

FCS Briefing Note

Briefing for Forestry Commission Scotland, Planning Authority staff and forestry practitioners:

Opportunities for aligning the information required under forestry approvals consented by Forestry Commission Scotland (FCS) with the Prior Notification(PN) of forestry private ways administered by local Planning Authorities (PA) through the planning system ¹:

PURPOSE OF THE BRIEFING NOTE (including the rationale for PA/FCS liaison and alignment)

The purpose of this briefing note is to help identify and outline how the alignment of information required by different consenting regimes might best be done to the mutual benefit of all stakeholders so as to minimise duplication and optimise efficient administration for all concerned. By so doing this will help deliver well-designed and considered forestry private ways (including forest roads and constructed footpaths) which comply with best practice and meet the intentions and requirements of separate planning legislation and Environmental Impact Assessment Regulations (EIA) concerning forestry private ways.

TARGET AUDIENCE

The main target audience for this briefing note will be FCS Conservancy staff, forestry owners, managers, on-site operators and other practitioners who are required to submit PNs to PAs prior to undertaking the formation or alteration of a private way intended for forestry purposes. PA staff dealing with PN requests will also have an interest in this guidance.

BACKGROUND

The Amendment Order came into force on 15 December 2014. The Order requires that, prior to the formation, or alteration, of agricultural or forestry private ways, the developer or landowner **must notify** the relevant planning authority to ascertain if the proposal can be considered as permitted development and, if so, whether prior approval is required in relation to the design, manner of construction or route. This process is known as '*prior notification*'.

Detailed guidance on permitted development rights in relation to forestry and agricultural private ways is available on <http://www.gov.scot/Publications/2015/06/3717> (Annex F) and should be read in conjunction with this briefing note.

FORESTRY CONSENTING REGIMES ADMINISTERED BY FORESTRY COMMISSION SCOTLAND

Forestry Commission Scotland serves as the forestry department of the Scottish Government including having specific responsibilities for forestry roads and quarries in respect of the

¹ See The Town and Country Planning (General Permitted Development) (Scotland) Amendment (No. 2) Order 2014 (SSI 2014 No. 300)

Environmental Impact Assessment (Forestry) (Scotland) Regulations 1999

<http://scotland.forestry.gov.uk/supporting/grants-and-regulations/environmental-impact-assessment> In administering its responsibilities for forestry approvals, permissions and licences for felling, woodland creation and its related activities, FCS requires applicants to comply with the UK Forestry Standard <http://www.forestry.gov.uk/ukfs> and related guidance on forestry activities.

In addition, FCS Conservancy staff act as a competent authority for certain forestry proposals which may impact on a Natura 2000 site and consult with SNH accordingly (see FCS Guidance Notes 18, 27 & 31-34 <http://scotland.forestry.gov.uk/supporting/grants-and-regulations/legacy-grant-schemes/scottish-forest-grant-scheme/guidance-notes-archive>).

Similarly, FCS Conservancy staff work with SEPA to monitor, report and regulate compliance with the Water Environment (Controlled Activities) Regulation Scotland 2011 (CAR) for forestry activities and approvals in relation to diffuse pollution.

Forestry activities, including forestry roads, are subject to forestry consenting regimes administered by Forestry Commission Scotland through its 5 regional Conservancy teams. For such forestry consents, there is a formal consultation procedure with PAs, SNH (in particular for designated sites and European protected species), SEPA (including CAR and diffuse pollution concerns), as well as other statutory bodies. In addition there is a public register whereby members of the public can view forestry applications. Responses to FCS are duly considered, revised as required, and approved for implementation, including any required conditions, or rejected if appropriate.

Forestry roads are essential to the routine and everyday management of forests and can also deliver other benefits in addition to their primary forestry role, such as recreational access for walkers and cyclists, as well as management for conservation purposes. They are a substantial operational activity. For example in Scotland in 2014 there were around 70 to 80 forest road/quarry EIA determinations (of which usually 2 to 3 would, typically, proceed to full EIA consent being required); over 200 felling licences; 200 or so Forest Plans; and around 400 woodland creation cases considered of which some 150-200 required EIA determination (with around 3 to 4 requiring EIA consent in any one year). It is thus likely that some 300 to 400 forestry cases per year will be subject to the planning PN process in addition to the above forestry processes.

PLANNING AUTHORITIES AND PRIOR NOTIFICATION FOR FORESTRY PRIVATE WAYS

PA's are responsible under the Town & Country Planning (Scotland) Act 1997 for planning matters within their area of responsibility, which include administering the Prior Notification process as outlined in the 2014 Amendment Order.

WHY ALIGN THE INFORMATION REQUIRