vulnerability of trees and the availability of open space to allow culling</td></tr>
<tr><td>Deer Population Density Figures:</td><td>Approximately 10 deer per 100ha however we know the deer use beyond the forest boundaries so the population could be twice that. Any deer shot are likely to be replaced by emigration</td></tr>
<tr><td>DCS Authorisations:</td><td>Night and OOS woodland have both been used. The main time of year for deer culling within these woodlands is winter and during the middle of the night as the public use the woods from before dawn till after dark</td></tr>
<tr><td>Other Relevant information:</td><td>Deer management is very difficult at within all these forests due to high public access.</td></tr>
</table>

The Woods of Inverness

Visitor Experience Plan

Final report, 17 May 2012
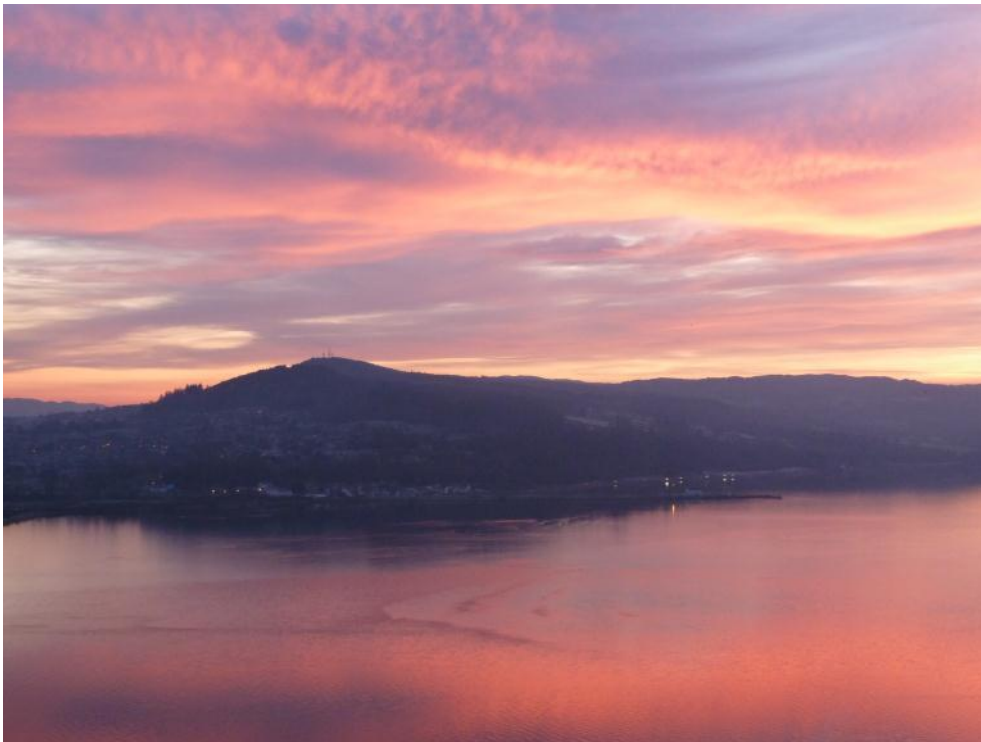
Craig Phadrig from Ord Hill

Prepared for Forestry Commission Scotland

James Carter Ltd / Aaron Lawton Associates

Contents

1   Introduction

This Visitor Experience Plan reviews the existing provision for visitors and makes proposals for future management and interpretation in four forests close to Inverness: Daviot, Ord Hill, Culloden and Craig Phadrig. All of the forests except Daviot are classified as Woodlands In and Around Towns (WIAT), and play an important role in providing informal recreation for the city's population. It is highly likely that current housing development will mean that Daviot will soon meet WIAT criteria.

The aims of the plan are to ensure a good quality visitor experience, and to encourage new visitors to use the forests. Where relevant, each section of the plan includes a list of recommended actions. These are summarised and prioritised in section 11.

2   Visitor characteristics

The experience of FCS staff suggests that the overwhelming majority of visitors to the woods are residents of Inverness, often from housing immediately adjacent to the woods. During the week, the woods are particularly popular with dog walkers, many of whom use the woods at least once a day. Weekends and school holidays see a wider spectrum of users, not all of whom are accompanied by a dog, including family groups, lone walkers and runners, cyclists and horse riders.

This perceived pattern of visitor activity is to be expected given the woods' location and character, but as part of this study we carried out some qualitative visitor research to try to assess its accuracy. The research also sought to identify any significant barriers to use by potential visitors, and to help develop proposals that could widen the woods' appeal and use.

Given constraints on available time and the need to carry out research during the winter, when it is difficult to guarantee finding a reasonable number of visitors on site, research was based on conducting informal interviews with any visitors we met during site survey and analysis work. Through these interviews, we aimed to get an impression of how people were using the site, of their thoughts about its strengths and weaknesses, and of any ideas they might have for improving what it offers. We visited each site on at least one weekday and one weekend day so we could get an impression of any differences

between them. In total, 22 interviews were conducted with individuals or groups visiting the woods.

We also conducted a number of off-site interviews so as to canvas opinion from people who might not use the woods on a regular basis, to assess levels of awareness about the woods among the wider population and identify any significant barriers to using them. These interviews were also spread over weekday and weekend days. The locations for the interviews were selected because they offered the best opportunity of speaking to people living near the woods, or of speaking to active countryside users who might not be aware of the woods. They were:

- Outside Co-op supermarket, Telford Retail Park (close to Craig Phadrig)

- Outside Co-op mini-market, Woodside (close to Culloden)

- Outside Tesco supermarket, Inshes Retail Park (close to Daviot)

- Riverside path, Bught Park (a popular countryside site offering an alternative to the woods)

In total, 33 interviews were conducted at these sites. The interviews followed a pre-arranged sequence of questions, although outside the supermarkets it was often difficult to address all the planned questions since many respondents were impatient either to do their shopping or return to their car.

2.1 On site interviews

Contact with visitors in the woods suggests they are generally very satisfied with their experience. Several people said, without prompting, that they were grateful for the chance to use the woods and for the range and quality of the paths provided.

A few people said that the paths were sometimes muddy, but most accepted this as something to be expected in a forest. One exception to this was the condition of the Wade military road beside Daviot wood, which was mentioned by several visitors as being in such a poor state that they no longer used it. The road is not part of FCS's land holding, but it is likely that most visitors do not recognise this distinction. Section 6, on Daviot wood, discusses this issue in more detail.

The characteristics of the visitors we met largely confirmed the perceptions of FCS staff: a high proportion of visitors use the woods

accompanied by a dog, and many of them said they used the wood every day, sometimes more than once. However, we did meet couples walking on a weekday without a dog, and at weekends it was clear both from the visitors we interviewed and those we saw that a substantial number of family groups were out enjoying the woods.

There was little evidence of mountain bike use in the four woodlands and none of horse riding, but this may have been due to the cold and snowy weather at the time of our site surveys. However, a small number of interviews gave an interesting perspective on these activities. At Daviot, we met a family group exploring the forest on mountain bikes, and a couple on foot who said they also cycled in the wood. In the Westhill section of Culloden Wood, we met a woman walking her dog who runs livery stables near Clava. She said she rides horses in the Newlands section of Culloden Wood (known by FCS staff as 'the lollipop' because of its trail layout) as well as in Daviot, where she used the car park by Daviot village because it was quieter than the VIC car park.

Although these responses cannot be considered representative, it suggests that different activities may be naturally 'zoned' as visitors choose forests that are suitable for different uses. The relatively flat terrain and wide paths at Daviot are well-suited to mountain bikes, particularly for family groups who want an enjoyable ride rather than a technical challenge; the 'lollipop' path in Culloden Wood seems less used by walkers and so is a good place for horseriders.

An interesting observation from the interviews was that we found a number of people who use the woods as part of longer routes. Several of them were runners, who used Ordnance Survey maps to plan substantial routes combining FCS forests with other sites.

Key factors people mentioned that would improve their experience were:

- Better maps and waymarking. Although people who use the forests regularly said they didn't use the waymarkers, many visitors said they had found the maps and waymarking systems confusing when they first started using the site.

- More seats and views, particularly at Craig Phadrig and Ord Hill.

- Interpretation about features in the forest, for example the clootie well and the prisoners' stone in Culloden Wood.

- Interpretation about forest management. This was a slightly surprising finding, but a number of visitors said they would like to know what was happening when they found areas of forest being cleared or planted. They seemed to accept that, as a working forest, the environment would sometimes change dramatically, but wanted to know what happened to the timber and to understand how the cycle of re-planting worked.

2.2   Off-site interviews

Key points that emerged from the off-site interviews were:

Most people interviewed who live in Inverness were aware of at least one of the Woods of Inverness forests, usually the forest closest to the interview site. Many people were aware of more than one and a reasonable number were aware of all four. Several interviewees mentioned other forests in the region, such as Roseisle and the Fairy Glen. This suggests that existing awareness of the forests is good, but that there is scope to increase awareness of the existence of other forests apart from those closest to where people live.

Most people heard about the forests through 'word of mouth' or because they had 'always known about them' or 'lived near them'. This suggests that fostering good experiences, which can lead to more word of mouth recommendations, may be more effective at growing audiences than traditional forms of marketing.

Most people said they did visit the forests, or had done in the past. This suggests that forest use is already quite high amongst the people of Inverness.

Among reasons given for not using the woods, health problems featured in several interviews at the Telford Retail Park Co-op.

The reasons given for choosing forests as opposed to other recreation sites included 'liking trees', 'peace and quiet', 'lots of paths', and the good condition of paths in FCS forests in general. Several people said they visited particular woods because they were convenient to where they lived or worked, and many said they used the woods as places to walk a dog. This suggests that convenience and a good standard of path maintenance are important factors in peoples' choice of site.

Roughly equal numbers of people used the forests five or more times a week as used them once a week, with much smaller numbers using them once or twice a month. This suggests that the woods have a core

group of visitors who use them routinely, with a smaller group of occasional users.

The vast majority of people interviewed used the forests for walking (with or without a dog), with very small numbers running or cycling. This could suggest either that most people prefer walking or that the forests are currently not good for cycling. However, it may also be an effect of the restricted sample size.

Most people were satisfied with the woodland experience on offer, but a large number mentioned poor maps and waymarking as a problem. Several people said they would like more views and places to rest, particularly at Craig Phadrig and Ord Hill. Smaller numbers complained of boisterous dogs and muddy paths. A few female respondents said they would not use the woods alone, or without a dog. This suggests that improving maps and waymarking should be a high priority, and that creating viewpoints would help to improve visitors' experience. The issue of women feeling insecure in the woods is almost certainly a symptom of general wariness in public places, particularly in environments such as woods that offer many potential hiding places. However, improvements in maps and waymarking might help to increase users' confidence.

2.3   Conclusions

A number of conclusions can be drawn from the research that can guide future management and development.

1. The woods attract a loyal core of locally-based visitors, many of whom visit regularly and who are pleased with their experience. Single people walking dogs do make up a significant proportion of visitors, but the woods are also popular with people without dogs, particularly at weekends. Weekend users include a significant proportion of family groups.

2. Awareness of the woods closest to people's homes and work places seems generally good, but more people would probably use the woods, or use them more often, if they were more 'in the public eye'. This might best be achieved by running occasional events, and by news-worthy projects that would gain local media coverage, rather than by conventional publicity campaigns.

3. A significant improvement could be made to visitors' experience by improving the quality and consistency of on-site maps and waymarking. This would particularly benefit people who are getting to know the sites: it is therefore an essential step in widening the appeal of the woods to a more diverse audience and encouraging people to explore sites apart from their local wood. Better waymarking would also increase the confidence of visitors who are already familiar with the forests. New mapping and waymarking should be done in conjunction with a review of trail networks and routes to ensure they offer a clear range of options.

4. A significant improvement to visitors' experience could also be made by providing more seating in appropriate places, opening up views, particularly at Craig Phadrig and Ord Hill, and providing interpretation of significant features.

5. It would be worthwhile highlighting in promotional and pre-visit information how certain woods can cater for particular needs or activities: for example Daviot, with its gentle gradients, could be promoted as suitable for people with health or mobility difficulties. The imagery chosen for the publicity leaflet already does this, by showing people using mobility scooters: the message could be reinforced by arranging events with suitable groups.

6. Given the possibility of longer routes that use the woods for part of their length, it may be worthwhile identifying these opportunities in pre-visit information and/or by installing finger posts indicating destinations that can be reached by following routes out of the forest. Although these routes are likely to appeal to a minority audience, raising awareness might encourage more people to try them.

2.4 Tourism potential

The Woods of Inverness currently provide an enormously valuable recreation resource for the people of Inverness. Their convenient locations and good infrastructure make them highly suitable for repeat use by local people. The lack of unique standout features makes the woods less suitable to be promoted as a significant tourist attraction, although small numbers of tourists will use them if they are specifically looking for a short walk near the city.

It might be possible to create a significant tourist attraction at one of the woods by installing a major feature such as a large and high quality sculpture trail. However, a feature such as this would be of limited benefit to local people as the exhibits become just part of the scenery after one of two visits. A mountain bike centre would be of interest to both local people and visitors, although only a relatively small section of the local population would benefit.

A more effective use of resources might be to develop an attraction that is of equal interest to tourists and to a majority of local people. One possibility for such a feature might be to establish an iconic 'landmark viewpoint hill' of the type that already exists in Perth and Edinburgh but is currently missing from Inverness. Along with the classic viewpoint itself, over time the surrounding forest could be the focus for developing additional features and attractions such as a sculpture trail or a programme of annual and regular guided events. These ideas are explored further in the 'Ord Hill' section of the report.

3   Visitor experience

3.1   Introduction

Visitor experience encompasses the whole 'journey' people take on a visit to the site – from the information they encounter before their visit and their first physical contact with the place, through their experience of the landscape and wildlife and their use of the visitor facilities, to the memories they take home with them and the stories they share with friends. In this report, we evaluate the existing situation and suggest interventions that are likely to improve the experience for visitors.

Our proposals take account of a hierarchy of visitor needs based on the work of the psychologist Abraham Maslow. This supposes that there are levels of basic human need that must be satisfied before visitors can progress to the higher levels which allow them to enjoy their visit and take something from it. The lowest level involves physiological needs such as being adequately fed and watered, and relieving the pressure of a full bladder. The next level contains safety needs such as knowing they are unlikely to be exposed to unmanageable levels of danger or uncertainty. Three higher levels contain needs relating to social interaction and a sense of belonging,

to esteem in the form of achievement and its recognition, and to fulfilment of personal goals and ambitions.

The enjoyment and engagement with the forest environment that might occur in the top three levels outlined above can only happen after the lower levels have been satisfied. In this way, Maslow provides a theoretical basis for something we know from our own experience – that we cannot enjoy ourselves or engage with new information and ideas if we are hungry, thirsty, cold, bursting for a pee, lost or worried.

So, before we even consider issues of enjoyment, engagement and understanding, the basic needs of visitors include finding the site, parking the car, using a toilet, eating and drinking, obtaining essential information, orientating themselves and gaining overall confidence in the site and its management.

After our visitors have satisfied their basic needs, they can turn their attention to the main reasons why they have come to the site. These may include exercise, recreation, re-vitalisation, enjoyment and socialising or learning, amongst others. In helping visitors to achieve their goals for the visit, we can also achieve those of the managing organisation, which might relate to conservation, health, economics or awareness and engagement, amongst others.

3.2   The Woods of Inverness experience

Interviews with existing users of the Woods of Inverness suggest that the majority of them are generally happy with the woodland experience currently on offer. Local people using the forests for dog walking, running, cycling and other forms of outdoor recreation are finding that their needs are being met to quite a high degree.

The most commonly heard complaint is about poor waymarking, which causes people to become lost or uncertain of their whereabouts. Less frequently heard complaints relate to dog mess, overly boisterous dogs and the occasional muddy path (which is sometimes on land adjacent to that belonging to FCS, although users are not always aware of this distinction).

Outdoor recreation, along with many other things that compete for visitors' time, operates in competitive environment where innovation is rewarded. The result is that visitor expectations rise inexorably over

the years, requiring outdoor recreation sites to continually 'raise their game' just to stand still relative to the market.

Some of the visitor facilities in the Woods of Inverness now need upgrading to bring them in line with the standards expected by many of today's visitors, and to future-proof the sites to some degree as visitor expectations continue to rise. We have also identified a number of potentially valuable and exciting opportunities to create significant new attractions and to engage with new audiences.

Upgrading existing facilities and developing new ones will improve the quality of visitors' experience and connect them more deeply with the forest environment, hence increasing the number of people coming, extending the length of their stay and affecting them more deeply. Ultimately, we believe that the interventions proposed in this report will provide significant social, health and economic benefits to the local community.

3.3   Vision for visitors

Here we set out a vision for how visitors might engage with the forests in the future, including aspirations for the makeup and character of their visit. The vision can be used as a yardstick against which to judge individual project proposals and their results. Overall, the degree to which the vision is realised can be seen as a measure of the overall success in fulfilling the forests' potential to provide access, enjoyment and understanding for visitors.

- Promotional material that portrays the forests as impressive, attractive and interesting places, and that allows people to match the attractions and facilities to their interests and abilities, is available in local doctors' surgeries, hospitals, clinics, schools, large offices, outdoor shops, VICs and accommodation, as well as online. FCS staff are friendly and helpful when answering queries from prospective visitors. Local tourism providers are knowledgeable about the forests and act as ambassadors for them. Having decided to visit, people can easily find the forests and their chosen access point.

- Most first-time visitors arrive at the primary access points for the start of their experiences. All car parks are visually attractive and well maintained. There is no shortage of parking space at the car parks, even on a fine summer weekend.

- On arrival, visitors immediately feel welcome and secure in the knowledge that the site is safe and well managed. At any time of day, visitors can satisfy their basic needs to consume

refreshments they have brought with them, appreciate what there is to see and do in the forest as a whole and at that particular access point, obtain essential information about safety and responsible behaviour, orientate themselves and set out confidently on their chosen route.

- An introduction to the forest's natural and cultural heritage is presented on high quality and engaging panels at the primary access points. These insightfully interpret the forest's history and special qualities, helping to create a connection between it and the visitor.

- Managed access to the forest environment is provided along well maintained trails. People can follow the waymarked trails without becoming lost or being concerned that they might. The promoted routes are furnished with waymarkers to make them easy for people to follow without a map. Trails are punctuated by attractive and well-designed viewpoints and seats that invite people to rest and appreciate the wildlife and landscape around them, without detracting from it.

- Interpretive interventions are made at significant places where an interesting story can be told. Wayside exhibits and other interventions are designed not simply to provide factual information, but to provoke and inspire visitors to meaningful thought.

- All visitors are able to access the forest's reception facilities including parking, information and picnic furniture. Physical all-abilities access to the forest environment is provided where this is practical. Visitors who cannot access the forest's key attractions in person are able to gain meaningful insights into them through publications.

- Overall, the visitor experience is of the high quality to be expected from a site managed for the purposes of recreation by a public agency. The experience enhances perceptions of forests as valuable and enjoyable places, and establishes the Woods of Inverness as important places for outdoor recreation. The visit makes people think about the landscapes and wildlife, and of their own relationship with them and the wider environment. Visitors do not damage the forest's natural heritage by their presence.

- All signs, interpretation and publications conform to the FCS brand and signs guidelines.

4   Interpretation

Detailed proposals for interpretation at the individual woods are discussed in the relevant sections below. These recommendations

concentrate on media and other interventions that are suited to the character of the sites, the pattern of visitor use, and the aims of widening the forests' appeal as well as increasing the number of visitors. Suggested themes are initial proposals and would need to be refined through more detailed research as projects are implemented.

The overall approach to interpretation should reflect the existing and likely visitor characteristics for the sites, particularly the high proportion of repeat visits that the woods will receive, and the fact that visitors are largely motivated by a desire for informal recreation, not by the woods' inherent heritage interest.

In the woods themselves, conventional interpretation such as on-site panels will only be appropriate where specific features are well defined and of considerable interest, or where they are likely to prompt questions from visitors who do not know the site. Clear candidates are the hillforts on Craig Phadrig and to a lesser extent Ord Hill, and the prisoner's stone and clootie well in Culloden. Other interpretation should take a more subtle approach, for example by developing features such as seats or landmarks that are inspired by the woods' heritage, and by running events that reflect aspects of the heritage.

4.1   Interpretation and audience development

Interpretation should serve the overall aim of encouraging a wider variety of people to use the woods. On-site developments, although they may be subtle, are important since they will increase the quality and range of experiences on offer and help to define the individual character of each site.

It is also important to consider how interpretation can raise the profile of the woods, both individually and as components within a group of sites serving Inverness.

Any presentation of the woods as a group, such as in leaflets, on websites or through contacts with local media, needs to be based on a theme that emphasises the woods' ease of access, attractiveness and varied features of interest. Although this is necessarily very broad in scope, we suggest the overall theme for the woods around Inverness should be:

'There's a range of beautiful woods just on your doorstep, all with easy to follow paths to explore and some fascinating discoveries to make'.

The existing leaflet effectively communicates this idea, although its content and presentation could be refined to make it more effective. The following section on Promotion discusses the leaflet and other off-site promotion and information options in detail, but a programme of on-site events would also help to raise awareness of the woods as well as interpreting their heritage.

It would be worth developing two strands to any events programme: a series of walks, promoted to target groups such as ramblers clubs, residents associations and U3A groups; and a programme of family-oriented events during holiday periods. The family-oriented events could include simple activities such as Easter egg hunts or Hallowe'en lantern making. Ideally, they would be developed so there was an event in each of the four woods within a short timescale, so the programme could be promoted as a mini-festival based on the city's local forests.

Any event programme should be organised after improvements to mapping and waymarking have been completed.

4.2   Interpreting forest management

The visitor research showed that visitors would be interested to know more about forest management. This presents an opportunity to build positive public relations for FCS, as well as to explain to visitors the reasons for sometimes radical changes in an environment they may see every day. This interpretation should be provided through temporary on-site media, which should be removed within two months of the relevant operations coming to an end. Online resources should also be used to keep visitors informed of forest work, and should also be kept up to date.

Although some work is already done to give information about forest management using temporary notices and online information, it could be much improved. Neither the temporary notices nor online information give any real interpretation of what is happening, for example by explaining what happens to the timber once it has been felled, and it seems to be difficult for notices to be removed after operations have finished. See section 10 for a more detailed analysis of this issue.

A more robust procedure for installing and removing on-site notices should be developed and better use made of the FCS sign systems, such as Signmaker, that allow some interpretation of forest work.

Actions

- Ensure all marketing and promotion is consistent with the overall theme for the woods.

- Develop events programmes, targeted at potential audience groups, once mapping and waymarking has been improved.

- Develop a more robust system to inform visitors about forest management, and ensure some interpretation of what is happening rather than just information.

5   Promotion

The Woods of Inverness are fairly robust places that can accommodate relatively large numbers of people without causing negative impacts on the environment or the quality of the visitor experience. As such, a legitimate promotional objective is to increase the number of people visiting the forests. However, promotion materials should present the Woods of Inverness accurately and honestly, to create a desire to visit the sites amongst those people who are likely to appreciate and enjoy the particular experiences available.

Pre-arrival visitor information is mainly aimed at promoting a site to potential visitors and ensuring that those who decide to visit have all the information they need to do so easily, enjoyably and safely.

5.1   Leaflet

The six forests that make up Woods of Inverness currently share a single leaflet which combines a variety of functions, including pre-arrival promotion, on-site orientation and navigation, and on-site interpretation.

Pre-arrival promotion

This alerts people to the forest's existence. It lets them know what the forest is like and what there is to see and do there so they can decide if it meets their needs and interests, and it shows them how to reach the access points.

The existing leaflet functions reasonably well as a promotion tool. The small stories it tells about the sites are lively and involving, it has

basic information about the facilities on offer, and it has maps to locate the access points. However, it does not give much insight into the essential character of the environments and experiences available at each forest in a way that would help people make an informed choice between them.

On-site orientation and navigation

This helps people find their way around a site once they arrive, and usually features a detailed site map.

Whilst individual site maps for all six forests are included in the leaflet, these are inaccurate and incomplete in places, and they are too small to be used reliably for navigation.

On-site interpretation

This provides visitors with insights into the forest's special qualities and significance whilst they are on-site.

There is not enough space in the leaflet to provide good interpretation of the features of interest, and we suggest that this function is better carried out on-site. The stories told in the leaflet should be included mainly for the purposes of pre-arrival promotion.

Since the woods all serve the local population, it is valuable to present them as a group, to encourage people to explore more than just the forest nearest to where they live. We recommend that the existing leaflet is redesigned to focus more clearly and effectively on pre-arrival marketing and on-site orientation and navigation. The text should include insights into the essential character of the environments and experiences available at each forest; the maps should be enlarged, corrected and should show all navigable paths in addition to waymarked trails; and the site interpretation function should be omitted.

In addition to the four woods closest to the city, the current leaflet features Reelig Glen and Littlemill. These more distant forests are likely to attract a very different market and the leaflet could do a much better job of giving information about Craig Phadrig, Ord Hill, Culloden and Daviot if it concentrated only on those four sites. Consideration should therefore be given to omitting Reelig Glen and Littlemill from future editions.

5.1.1 Leaflet distribution

The leaflet should be made more widely and reliably available. To help contribute to government health and social agendas, the Woods of Inverness leaflet should be made available from local hospitals, clinics, schools, large offices and outdoor shops. In the past, copies were distributed to local doctors' surgeries and it would be worthwhile repeating this in future with a new edition of the leaflet.

To maximise the economic benefits of the Woods of Inverness, the leaflet should also be available from the Inverness VisitScotland Information Centres and from local tourist service providers, including hotels, guest houses and B&Bs. Leaflets should always be present and clearly displayed in the reception areas of the above stockists, and should also be included in accommodation bedroom packs.

Consideration should also be given to ensuring that every household in Inverness has a copy of the Woods of Inverness leaflet. Although this would in no way act to change the behaviour of people who do not currently walk, it may positively affect those who do walk but who do not currently use the forests, and those who do not currently stray beyond the forest nearest their home. Distribution could be achieved through an individual arrangement with the Post Office to deliver a leaflet to every house in the city, or perhaps by sharing any existing distribution arrangement the Council may have in place.

5.1.2 Familiarisation trip

Once improvements to mapping and waymarking have been completed, it would be worth considering arranging a familiarisation visit (known in the tourism trade as a fam trip) for relevant groups. One group would be local guest house owners, who should know about those forests most likely to appeal to tourists looking for a local excursion, namely Ord Hill, Craig Phadrig and Culloden. The trip would need to be organised outside the peak visitor season, but avoiding the depths of winter, so the forests are still attractive. To make it more appealing, the day should include input from experts on the forests' heritage, such as the FCS archaeologist who could bring alive the archaeology of Craig Phadrig. Another target for fam trips would be potential user groups with specific interests, such as running clubs.

Some prior research would be needed before organising the trip to establish whether there is likely to be sufficient interest: experience in

other areas has been that few accommodation providers take up the opportunity.

5.2 Online

The existing web pages contain useful information about the individual forests that make up the Woods of Inverness, but there are considerable problems in terms of their content and usability. A major internal review of the FCS website is being undertaken during the current financial year, which should address many of the problems with the current site. Issues include:

- The 'search by map' function clusters forests in an unhelpful way. From an overview of Scotland, clicking on the number '4', which is most closely centred on Inverness, zooms the map to an area south east of the city. This shows links to the car park descriptions for Culloden, Daviot Tourist Information Centre (*sic*), Daviot Village and Littlemill. Craig Phadrig is invisible without panning the map; Ord Hill does not appear at all.

- The links from the map view would be more useful and effective if they took visitors to descriptions of individual forests rather than car parks.

- Ord Hill does not appear in the results when searching by text input for forests near Inverness, although the other Woods of Inverness sites do.

- The use of separate web pages for the site overview, car park details and trail details is over complicated for small sites such as these.

- The lack of any trail details or a direct link to them on the site overview page is a major usability problem.

- There are not enough images to gain a good impression of the forests' character.

- There are no site maps or location maps.

- Site descriptions are sparse, with little in the way of upbeat promotion of the character of individual forests.

- Some site information is out of date: for example on 15 March 2012 the Culloden Forest page stated that 'The car park will be closed from 10th to 20th of December due to tree felling'.

- No detailed information on car parks or trails is accessible from the Ord Hill site overview page, as it is for other Woods of Inverness sites.

- The Woods of Inverness leaflet is not available to download.

5.2.1   Potential for social media

Given the essentially local visitor base, the high level of repeat visits and what appears to be a considerable 'loyalty' to the forests, it might be worthwhile using social media to communicate with visitors. A Twitter account or Facebook page would allow speedy communication with people who regularly use the forests, as well as providing an easy way for them to register comments or concerns.

However, any social media presence needs an active engagement by staff working with the sites for it to be credible and productive. It would only be worth developing social media if adequate staff time and expertise is available.

Actions

- Refine the content of the existing leaflet to improve its effectiveness at marketing and to provide all of the factual information people need to make the most of their visit. Consider focussing only on the four woods closest to the city.

- Make leaflet available from a broad range of local outlets and consider distributing it to every household in Inverness.

- Ensure revisions to the FCS website make the presentation of the Woods of Inverness more comprehensive and user friendly.

- Consider developing a social media presence, particularly for the most heavily used forests, if staff time can be reliably allocated to monitoring and contributing to it.

- Consider organising a familiarisation trip for accommodation providers, once improvements have been made to mapping and waymarking.

6   Daviot Wood

Daviot Wood lies near Daviot village off the A9 trunk road to the south east of Inverness. At around 4.5 miles from the city centre by car, Daviot is quite remote from the city and is not currently classified as a WIAT site. However, the Milton of Leys suburb to the south east of the city has been a major focus for population expansion in recent years. Daviot is now within walking distance of a sizeable population, and it is highly likely that it will soon fall within the WIAT definition.

The visitor provision at Daviot Wood has thus far failed to keep up with this change in the local population geography. The main visitor access point, where most facilities and resources are focussed, is currently the VisitScotland Information Centre (VIC) car park on the A9. This provides good access for tourists travelling north but flawed access for local people who drive from other parts of Inverness. The large number of people now living in the Milton of Leys area justifies development of new facilities aimed at this significant audience.

We believe this reorientation of access facilities towards the expanding city and in favour of pedestrian access may represent the primary strategic opportunity for Daviot Wood to fulfil its potential as a recreation resource for the people of Inverness.

6.1   Access points

6.1.1   Daviot VIC
The main access point for visitors to Daviot Wood is currently at the VIC that lies to the south of Inverness. This provides convenient access to the woods for tourist visitors travelling north on the A9. However, since many tourists will be en route to some other destination, it seems likely that a relatively small proportion stop at the VIC, and a small proportion of these stay long enough to explore the woods. It seems more probable that the majority of tourists use the information centre, toilets and possibly the picnic facilities without venturing much further than the car park. Unless a significant tourist attraction such as a sculpture trail or viewing tower were to be built in the woods, we believe that tourist visitors will remain a relatively minor audience for Daviot Wood.

The VIC car park is used extensively by local people who drive from all parts of Inverness. The car park's location off the A9's northbound carriageway means that most visitors have to turn across oncoming traffic or continue south and make a U-turn at the Daviot junction.

This makes the location of the car park less than ideal for people coming from Inverness. Bearing in mind the relative unimportance of the tourist audience, it seems unlikely that a car park would be built in this location if the site were being planned from scratch today.

Infrastructure & facilities

The design and layout of the trails car park is serviceable and fairly attractive, being sensitively integrated into the woodland environment. However, it would benefit from having a loop road layout instead of the existing linear one.

A small number of picnic tables are dotted amongst the parking bays. These are located in shady places in close proximity to vehicles coming and going. A better picnic experience would be provided if the picnic facilities were to be re-planned, perhaps using some of the more open and sunnier spaces in the VIC car park in addition to the wooded trails car park.

The main trailhead area consists of a jumble of fence posts, barriers and signs that appear unplanned and whose function is questionable. This area would benefit from re-planning to provide a more coherent and inviting entrance to the forest.

At the time of our visit in January, the buildings, landscapes and structures appeared poorly maintained, giving a negative first impression to visitors. Moss and lichen were encroaching onto the buildings and signs; the roadways and verges were made indistinct by fallen branches, needles and mud; the viewpoint at the edge of the car park was overgrown and derelict; the bins were broken. It is conceivable that maintenance standards are higher during the summer, but we believe that the standard during the winter should also be high, bearing in mind the significant numbers of people using the car park year round.

Information

Pre-arrival road signs located on the A9 to the south of the site alert northbound tourists to the presence of the Daviot Wood VIC and picnic site. These signs fail to provide a full and accurate picture of the facilities on offer, as they do not mention that it has trails, whilst they do advertise the toilets off-season when these are not available. This represents a serious inconvenience to tourists, as it is quite likely that many hundreds of people stop here each year to use toilets that

turn out to be closed. We recommend that the pre-arrival signs are updated.

On first arrival at the car park, visitors are greeted with two identification signs – one saying 'Tourist Information' on the gable end of the VIC building, and another saying 'Daviot Wood Picnic Site' on a freestanding sign which also contains vehicular directions. Both signs are of low visual quality and fail to create a positive first impression of the site. Arguably, the Daviot Wood Picnic Site name no longer makes much sense bearing in mind the relatively low priority given to this activity. The vehicle direction sign is overly complex and fails to provide the clear, concise information drivers need at this key decision point. Almost as prominent as the arrival and vehicular direction signs is an ugly 'Toilets' sign on the building, the function of which might be achieved in more subtle ways. We recommend that the sense of arrival and welcome to the site for vehicle-borne visitors is improved.

On leaving the car, visitors can consult an orientation panel containing a map of Daviot Wood and descriptions of the trails it contains. Being the only orientation panel on site, its location in the VIC car park is problematic, as woodland visitors who park in the trails car park have to walk quite a distance away from the trail head to see it. The orientation map is orientated approximately 120 degrees out of sync with the actual landscape, making it into a 'disorientation map'. The trail names, layouts and distances provided on the panel are almost completely different from those provided in the FCS 'Forests of Inverness' leaflet, which is confusing for visitors with the leaflet. We recommend that the orientation panel is updated, and possibly duplicated with one panel located at the trail head and another in the VIC car park, possibly in conjunction with an outdoor display of tourist-related information for when the centre is closed.

At the trail head stands a green FCS corporate identification sign which signifies arrival at the FCS ownership boundary. This prominent arrival sign is confusing to visitors who will have assumed arrival at the forest when they entered the car park (refer to section 10.1, on 'Identification & identity', for more information). A green trail head post signifies the beginning of the Fitness Trail, but fails to mention any of the other trails available on site. We recommend that the trail head information is redeveloped to provide an integrated visitor information point containing all necessary identification, orientation and direction information.

Overall, we recommend that all information and sign structures in the car park are re-planned and re-presented.

6.1.2 Milton of Leys

Access to Daviot Wood from the Milton of Leys suburb is currently very low-key. A rough track leads up from a corner of a housing estate to the woodland boundary, where visitors are welcomed by a green FCS corporate identification sign and a brown timber monolith featuring a small orientation map. There are no other arrival facilities such as a car park, picnic area, trail head or trail direction information.

This low-key approach was appropriate when relatively few people accessed the forest at this point. However, as previously discussed, the Milton of Leys area has been a major focus for population expansion in recent years, and this entrance is now within walking distance of a sizable population. The entry point is already being used by large numbers of people and it has the potential to attract many more if additional facilities were to be provided. This entry point or another one nearby has the potential to become arguably the most important entrance to Daviot Wood, in terms of the total number of people using it and its suitability for arrival on foot.

We recommend that the demand for pedestrian and vehicular access to Daviot Wood from Milton of Leys is assessed through a small study and, if found to be substantial, a medium term objective is put in place to develop a significant new entry point at or near this location. The entrance might feature a car park and a visitor information point, with a picnic area being included if the setting is attractive enough. The entry point might be developed somewhere along the existing access track, or it might be situated on the old military road that lies to the west, if this provides a more convenient or practical location.

Infrastructure & facilities

There is no formal provision for people arriving by car, with vehicle-borne visitors currently parking on a residential street close to the track-end. This arrangement is unsatisfactory due to the small number of cars that can be accommodated and the potential for local residents to become resentful if demand for parking space increases. As discussed above, we recommend that serious consideration is given to providing a new car park to accommodate the demand, should this be confirmed and should this location prove practical for vehicle access.

Information

On leaving the on-street parking, visitors are presented with a brown timber monolith featuring a small orientation map. On arrival at the forest entry point, visitors are greeted by a green FCS corporate identification sign and another brown timber monolith featuring a small orientation map. Taken together, the signs do not currently provide a high quality sense of arrival.

In the short term, we recommend that the signing is redeveloped to provide a small integrated visitor information point at the woodland entrance containing all necessary identification, orientation and direction information, and providing a strong and positive sense of arrival. Should a more significant entry point and car park be developed in the medium term, we recommend that a larger information point is installed in the new location.

6.1.3 Daviot village

A minor access point for visitors to Daviot Wood is available at a car park situated near Daviot village. This entrance is at the end of the forest furthest from the major population centre of Inverness, and people have to drive past the VIC entry point to reach it. The woodland at this south east end of the forest is arguably less varied and interesting than that at the north west end. The car park environment is of low visual quality, being adjacent to a quarry, with the hard surfaces, mud, dust and heavy industrial traffic that goes with it. For all of the above reasons, this entry point is seldom used to access the forest.

Infrastructure & facilities

The car park and visitor arrival point is deeply unattractive, being a low specification municipal car park and recycling point located next door to a working quarry, with lorries using the area as turning and parking space. The overall impression given by this access point is one of being in a heavily industrial complex. As the issues that make this access point unpopular with visitors are fairly intractable, we recommend that it is kept open but not heavily promoted.

Information

There are currently no pre-arrival road signs directing people from the A9 to the main Daviot village car park, despite the route being unintuitive. Whilst regular users have no need of direction signs, these are essential for tourist visitors and would be beneficial for first-time

local visitors. However, if the recommendation to de-emphasise this access point is accepted, no pre-arrival road signs are required.

At the car park, a brown timber monolith featuring a small orientation map is located in the parking area, with a green FCS corporate identification sign located some distance up the access track and barely visible from below. The brown monolith does not provide a strong sense of arrival and does not feature the FCS corporate identity. The green FCS corporate identification sign provides a sense of arrival and displays the corporate identity, but it does so in the wrong place, as the visitor's on-site experience began on first arriving in the car park.

At a secondary forest entry and exit point a few hundred metres away, a brown timber monolith featuring a small orientation map is located near the gate. Prominent red safety signs, warning of danger and blasting operations, create a deeply unfriendly atmosphere.

We recommend that the signing is redeveloped to provide a small integrated visitor information point in the car park containing all necessary identification, orientation and direction information, and providing a strong and positive sense of arrival.

6.2   Paths, trails & waymarking

Paths

The forest roads and paths at Daviot Wood are in generally good repair and only routine maintenance and reinstatement after forest operations is required.

Trails

The waymarked trails are overly complex which makes them difficult to waymark successfully and hence confusing for visitors. Only one circular trail is provided from the two most used access points at the VIC and Milton of Leys, when a choice would be better, as would a circular trail using the Military Road. A single trail is provided from the little-used Daviot village access point which, arguably, should be deemphasised through its removal. We recommend that the trails at Daviot Wood are re-planned.

Waymarking

The trail waymarking is erratic, with missing markers, incorrect colouring and inconsistent placing of markers at junctions. Waymarkers are of many different styles and colours, creating a sense

of incoherence. Waymarkers contain symbols that do not appear on the panel or leaflet maps. We were not able to use the waymarkers and leaflet map to successfully navigate the trails, and we recommend that waymarking at Daviot Wood is replaced or refurbished as required. Refer to the separate section 10.2, 'Orientation & Waymarking', for more information.

A brown sandblasted timber fingerpost is located in the trails car park. Brown timber fingerposts and matching waymarkers appear at other places in the forest. These directions bear little relation to the information provided on the orientation map, and the brown stained structure bears no relation to other signs to be seen on site. These signs appear to be part of a defunct signing system and we suggest that they are removed to prevent confusion.

Overall, the site signs range from brown, blue and white metal to green timber and brown timber, with an equally wide assortment of finishes, design styles and typefaces. This lack of coherence gives the impression of disorganisation and fails to give visitors confidence in the site management. We recommend that all information and sign structures across the site are reviewed and rationalised as far as possible.

The military road

The General Wade Military Road running south from Inverness forms part of the western boundary of Daviot Wood. The route was once popular with walkers and cyclists who used it as the western leg of a circular route between Milton of Leys and the wood. The road is now far less popular because the surface has been allowed to become rutted and waterlogged to the point where passage is highly unpleasant.

This situation is a pity as circular routes are highly popular with visitors and as the road arguably provides more interesting scenery than many of the forest roads. On our visit to this area, we heard repeated complaints from forest visitors about the condition of the military road, and most people assumed that the Forestry Commission was responsible for it. There exists a clear opportunity to upgrade the military road surface and to use it as part of a waymarked circular trail between Milton of Leys and Daviot Wood, possibly in conjunction with creating a new forest entry point as discussed above.

In any case, the existing access point into the forest from the military road is currently untidy and lacking in the required directional signs.

This significant forest entrance should be upgraded with improved identification, orientation and direction signs.

6.3   Features, viewpoints & seats

Viewpoints

A viewpoint near the existing Milton of Leys entrance is heavily promoted on the orientation panel at the VIC car park. The actual viewpoint appears to be a lay-by next to the path, used for storing track maintenance aggregate. The view is compromised by vegetation growth, and the storage area does not provide a pleasant environment or a distinctive sense of place, to the extent that it is not clear that you have arrived at the viewpoint. Overall, the existing viewing experience is of poor quality.

The idea of providing tourists stopping at the VIC with a relatively short walk through the forest to a viewpoint is reasonably compelling, although it seems likely that a relatively small number of tourist visitors will make the journey. A viewpoint in this location should also provide a good destination or stopping point for local people walking up from Milton of Leys. If the viewpoint is to continue to be promoted, we recommend that a new viewing facility featuring an elevated platform, sheltered seating and landscape improvements is constructed. The overall desirability and precise location of this development may depend on the possible future existence and location of a significant new entry point from Milton of Leys (as discussed above), and we suggest that the two opportunities are considered together.

A viewpoint near the existing Daviot village entrance is featured on the orientation panels and leaflet. This provides a nice short-walk destination point for residents of Daviot village. The view is pleasant, but the viewpoint location itself has no distinctive sense of place, to the extent that it is not clear when you have arrived at it. If the viewpoint is to continue to be promoted on maps, we recommend that a feature seat is installed.

Seats

Throughout Daviot Wood, there is a general lack of seats and other opportunities for visitors to rest and/or appreciate the view. Refer to section 10.4, 'Seats', for more information on seats. We recommend that the best sitting places are identified and appropriate new seats are installed at these locations.

6.4   Interpretation

6.4.1   Interpretive significance

Daviot does not really have any obvious features worthy of interpretation. The Wade Military Road is interesting, but it is not in FCS ownership, and as discussed above is in such poor condition that access to it cannot be encouraged at the moment. As a linear feature with several access points, it would be a challenge to interpret the road through fixed on-site media. According to the car park panel, there are traces of prehistoric round houses and field clearance patterns just north of the viewpoint above Milton of Leys, but these are not obvious to the lay observer. The forest itself is unexceptional.

The view north from above Milton of Leys could merit a viewpoint indicator, identifying and interpreting features in the landscape. This could offer a pleasant view of Inverness and the northern Highlands for any tourists who wanted a short excursion form the car park, as well as a destination point for local visitors. However, this would only be worth considering as part of a substantial re-development of the viewpoint (as discussed above), combined with selective vegetation clearance to keep the view clear.

6.4.2   Themes

Although there are no outstanding features and little scope for conventional fixed media here, it is still worth defining interpretive themes for the wood. These should be used for subtle interpretation, incorporated into trail features, and for events as discussed below. They can also be used as a basis for revised trailhead and orientation panels.

The themes we suggest for Daviot are based on the history of transport through the area, and on the forest's value for wildlife:

> *For centuries, people have travelled through this landscape on their way between the north and south of the Highlands. If you're on a journey, you're following the tracks of prehistoric traders, 18th century clans and troops, cargoes of Highland produce and sightseers through the ages.*
>
> *The forest around you provides a home for far more varied wildlife than the open moor that was here before it was planted. Dragonflies breed in forest pools, owls hunt through the trees at night, and deer may well be watching you as you walk.*

6.4.3   Proposed media

We recommend that interpretation at Daviot should be subtle rather than overt. The heritage of the Wade road, and of the forest environment and wildlife, can best be reflected on site through developing designs inspired by the forest's themes for seats to be located at key points. The corners of the main rectangle of forest roads would be good locations: simple benches already exist at a couple of them. The exact placing of the seats would need sympathetic landscape design so that the seats are not just stuck by the side of the road, but placed in a setting that invites people to rest for a while.

A project to create new seats, incorporating work by local artists, would provide a newsworthy story that would raise awareness of the wood, bring its heritage alive, and provide welcome resting and destination points in what is otherwise a slightly monotonous environment in places.

In addition to the seats, events could be held at Daviot that interpret the forest's themes as well as promoting it and encouraging new visitors to explore. Depending on the scale of ambition for events programmes centred on the Woods of Inverness, these events could range from organised outings for groups of people using mobility scooters to Easter egg hunts and summer barbecues with music: a remodelled viewpoint could make an excellent performance space, with the landscape as a backdrop.

Actions

- VIC access point – work with partners to review and upgrade the infrastructure and facilities, including the landscapes, buildings, roadways and verges, picnic tables, bins and trailhead furniture, and to maintain these to high standards year-round.

- VIC access point – work with partners to review and upgrade the pre-arrival, identification, orientation and direction signs.

- Milton of Leys access point – assess the demand for pedestrian and vehicular access to Daviot Wood from Milton of Leys.

- Milton of Leys access point – if justified by the demand for access from Milton of Leys, work with partners over the medium term to develop a significant new entry point, possibly including a car park, picnic area, trail head and associated signing.

- Milton of Leys access point – in the short term, review and upgrade or refurbish the existing identification and orientation signs.

- Daviot village access point – review and upgrade or refurbish the existing identification and orientation signs.

- Trails – review and rationalise the trails network.

- Waymarking – review and rationalise the trail waymarking and other direction signs.

- Military road – work with partners to upgrade the military road surface, to create a circular trail between Milton of Leys and Daviot Wood and to upgrade or refurbish the existing identification, orientation and direction signs.

- Viewpoints and seats – review viewpoints and seat location and install viewpoint features and seats as required.

- Interpretation – commission artist-designed seats inspired by forest themes.

- Interpretation – develop events to raise awareness of the wood and the recreation opportunities it offers.

7   Ord Hill

Ord Hill lies above North Kessock off the A9 trunk road to the north east of Inverness. At around five miles from the city centre by car, and involving a bridge crossing, Ord Hill is technically quite remote from the city, although it feels more closely connected as it forms a highly visible landmark. The wood has only a small population living within walking distance, so most people access it by car from other parts of the city. It seems likely that tourist visitors are currently a minor audience for Ord Hill.

Ord Hill forms a prominent landmark for Inverness, and the views from the top would be spectacular if it was not so heavily wooded. Many cities have landmark viewpoint hills, such as Kinnoull Hill in Perth and Arthur's Seat in Edinburgh, which local people value highly and visit in their droves. Inverness currently has no such iconic landmark viewpoint, but Ord Hill may have the potential to provide one.

We believe that panoramic views may represent the primary strategic opportunity for Ord Hill to fulfil its potential as a recreation resource for the people of Inverness.

7.1   Access points

7.1.1   Main car park

The main access point for visitors to Ord Hill is a woodland car park reached from minor roads leading off the A9 near North Kessock. The parking area is used extensively by local people who drive from all parts of Inverness. The car park's access route off the A9 provides relatively easy access for people coming from the city.

Infrastructure & facilities

The design and layout of the car park is serviceable and fairly attractive, being partially integrated into the woodland environment. However, it would benefit from some more sensitive landscape design and additional planting. The earth bund separating the main parking area from the road is used as an informal exit, which has caused muddy ruts in the slope that look very unsightly – the bund should be re-formed and/or planted to prevent this use.

If the car park were to be more sensitively landscaped, there may be an opportunity to introduce a small number of picnic tables.

Information

There are currently no pre-arrival road signs directing people from the A9 to the main Ord Hill car park, despite the route being complex and unintuitive. Whilst regular users have no need of direction signs, they are essential for tourist visitors and would be highly beneficial for first-time or occasional local visitors. In the short term, we recommend that consideration is given to working with the roads authority to provide direction signing from the A9 to the main car park. This will become a necessity if the status of Ord Hill as a visitor attraction is raised significantly (as discussed in section 7.3).

Arrival at the wood is first signified by a green FCS corporate identification sign located at the woodland boundary on the public road approximately 1200m from the car park. There is no natural sense of arrival at this location and placing an identification sign here weakens the real sense of arrival required later. We recommend that this sign is removed and replaced with the system of pre-arrival direction signing described above.

Arrival at the wood is next signified by a green FCS corporate identification sign located at the junction of the forest road and the public road approximately 300m from the car park, which provides an appropriate place for a 'threshold' sign. The content of the existing sign is out of date and should be reviewed and simplified – the Blue Walk slat should be removed (as there are two trails and specific mention of either at this point is unnecessary), and consideration should be given to omitting the 'Orienteering Course' words and relying on the symbol alone (as anybody wanting to use the course will recognise the symbol). Wheelie bins belonging to local houses are stored directly in front of this sign, which gives a poor first impression of the wood – a concrete stand or timber enclosure should be provided for the bins on the opposite side of the forest road. We recommend that the sign is replaced or renovated and that the wheelie bins are moved and properly housed.

On arrival at the car park, visitors are greeted with a lectern sign containing an orientation map and supporting information. The sign is of reasonable visual quality but does not have the presence needed to create a strong sense of arrival in a place of some importance. The map is far too small to be useful and does not fully match the one in the leaflet. The layout of the panel could also be improved. We recommend that consideration is given to installing a more significant

visitor information point containing all necessary identification, orientation and direction information.

7.1.2   A9 lay-by car park

A secondary access point for visitors to Ord Hill is a lay-by on the A9 southbound carriageway near North Kessock. This provides the possibility of access to the woods for tourist visitors travelling south, although most local people would probably be better off using the main car park.

The lay-by is unattractive and lacking in facilities, so it seems unlikely that people will choose to spend much time in it. There is a steep climb to the main waymarked trail network, making this forest entrance much less accessible for people with walking difficulties. A short distance along the access path lies a viewpoint from which the view is very pleasant, although the viewpoint location itself has no distinctive sense of place, to the extent that it is not clear when you have arrived at it. If the viewpoint is to continue to be promoted on maps, we recommend that a feature seat is installed in a landscaped area.

In its current form, it is difficult to recommend that this lay-by is promoted as a forest entry point on maps and signs. However, if the local authority upgrade the lay-by in the future, the potential exists for FCS to provide a valuable opportunity for tourists and locals to access the forest, possibly including picnic facilities, a significant viewpoint feature and all necessary identification, orientation and direction information.

Infrastructure & facilities

The design and layout of the car park is serviceable but unattractive. We understand that the local authority experiences problems with the lay-by being used for overnight parking and other activities regarded as undesirable. Unsightly height restricting barriers have been installed to combat the overnight parking issue. Apart from toilets, the lay-by has few other facilities and is unlikely to be an environment in which people choose to spend much time.

If the car park were to be more sensitively landscaped, there may be an opportunity to introduce a small number of picnic tables. In its current state we recommend that no action is taken.

Information

There are currently no pre-arrival road signs alerting people to the woodland recreation opportunities available from this lay-by. Whilst regular users have no need of these signs, they are essential for tourist visitors and would be beneficial for first-time local visitors. However, if the recommendation to de-emphasise this access point is accepted, no pre-arrival road signs are required.

There are currently no identification, orientation or direction signs for Ord Hill available in the lay-by, although there is a green FCS corporate identification sign located at the FCS ownership boundary some distance from the parking area. This oversized identification sign is inappropriate at this location and should be removed.

We recommend that the signing is redeveloped to provide a low-key integrated visitor information point in the lay-by park containing identification, orientation and direction information.

7.2   Paths, trails & waymarking

Paths

The forest roads and paths at Ord Hill are in generally good repair and only routine maintenance and reinstatement after forest operations is required.

Trails

The waymarked trails are overly complex which makes them difficult to waymark successfully and hence confusing for visitors. The main problems with the existing layout are the presence of waymarked dead-end spurs (to the fort viewpoint and the A9 car park), link-routes (joining the two circular trails) and shared two-way legs (making the Fort Trail a figure of eight) in what would otherwise be a simple circular waymarked trail. We recommend that the trails at Ord Hill are re-planned to make them clearer and easier to follow.

Waymarking

The trail waymarking is erratic, with missing markers, incorrect colouring and inconsistent placing of markers at junctions. Waymarkers contain symbols that do not appear on the panel or leaflet maps. We were not able to use the waymarkers and leaflet map to successfully navigate the trails and we met many people who were lost or who said they had been lost on previous visits. Refer to section 10.2 on 'Orientation & Waymarking' for more information. We

recommend that waymarking at Ord Hill is replaced or refurbished as required.

A brown sandblasted timber fingerpost with no fingers is located in the main car park. Brown timber fingerposts and matching waymarkers appear at other places in the forest. These directions bear little relation to the information provided on the orientation map, and the brown stained structure bears no relation to other signs to be seen on site. These signs appear to be part of a defunct signing system and we suggest that they are removed to prevent confusion.

7.3 Features, viewpoints & seats

Features

The main feature of interest on Ord Hill is the hill fort. This defensive structure dating from the Iron Age is in a very attractive part of the forest, but it is not particularly well preserved and it is difficult to understand its layout without help. There is currently no interpretation of the fort near the site and we recommend that this is provided.

Viewpoints

For a hill that should provide and is promoted as offering some of the best views in Inverness, Ord Hill has precious few viewpoints of note. Existing viewpoints are few and far between, and the views offered by some of those that do exist are becoming obscured by growing trees. This is frustrating for visitors who expect to have views from the hills they climb. As a minimum, we recommend that existing viewpoints are maintained to preserve and enhance the views, that new slot views are created by selective felling where possible, and that seats are installed at the viewpoints. These recommendations are consistent with proposals in an internal FCS landscape review carried out in 2004, which suggested selective felling to preserve and open up views from the hill, as well as adjustments to the trail network.

Experience at other places such as Kinnoull Hill in Perth and Arthur's Seat in Edinburgh suggests that city folk place a high value on accessible local landmark hills. These places afford spectacular views over the city and provide a focus for outdoor activity amongst residents and visitors. Inverness currently has no such iconic landmark viewpoint, but Ord Hill may have the potential to provide this. The forest is varied and attractive, with a good range of trail options, and the views from the top would be spectacular if it was not so heavily wooded.

Repositioning an outdoor attraction begins with putting in place the required physical infrastructure, but changing attitudes towards it amongst local people is a longer-term process. Should the project described above go ahead, raising awareness of the hugely improved views from Ord Hill and establishing its new status might be speeded up by setting up a programme of events, which would involve local people directly and generate wider publicity. In addition to a series of small-scale activities such as ranger-guided walks, a significant large-scale festivity, perhaps on mid-summer day or New Year, might create the required impact.

Potential challenges to Ord Hill becoming an iconic viewpoint hill include the presence of the archaeologically important hill fort and the hill's distance from Inverness.

We recommend that the feasibility of creating a major local attraction at Ord Hill is assessed through a small study and, if found to be feasible, a medium term objective is put in place to create the required conditions. The project might include clearing trees from the hilltop and key viewpoints at lower levels, installing significant viewpoint features, upgrading the car park, re-planning the trail network, re-signing the site, installing interpretation materials and creating a programme of events with associated publicity initiatives.

Seats

Throughout Ord Hill, there is a general lack of seats and other opportunities for visitors to rest and/or appreciate the view. Section 10.4 has more information on seats. We recommend that the best sitting places are identified and appropriate new seats are installed at these locations.

7.4 Interpretation

7.4.1   Interpretive significance
The remains of the hillfort are clearly visible, although they not as well defined nor as archaeologically significant as at Craig Phadrig. However, they are worth interpreting, and interpretation should mention the presence of another fort just across the firth.

The forest environment is varied, and offers the most attractive landscapes and trails of the four woodlands in this study. This status would be enhanced still further if views from the hill were improved as described above. These qualities do not lend themselves to

conventional interpretation, but they do offer opportunities to enhance visitors' experience and to help to create popular destination points, particularly if, as discussed above, Ord Hill is promoted as 'the best place for a view in Inverness'.

7.4.2   Themes

We suggest the following themes for Ord Hill. The second, based on the forest's aesthetic qualities, is intentionally open-ended to allow scope for a variety of approaches.

> *Hundreds of years ago, people lived on top of this hill in a large walled enclosure. They belonged to a sophisticated society that had trading links with other places and neighbours on Craig Phadrig, just across the firth.*

> *The woodland of Ord Hill is a place to find birdsong and sunsets, the scent of pine trees and moss, laughter and adventure, views to the far horizon, and space to think and dream.*

7.4.3   Proposed media

The presence of the hillfort should be introduced on a trailhead panel in the car park, as is currently the case. The current panel mentions that the fort was vitrified: consultation with the FCS archaeologist suggests this may be inaccurate, so the content of any new trailhead panel should be checked.

In addition to an introduction in the car park, a single panel should be installed close to the hillfort itself. This should include high quality illustration showing life in the Iron Age, and it should encourage visitors to notice the sections of rampart visible among the trees. Consultations with the FCS archaeologist suggest that it is difficult to identify the exact boundaries of the fort area: the interpretation can make this clear, and encourage people to visit Craig Phadrig to see a more distinct, spectacular and significant fort.

The exact location and installation of the panel will need careful planning in consultation with the FCS archaeologist so as to avoid any interference with the scheduled monument. An ideal location would be close to top of the steps that approach the fort from the car park: there is a strong sense of arrival here, and some rampart remains are clearly visible close by.

The second theme, based on the wood's aesthetic qualities, can be addressed through creative approaches to any seating installed on the trail network and at viewpoints. Short, evocative texts could be commissioned to be carved into the seats, or seat designs could be let as sculptural commissions. This approach is similar to that suggested for Daviot, but the style of installations at Ord Hill should be distinct. At Daviot, seat designs can illustrate the forest themes; at Ord Hill they should be more evocative and inspirational, allusive rather than literal.

Events should also form part of interpretation at Ord Hill. As discussed above, events could play a particularly important role if the hill is developed as a major destination for Inverness.

Actions

- Ord Hill – assess the feasibility of creating an iconic viewpoint hill for Inverness.

- Ord Hill – if feasible to create an iconic viewpoint hill, instigate a project to open up views, install viewpoint features, upgrade the main car park re-plan the trail network, re-sign the site, install interpretation and devise a programme of events.

- Main car park – review and upgrade the infrastructure and facilities, including the landscape, planting, picnic tables and trailhead furniture.

- Main car park – review and upgrade the pre-arrival, identification, orientation and direction signs.

- A9 lay-by – review and upgrade the pre-arrival, identification, orientation and direction signs.

- Trails – review and rationalise the trails network.

- Waymarking – review and redevelop trail waymarking as required by the revised trail network.

- Viewpoints – maintain existing viewpoints and create new slot views.

- Interpretation – develop new interpretation panel for installation close to hillfort site.

- Interpretation – develop viewpoint seating and features inspired by the forest's aesthetic qualities.

8   Culloden Wood

Culloden Wood lies off the A96 trunk road to the east of Inverness, around 3.5 miles from the city centre by car. The name covers three distinct forestry blocks, although most visitors are likely to think only of the area immediately next to Smithton as 'Culloden Wood'. The other blocks are a substantial area next to Newlands of Culloden, known by FCS staff as 'the lollipop' because of the shape of the trail loop, and a smaller area immediately next to the National Trust for Scotland (NTS) Culloden Battlefield site.

The wood has a sizable population living within walking distance in the Smithton, Culloden and Balloch suburbs, although people also visit by car from other parts of the city. It seems likely that tourist visitors are currently a minor audience for Culloden Wood.

Culloden Battlefield is a major visitor attraction owned and operated by the NTS. Action during the battle covered a larger area than the NTS site, extending across Culloden Muir and into the main block of Culloden wood. There are plans to develop a circular waymarked trail that would link the NTS site, the FCS Westhill block and the main Culloden Wood block: this would allow battlefield visitors to explore much more of the historic battlefield site, and offers opportunities for more in depth interpretation of its stories. Proposals for the route, for possible interpretation along it, and initial cost estimates are described in the report *Culloden Interpretation and Access Prospectus* (Alba Interpretation, 2009, for National Trust for Scotland, Forestry Commission Scotland and Highland Council).

The interpretation significance of Culloden Wood is discussed in more detail below. It seems likely that relatively small numbers of people would use the proposed longer trail, but it represents a useful diversification of the outdoor recreation facilities offered by the Woods of Inverness, and it provides perhaps the best opportunity to encourage tourist visitors to use this forest.

8.1   Access points

8.1.1   Tower Road

The main access point for visitors to Culloden Wood is a woodland car park reached from minor roads running between the A96 and the B9091. The parking area is used extensively by people from the immediate area and from all parts of Inverness.

Infrastructure & facilities

The metal gate and gateposts near the public road are unwelcoming and unattractive, and consideration should be given to replacing them with a more welcoming solution to access control. The design and layout of the car park is serviceable and attractive, being integrated into the woodland environment.

Information

There are currently no pre-arrival road signs directing people from the A96 or B9091 to the main Culloden Wood car park. Whilst regular users have no need of direction signs, these are essential for tourist visitors and would be beneficial for first-time local visitors. As this access point is used almost exclusively by local people, pre-arrival road signs are probably not essential.

Arrival at the wood is first signified by a green FCS corporate identification sign located at the junction of the access track and the public road approximately 300m from the car park, which provides an appropriate place for a 'threshold' sign. This sign can only be viewed by people travelling south and consideration should be given to installing an additional sign for people travelling north.

On arrival at the car park, visitors are greeted with a lectern sign containing an orientation map and supporting information. The sign is of reasonable visual quality but does not have the presence needed to create a strong sense of arrival in a place of some importance. The panel was missing during our visit but, if designed at the same time as the Ord Hill panel, there may be issues with its map and overall layout. We recommend that consideration is given to installing a more significant visitor information point containing all necessary identification, orientation and direction information.

A trail head is currently located some distance from the orientation point. This consists of two monolith signs, one featuring initial trail directions and another featuring a management request to 'Please pick up after your dog'. It would be better if the trail directions were given on a sign that looks similar to the standard waymarker posts so as to establish a visual connection between the two. The management sign will have long since become part of the scenery for repeat visitors and, if the issue is still current, a temporary campaign should be developed to address it. We recommend that the trail head is replaced as an integral part of the proposed new visitor information point described above.

Overall, we recommend that all information and sign structures in the car park are re-planned and re-presented in their entirety.

8.1.2   Other entrances

Culloden Wood is bordered to the north west by a housing development where the forest boundary is inevitably quite porous. A number of informal entrances have been created by local people to improve access to the woods. Although they can be quite unsightly, many of these entrances are too small and infrequently used to warrant any significant intervention. However, one or two of them seem more popular and might benefit from a degree of improvement and formalisation. One other minor entrance has been overly formalised through installation of an ugly, complex and ineffective metal vehicle barrier.

We recommend that the most popular secondary entrances are tidied up by inserting proper strainer posts either side of gaps in the perimeter fence, and by building proper wall-ends in breached dykes. It may also be worth installing very low-key identification signs containing the FCS corporate identity and forest name, but no map or other information. The complex metal vehicle barrier should probably be removed.

Low-key identification signs should also be installed at the entrances used for the new Culloden battlefield trail, if it is developed.

8.2   Paths, trails & waymarking

Paths

The forest roads and paths at Culloden Wood are in generally good repair and only routine maintenance and reinstatement after forest operations is required to the majority of them. The main exception is a circular route adjacent to Newlands of Culloden (the 'lollipop') where the path is heavily rutted and waterlogged in places. We understand that this area is used extensively by a horse riding school, which may be a factor in its poor condition. We recommend that this path is upgraded where necessary.

Trails

The waymarked trail network is simple, which makes it easily understood by visitors. The yellow trail is a viable length but the red trail is too short to be useful and should be extended, perhaps into an out-and-back trail to St Mary's Well if a longer circular trail to the

north of the railway is not possible. The trail names should be made more expressive of character of each trail. We recommend that the trails at Culloden are re-planned.

Waymarking

The trail waymarking is erratic, with missing markers and inconsistent placing of markers at junctions. We were not able to use the waymarkers and leaflet map to successfully navigate the trails. Refer to section 10.2 on 'Orientation & Waymarking' for more information. We recommend that waymarking at Culloden Wood is replaced or refurbished as required.

Green metal direction signs are located in the car park and at other places in the forest. These directions bear little relation to the information provided on the orientation map, and the metal structure bears no relation to other signs to be seen on site. These signs appear to be part of a separate signing system and we suggest that they are reviewed and, if possible, removed to prevent confusion.

Brown timber fingerposts are located just outside the forest on the route of the proposed new Culloden battlefield trail. As things currently stand, future users of this trail would pass four or five different sign systems on their journey. This lack of coherence would give an impression of disorganisation and would fail to provide visitors with confidence in the site management.

We recommend that all information and sign structures across the site are reviewed and rationalised as far as possible.

8.3   Features, viewpoints & seats

Features

There are a number of interesting features in Culloden Wood, including the Clootie Well, the Lord President's Seat and the Prisoner's Stone.

The Clootie Well, also known as St Mary's Well, is a well known local landmark. Clootie wells are places of pilgrimage comprising a well or a spring, often with trees growing beside it, where strips of cloth are tied to the tree branches, usually in the belief that this will help someone who has been in contact with the cloth to get better from an illness or injury. The Culloden Clootie Well is currently in poor condition, with maintenance work needed to the enclosing wall and internal paving. The identification sign is of poor quality and uses

a different name (Clootie Well) to the leaflet map (St Mary's Well). There is currently no interpretation of the well's history and significance. We understand that FCS does not own the wall around well, nor the ground inside it. We recommend that FCS, either with permission of the landowner or by purchase of the land, maintains and upgrades the Clootie Well and the surrounding area, including maintaining the wall and installing paving, new signs and interpretation.

The Prisoners' Stone is a large boulder that is the reputed site of the execution of 17 Jacobite prisoners by government troops on 17 April 1746, the day after the Battle of Culloden. There is an identification sign and a seat near the stone, but no interpretation of its history and significance. The setting of the stone has changed dramatically in recent months as the surrounding mature forest has been felled. We recommend that a landscape plan for the stone's immediate environment is drawn up to ensure that it always has a strong sense of place, and that new signs, seats and interpretation are installed.

The Lord President's Seat is a boulder located at the foot of an oak tree on the south side of the railway bridge. Local folklore has it that the stone was used as a seat by Duncan Forbes, Lord President of the Court of Session in the 1740s and head of the family that once owned the land. Forbes was a strong supporter of the government side during the Jacobite rebellion. There is currently no identification sign or interpretation of the stone's history and significance, making it almost impossible to know that this is the Lord President's Seat, especially as the location is wrongly marked on the leaflet map. We recommend that interpretation of the stone is provided.

Viewpoints

There are currently no viewpoints in the forest due to the enclosed nature of the woodland. However, should the proposed Culloden battlefield trail be developed, an opportunity exists to create a viewpoint feature where the path meets the B9006. This location gives a good view to the north west, into the northern Highlands from where many of the Jacobite supporters would have come. We recommend that this opportunity is considered as part of the trail development.

Seats

Throughout Culloden, there is a general lack of seats and other opportunities for visitors to rest and/or appreciate the view. Refer to section 10.4 , 'Seats', for more information on seats. We recommend

that the best sitting places are identified and appropriate new seats are installed at these locations. These seats might form interpretive features on the proposed Culloden battlefield trail.

8.4 Interpretation

8.4.1 Interpretive significance

The features in Culloden Wood that are of interest to visitors and that deserve better interpretation than they have at present are the Clootie Well, the Prisoners' Stone, and the Lord President's Seat. All have some connection to the story of the battle of Culloden, since soldiers are reputed to have rested at the well, but the tradition of its use as a healing well dates from much earlier. Interpretation of the well should not therefore be restricted to linking it to the story of the battle: instead it might be linked to the hillfort sites at Craig Phadrig and Ord Hill.

There are other historic features in Culloden Wood, including traces of hut circles, but they are too indistinct to merit interpretation through fixed media or publications.

The forest environment is unexceptional, although there is clearly wildlife value in the woodland that could be referred to in passing, or made a focus for face to face interpretation.

Proposed battlefield trail

Apart from the Prisoners' Stone and the Lord President's Seat, the landscape itself is something that could be interpreted to give a deeper understanding of the battle. This would be one benefit of the proposed trail: it would allow people to trace the course of the battle and the troop movements before and afterwards far more extensively than is possible on the NTS site. In addition, the views across open moorland and north to the Highlands from some stretches of the trail route would give some idea of what the terrain was like at the time, and help place the battle in the context of the wider landscape.

We consider that the trail is worth pursuing as a new development. It would extend recreational opportunities for all visitors to Culloden Wood, offering a substantial circular walk through varied landscapes, as well as offering an in-depth exploration of some of the stories of the 1745 rebellion and the battle itself. However, we are cautious about how many visitors to the NTS site will actually follow the trail. The proposed 9 km circuit would take around two hours to walk,

allowing time to stop at features such as the Clootie Well and the Prisoner's Stone and for rests, making it something only those with a particular interest in the battle would do. In the company of a knowledgeable and skilled guide, the route would be an excellent way to learn about the battle and its wider context, but again this is likely to appeal to a relatively small niche market.

The *Culloden Interpretation and Access Prospectus* (op cit) suggests several other possible strands of interpretation along the route, including the Forbes family's history and their involvement in influencing politics and agricultural reform, changes in land use, and prehistoric monuments. We are not convinced that these wider topics can be supported adequately by features along the trail, or that they are of sufficient appeal to likely trail users to merit permanent interpretation through on-site media or publications. They might be interesting topics for interpretation in the hands of a skilled guide, but we see the trail's strongest selling point being its exploration of the battle and of the events immediately before and after it.

8.4.2   Themes

We suggest the following themes for Culloden Wood. These are intended for interpretation of the wood and the features within it: the proposed battlefield trail will need a separate interpretive planning exercise to determine themes and appropriate media.

> *The Clootie Well shows how pagan traditions are still alive, and links us to people who lived here centuries ago. Perhaps people from the hillforts you can see in other forests around Inverness came here to leave offerings to heal the sick.*

> *Within this peaceful forest there are traces of troubled times, and of a battle that raged beyond the famous site nearby.*

Interpretation at the Clootie Well might include messages about respecting the offerings people have left, as well as encouragement to use bio-degradable materials if visitors want to leave an offering themselves.

8.4.3   Proposed media

The new trailhead and orientation provision in the car park should introduce the two forest themes. In addition, plaques or panels should be installed at the Clootie Well, the Prisoners' Stone and the Lord Presdient's Seat. Careful consideration should be given to the

materials used: full colour panels in resin-based plastic seem inappropriate for these features. Metal plaques would be more appropriate for the character of the sites and of the themes, and would be longer lasting. Where possible, the plaques should be attached to existing structures, such as the wall of the Clootie Well and the railway bridge next to the Lord President's Seat. If new structures are needed, they should be designed to be in keeping with the feature and its environment.

Actions

- Culloden Wood – continue development of the proposed Culloden battlefield trail and consider opportunity for viewpoint on the B9006.

- Tower Road car park – review and upgrade the infrastructure and facilities, particularly the metal entrance gate.

- Tower Road car park – review and upgrade the pre-arrival, identification, orientation and direction signs.

- Other entrances – tidy-up informal entrances and install lo-key identification signs.

- Paths – upgrade loop path near Newlands of Culloden.

- Trails – review and re-plan the trails network, especially the red trail.

- Waymarking – review and rationalise the trail waymarking and other direction signs.

- Features – improve settings for the Clootie Well, Prisoner's Stone and Lord President's Stone.

- Viewpoints and seats – review seat location and install new seats as required.

- Interpretation – develop on-site plaques for the Clootie Well, Prisoners' Stone and Lord President's Seat.

- Interpretation – develop a full interpretation plan for the battlefield trail as part of its development.

9 Craig Phadrig

Craig Phadrig Forest lies adjacent to the Beauly Firth to the west of Inverness, around two miles from the city centre by car. The forest has a sizable population living within walking distance in the Leachkin, Kinmylies and Scorguie suburbs, although people also visit by car from other parts of the city. It seems likely that tourist visitors are currently a minor audience for Craig Phadrig Forest.

The hillfort on the top of the hill is impressive, and of considerable archaeological significance. However, the rest of the forest is not as attractive as Ord Hill, and the views from it are less accessible. It is well worth providing interpretation of the hillfort, but we believe that Craig Phadrig Forest is best viewed as a primarily local resource, rather than as a site that might be a tourist destination. It is a valuable recreation resource for people living on its perimeter, and an intriguing occasional destination for people living in other parts of Inverness to provide variety or to explore the hillfort.

This situation might change if substantial re-structuring of the forest could open up views and enhance the setting of the hilfort, but the forest character and extent would still make it a less enticing place than Ord Hill.

9.1.1 Main car park

The main access point for visitors to Craig Phadrig Forest is a woodland car park reached from minor roads off the A862 Inverness to Beauly road. The parking area is used extensively by people from the immediate area and less so by people from all parts of Inverness.

Infrastructure & facilities

The design and layout of the car park is serviceable although not as well integrated into the woodland environment as it could be. The entranceway is potholed and the broken down fence on the threshold boundary looks unsightly. The information and picnic area is reasonably attractive, but it has been built at a higher level than the car park, making it inaccessible for some people with walking difficulties.

We recommend that all-abilities access is provided to the information and picnic area, and that the surface and fences are fixed.

Information

There is a pre-arrival road sign directing people from Leachkin Road to the main Craig Phadrig Forest car park off Leachkin Brae. Whilst

regular users have no need of direction signs, these are essential for tourist visitors and would be beneficial for first-time local visitors. As this access point is used largely by local people, pre-arrival road signs beneficial but probably not essential.

Arrival at the forest is first signified by a green FCS corporate identification sign located near the junction of the car park and the public road. The sign is not very prominent when viewed from the road as it is located too far into the mouth of the entrance. Some of the content is redundant, including the trail information and arrow.

On arrival at the car park, visitors are greeted with a lectern sign containing an orientation map and supporting information. The sign is of reasonable visual quality and, although it does not have the presence needed to create a strong sense of arrival, it is probably appropriate for a low-key site such as this. The map is too small to be useful and does not fully match the one in the leaflet. The layout of the panel could also be improved. We recommend that consideration is given to updating the orientation panel so it contains all necessary identification and orientation information.

There is currently no trail head to act as a setting-off point and initial direction indicator, and we suggest that one should be installed.

Overall, we recommend that all information and sign structures in the car park are re-planned and re-presented as required.

9.1.2   Other entrances

Craig Phadrig Forest has a second car park at the base of the hill, accessed from the lower end of Leachkin Brae. We think it unlikely that people driving to the forest will gain much by parking here as opposed to the main car park higher up the hill. The resources dedicated to owning and maintaining this parking area would arguably be better allocated to the main car park. We understand that FCS plan to close and dispose of this car park, while retaining a pedestrian access point here for local people. We support this policy.

Craig Phadrig Forest is bordered to the east by a housing development where the forest boundary is inevitably quite porous. A number of informal entrances have been created by local people to improve access to the woods. Although they can be quite unsightly, many of these entrances are too small and infrequently used to warrant any significant intervention. However, one or two of them seem more

popular and might benefit from a degree of improvement and formalisation. A particularly strong candidate is the entrance off Balnafettack Crescent, from where the path leads past rocky outcrops and through one of the most attractive sections of the forest.

We recommend that the most popular secondary entrances are tidied up by inserting proper strainer posts either side of gaps in the perimeter fence. It may also be worth installing very low-key identification signs containing the FCS corporate identity and forest name, but these informal entrances do not need a map or other information.

9.2   Paths, trails & waymarking

Paths

The forest roads and paths at Craig Phadrig Forest are in generally good repair and only routine maintenance and reinstatement after forest operations is required to the majority of them. The main exception is the access path into to the hill fort which needs upgrading.

Trails

The waymarked trails are overly complex which makes them difficult to waymark successfully and hence confusing for visitors. The presence of waymarked dead-end spurs (to the lower car park), figure of eight loops and shared two-way legs are the main problems with the existing layout. We recommend that the trails at Ord Hill are re-planned.

Waymarking

The trail waymarking is erratic, with missing markers, incorrect colouring, inconsistent placing of markers at junctions, overgrown markers and inconsistencies between the waymarkers and the orientation map. We were not able to use the waymarkers and leaflet map to successfully navigate the trails. Refer to section 10.2, 'Orientation & Waymarking', for more information. We recommend that waymarking at Ord Hill is replaced or refurbished as required.

9.3   Features, viewpoints & seats

Features

The main feature of interest in Craig Phadrig Forest is the Craig Phadrig hill fort. This well-known local landmark is a remarkably well

preserved defensive structure dating from the Iron Age. The fort would have been built in this location to take advantage of the 360º panoramic views, although these are no longer available as the top of the hill has been planted with trees. This seems a missed opportunity and we recommend that consideration is given to restoring the views by felling trees. There is currently no interpretation of the fort near the site and we recommend that this is provided.

The status of the fort as a Scheduled Ancient Monument (SAM) is slightly compromised at present by tree growth, and by desire line access paths that are causing some erosion. A recent SAM management plan (*MMP 2892 Craig Phadrig Fort*, 2009) suggests some minor path diversion and creation work to address the erosion. This includes building a fence to discourage access onto the path that climbs the fort embankment at it southern edge, and using finger posts to encourage visitors to use the preferred access point. We support the goal of channelling access so that damage to the site is prevented, but it would be better if this can be done without using fences.

Viewpoints

For a hill that should provide some excellent views across Inverness and the surrounding landscape, Craig Phadrig Forest has precious few viewpoints of note. Apart from the hill fort, the single existing viewpoint is a slot view that is becoming obscured by growing trees. This is frustrating for visitors who expect to have views from the hills they climb.

The dense tree growth also compromises the setting of the hillfort, making it more difficult to appreciate its outline and impossible to get a sense of how it commands views across the surrounding landscape. We recommend that the existing viewpoint is maintained to preserve and enhance the view, that new viewpoints are created by selective felling where possible, and that the setting of the hillfort should be enhanced where possible. Seats should be installed at the viewpoints.

An internal FCS study (*Craig Phadrig Proposed Concept Plan*, October 2004) made similar recommendations and suggested that the forest could be promoted as a showpiece site. As discussed above, we consider that Ord Hill has more potential as a showpiece, but we otherwise support the landscape proposals.

Seats

Throughout Craig Phadrig Forest, there is a general lack of seats and other opportunities for visitors to rest and/or appreciate the view. Section 10.4 has more information on seats. We recommend that the best sitting places are identified and appropriate new seats are installed at these locations.

9.4 Interpretation

9.4.1 Interpretive significance

The key feature to interpret at Craig Phadrig is the hillfort. According to the FCS archaeologist, it is one of the most important examples of its type within the forest estate. There is evidence that it was first built in the Iron Age, around 400 BC, with other evidence of people living there between around 150 BC to around 900 AD. The remains of the walls are distinct and easy for non-specialists to identify.

The fort is likely to have been the headquarters of a Pictish king, a powerful figure in one of the most fertile parts of the Highlands. The fort has been vitrified, meaning that the stones of the wall have been partially melted in an intense fire. Research into the amount of heat needed to do this suggests it must have been a deliberate act, needing considerable preparation. It may have been a symbolic destruction after a conquest, or a ceremonial act to mark the death of a chief.

A comprehensive education pack about the fort has been produced by FCS and Highland Council (*The Pictish Fort of Craig Phadrig: an educational resource*, 2011), which might raise the profile of the site as a potential venue for educational visits. Providing the fort with a better landscape setting would enhance the impact and value of such visits, and on-site interpretation would help informal visitors to appreciate the fort's significance.

9.4.2 Theme

We recommend that interpretation at Craig Phadrig concentrates on the hillfort. An appropriate theme would be:

> *Craig Phadrig was once home to a powerful chief, who had an impressive fort here with commanding views of the surrounding land and sea. Ord Hill, just across the firth, was the site of another fort.*

> *The fort had a dramatic but mysterious history, and was occupied for hundreds of years before the forest here was planted.*

Interpretation should encourage visitors to explore the 'twin' hillfort on Ord Hill. It should also encourage visitors to access the fort using the approved route, explaining that other routes may damage the site. This is likely to be most effective if the message is given close to the paths concerned, rather than in the car park.

9.4.3 Proposed media

The panel currently in the car park does a good job of introducing the hillfort, but the site deserves more detailed interpretation. We recommend installing two panels close to the fort itself, with their exact locations dependent on conserving the monument.

The panels should make use of new, high quality reconstruction drawings, which can be based on recent archaeological surveys that have given a clearer idea of the fort's structure. One of the panels should refer to the fort's vitrification, and present this as a deliberate act without a known cause.

In addition, the website listing for Craig Phadrig should include a link to Highland Council's online Historic Environment Record, which has a page giving detailed information and references about the fort (http://her.highland.gov.uk/SingleResult.aspx?uid=%27MHG3809%27).

Actions

- Main car park – review and upgrade the infrastructure and facilities, including the landscape, surfaces, fences and accessibility.

- Main car park – review and upgrade the pre-arrival, identification, orientation and direction signs.

- Other entrances – consider converting the lower car park into a pedestrian entrance.

- Other entrances – tidy-up informal entrances and install lo-key identification signs.

- Paths – upgrade the hill fort access path.

- Trails – review and rationalise the trails network.

- Waymarking – review and rationalise the trail waymarking and other direction signs.

- Features – carry out selective felling to restore the setting of the hillfort and to open up views.

- Features – adjust path lines around the hillfort to address current erosion issues.

- Viewpoints and seats – review viewpoints and seat location, create new viewpoints and install viewpoint features and seats as required.

- Interpretation – develop more detailed interpretation of the hillfort, to be installed on two panels close to the site.

- Interpretation – include link to Historic Environment Record on Craig Phadrig web page.

10 Common site issues

Outlined below are issues that affect most or all of the sites that make up the Woods of Inverness.

10.1 Identification & identity

Throughout the Woods of Inverness forests, we found the signs providing site identification and the corporate identity to be consistently poor. This results in a weak and often negative sense or arrival at many entry points.

One of the underlying issues is a failure to recognise that, no matter who owns it, the car park is usually the beginning of the visitor's experience from their point of view, and hence the place where all site identification, corporate identity, orientation and direction information should be located.

A second underlying issue is a desire to use signs to 'scent-mark' the FCS ownership boundary, when the precise location of this is usually unimportant and irrelevant from the visitor's point of view. This contributes to confusion and a weak sense of arrival, as information is often omitted from the natural arrival point or duplicated at two different arrival points.

Current good practice in visitor management suggests that the visitors' on-site experience usually begins at the car park where a coherent and unified identity and sense of arrival should be created.

We recommend that a clear policy is put in place regarding site identification and corporate identity at entry points, and that this policy prioritises the needs of visitors and the quality of experience provided to them over those of the land manager.

10.2 Orientation & waymarking

Throughout the Woods of Inverness forests, we found the standard of orientation mapping and trail waymarking to be consistently poor. These are some of the issues we encountered:

- The majority of orientation panel maps are inaccurate and do not match those in the leaflet.

- The majority of orientation panel maps are not orientated correctly to their environment, turning them into 'disorientation maps.

- Leaflet maps are presented at too small a scale to be useful for on-site navigation.

- Orientation panel and leaflet maps use a style that is unlikely to be easily understood by the majority of forest users.

- Fingerposts at key access points and junctions are of many different styles (sandblasted softwood, natural hardwood, metal) creating confusion and a sense of incoherence.

- Trail waymarking is erratic, with missing markers, incorrect colouring and inconsistent placing of markers at junctions.

- Trail waymarkers are of many different styles and colours, creating a sense of incoherence.

- Trail waymarkers contain symbols that do not appear on the panel or leaflet maps.

Overall, it would be difficult for anybody to successfully navigate the forests using the orientation and direction materials provided. It seems likely that most people trying to do so will at some point become lost, or at best highly uncertain about their whereabouts. On our visits, we met many people who were lost or who said they had been lost on previous visits whilst using the maps and waymarkers.

The lack of consistency in the design of fingerposts and waymarkers will undermine visitors' confidence in the waymarking system and in the management of the site in general.

We recommend that the system of orientation and direction signs and leaflets provided throughout the Woods of Inverness are completely re-planned and redeveloped as a high priority.

10.3 Woodland management

Throughout our visits we came across many and varied temporary signs describing woodland management work and the actions required of visitors to negotiate it in safety. On most occasions there were no traces of woodland management being undertaken at the time or in recent weeks. In some cases, the specified date by which time the operations were due to be finished had been exceeded by six months or more.

Many of these signs were in a poor condition and looked as though they might have been left in place for months or years. Some signs were almost unreadable and others were lying face-up or face-down on the verge or in the undergrowth. The content of these signs does not adhere to the latest FCS good practice guidelines.

This casual approach to what are supposed to be relevant and temporary safety signs inevitably leads to a low rate of compliance by visitors due to poor wording and the 'cry wolf' effect. To increase compliance and to improve forest safety, signs in the latest FCS designs should be in place only as long as the management work is ongoing and they should always be removed immediately afterwards.

10.4 Seats

Throughout the Woods of Inverness, there is a general lack of seats and other opportunities for visitors to rest and/or appreciate the view. In general, visitors appreciate sitting opportunities on significant ascents where they may need to catch their breath, and in open spots that benefit from any available sun and from pleasant views. Seating opportunities can take the form of simply constructed timber seats, natural perches such as boulders of fallen tree trunks, or sculptural seats where these are part of an interpretive intervention. We recommend that the best sitting places are identified and appropriate new seats are installed at these locations.

Actions

- Identification & identity – review and upgrade the system of orientation and direction signs and leaflets throughout the Woods of Inverness.

- Orientation & waymarking – review and upgrade the system of orientation and direction signs and leaflets throughout the Woods of Inverness.

- Woodland management – work with operations units to ensure that safety signs are managed more effectively throughout the Woods of Inverness.

- Seats – install seats in suitable locations throughout the Woods of Inverness.

11 Summary project list and costs

The following table gives a summary of the actions and projects described in the report together with indicative budget costs for each. These outline costs are provided for preliminary budgeting purposes only, as a variety of currently unknown factors are likely to affect them as a result of further research, detailed planning and design.

We have assumed that significant communications projects including interpretation and redeveloping the leaflet will be carried out by external contractors, although the costs would obviously be lower if carried out internally. Where an item is likely to be delivered by FCS staff alone we have indicated this. Where the scope of a project is currently unknown, we have not provided a cost. When an item is included within another project, we have given its name. All costs exclude VAT.

We have also allocated a priority ranking (1-3) and a Short Term (ST) or Longer Term (LT) timeframe to each project. These are our recommendations as consultants, based on our perceptions of the impact each project is likely to have on improving the visitor experience at the forests and meeting the aims expressed in the vision for the forests (section 3.3). Priorities and timeframes may of course need to be amended in the light of strategic priorities or other work programmes. The rankings have been allocated on the following basis:

1. Essential to cater for current levels of visitor use and to maintain existing standards.

2. Highly desirable to improve the quality of visitors' experience, extend the range of visitors for whom the forest offers specific facilities, and bring the forests' interpretation up to date.

3. Projects that would enhance visitors' experience, but that might be regarded as 'optional extras'.

Short Term: items that should be completed within the next two years.

Longer Term: items that should be addressed within the next five years.

Item	*Priority*	*Time frame*	*£ cost*
Overall interpretation (p 12)			
Ensure all promotion is consistent with the overall theme for the woods.	2	ST	Staff
Develop events programmes, targeted at potential audience groups, once mapping and waymarking has been improved.	2	LT	£5-20k pa
Develop a more robust system to inform visitors about forest management, and ensure some interpretation of what is happening rather than just information.	1	ST	£12k if a new sign system is developed. Otherwise Staff
Promotion (p 16)			
Refine the content of the existing leaflet to improve its effectiveness at marketing and to provide all of the factual information people need to make the most of their visit. Consider focussing only on the four woods closest to the city.	1	ST	£5k
Make leaflet available from a broad range of local outlets and consider distributing it to every household in Inverness.	1	ST	From £2k, depending on print run and distribution
Ensure revisions to the FCS website make the presentation of the Woods of Inverness more comprehensive and user friendly..	1	ST	Staff
Consider developing a social media presence, particularly for the most heavily used forests, if staff time can be reliably allocated to monitoring and contributing to it.	3	LT	Staff
Consider organising a familiarisation trip for accommodation providers, once improvements have been made to mapping and waymarking.	3	LT	Staff

Daviot			
VIC access point – work with partners to review and upgrade the infrastructure and facilities, including the landscapes, buildings, roadways and verges, picnic tables, bins and trailhead furniture, and to maintain these to high standards year-round.	2	LT	Partners
VIC access point – work with partners to review and upgrade the pre-arrival, identification, orientation and direction signs.	1	ST	£10k
Milton of Leys access point – assess the demand for pedestrian and vehicular access to Daviot Wood from Milton of Leys.	1	ST	£7k
Milton of Leys access point – if justified by the demand for access from Milton of Leys, work with partners over the medium term to develop a significant new entry point, possibly including a car park, picnic area, trail head and associated signing.	TBC	LT	Unknown
Milton of Leys access point – in the short term, review and upgrade or refurbish the existing identification and orientation signs.	1	ST	£3k
Daviot village access point – review and upgrade or refurbish the existing identification and orientation signs.	1	ST	£3k
Trails – review and rationalise the trails network.	1	ST	£2k
Waymarking – review and rationalise the trail waymarking and other direction signs.	1	ST	£5k
Military road – work with partners to upgrade the military road surface, to create a circular trail between Milton of Leys and Daviot Wood and to upgrade or refurbish the existing identification, orientation and direction signs.	2	LT	Partners

Viewpoints and seats – review viewpoints and seat location and install viewpoint features and seats as required.	2	LT	See below
Interpretation – commission artist-designed seats inspired by forest themes.	3	LT	£15 - 30k Depending on the style of work
Interpretation – develop events to raise awareness of the wood and the recreation opportunities it offers.	3	LT	See above
Ord Hill (p 34)			
Assess the feasibility of creating an iconic viewpoint hill for Inverness.	2	ST	£12k
If feasible to create an iconic viewpoint hill, instigate a project to open up views, install viewpoint features, upgrade the main car park re-plan the trail network, re-sign the site, install interpretation and devise a programme of events.	TBC	LT	Unknown
Main car park – review and upgrade the infrastructure and facilities, including the landscape, planting, picnic tables and trailhead furniture.	1	ST	£20k
Main car park – review and upgrade the pre-arrival, identification, orientation and direction signs.	1	ST	£10k
A9 lay-by – review and upgrade the pre-arrival, identification, orientation and direction signs.	3	LT	To be developed with partners
Trails – review and rationalise the trails network.	1	ST	£2k
Waymarking – review and redevelop trail waymarking as required by the revised trail network.	1	ST	£5k
Viewpoints – maintain existing viewpoints and create new slot views.	1	ST	Staff
Interpretation – develop new interpretation panel for installation close to hillfort site.	2	ST	£5k

Interpretation – develop viewpoint seating and features inspired by the forest's aesthetic qualities.	3	LT	£15 - 50k Depending on the hill's status and the style of work
Culloden (p 40)			
Continue development of the proposed Culloden battlefield trail and consider opportunity for viewpoint on the B9006.	2	LT	Unknown
Tower Road car park – review and upgrade the infrastructure and facilities, particularly the metal entrance gate.	1	ST	£1k
Tower Road car park – review and upgrade the pre-arrival, identification, orientation and direction signs.	1	ST	£8k
Other entrances – tidy-up informal entrances and install low-key identification signs.	2	LT	£7k
Paths – upgrade loop path near Newlands of Culloden.	2	LT	£15k
Trails – review and re-plan the trails network, especially the red trail.	1	LT	£2k
Waymarking – review and rationalise the trail waymarking and other direction signs.	1	ST	£5k
Features – improve settings for the Clootie Well and Prisoners' Stone.	1	LT	£15k
Viewpoints and seats – review seat location and install new seats as required.	2	LT	£5k
Interpretation – develop on-site plaques for the Clootie Well, Prisoners' Stone and Lord President's Seat.	1	LT	£6k
Interpretation – develop a full interpretation plan for the battlefield trail as part of its development.	2	LT	£10k

Craig Phadrig (p 47)			
Main car park – review and upgrade the infrastructure and facilities, including the landscape, surfaces, fences and accessibility.	2	ST	£20k
Main car park – review and upgrade the pre-arrival, identification, orientation and direction signs.	1	LT	£8k
Other entrances – consider converting the lower car park into a pedestrian entrance.	3	LT	£5k
Other entrances – tidy-up informal entrances and install low-key identification signs.	3	LT	£5k
Paths – upgrade the hill fort access path in line with SAM plan.	2	LT	£5k
Trails – review and rationalise the trails network.	1	ST	£2k
Waymarking – review and rationalise the trail waymarking and other direction signs.	1	ST	£5k
Features – carry out selective felling to restore the setting of the hillfort and to open up views.	2	LT	£5k
Viewpoints and seats – review viewpoints and seat location, create new viewpoints and install viewpoint features and seats as required.	2	LT	£10k
Interpretation – develop more detailed interpretation of the hillfort, to be installed on two panels close to the site.	2	ST	£7k
Interpretation – include link to Historic Environment Record on Craig Phadrig web page.	3	ST	Staff
Common issues (p 51)			
Identification & identity – review and upgrade the system of orientation and direction signs and leaflets throughout the Woods of Inverness.	1	ST	See above

Orientation & waymarking – review and upgrade the system of orientation and direction signs and leaflets throughout the Woods of Inverness.	1	ST	See above
Woodland management – work with operations units to ensure that safety signs are managed more effectively throughout the Woods of Inverness.	1	ST	Staff
Seats – install seats in suitable locations throughout the Woods of Inverness.	2	LT	See above

Inverness Woodlands LMP 2019 - 29

APPENDIX 20

CCF Prescriptions

Coupe No. (See map below)		Management Objective / Reason for Selection	Long-term Structure and Desirable Species	Age; Transition Period; Return Time	Regen and Ground Flora	Observations (e.g. likely barriers to achieving objective)	Next treatment required	Proposed Monitoring	Other Useful Information
2400 A	Irregular Shelterwood	Create diverse canopy structure	Complex 90% SP overstory 30% NS understory Increase NS in a multi-story scenario	66 years 100 10	Prolific NS regeneration in places, other areas regen is sparse.	Deer browsing and weed composition	Matrix thin to MT; Widen the overstory above thick NS regen to give young trees space (irregular shelterwood). Respace NS very too thick; In areas with sparse NS regen, thin out overstory carefully;	Crop validation prior to next thinning	Some very successful regen in patches; no idea why only in these areas, and not across the whole SP area.
2400 D	Create tracks; crown thinning	First thinning-	Simple 100 SS Try to reach complex	23 years Hopefully no transition period necessary,	No ground flora; very thick SS	Latest opportunity to start thinning now	Track-thin; in the matrix, start crown-thinning on a few individuals	Crop validation prior to next thinning	n/a

Inverness Woodlands LMP 2019 - 29

			structure of SS	if racks in place now					
2409 A	Irregular Shelterwood / Regular Shelterwood	Create diverse canopy structure	Complex 90% SP overstory 30% NS understory	66 years 100 10	Prolific NS regeneration in places, other areas regen is sparse.	Deer browsing and weed composition	Matrix thin to MT; Widen the overstory above thick NS regen to give young trees space (irregular shelterwood). Respace NS very too thick; In areas with sparse NS regen, thin out overstory carefully;	Crop validation prior to next thinning	Some very successful regen in patches; no idea why only in these areas, and not across the whole SP area.
2409 B	Regular Shelterwood	Reduce canopy cover	Simple 80 NS 20 SP	66 100 10	Sparse NS regen along edges	Deer browsing	Matrix thin	Crop validation prior to next thinning	n/a
2409 F	No thin	Unthinned	Simple 90 SS 10 SP	66	n/a	n/a	n/a	n/a	n/a
2400 E	Very light regular shelterwood	Unthinned – so be very careful	Simple 100 JL	66	No regen	Sub-compartment hasn't been thinned yet	Very light thin – take out few of the sub-dominants	Crop validation prior to next thinning	n/a
2400 B	Very light regular shelterwood	Unthinned – so be very careful	Simple 100 JL	66	No regen	Sub-compartment hasn't been thinned yet	Very light thin – take out few of the sub-dominants	Crop validation prior to next thinning	n/a

Inverness Woodlands LMP 2019 - 29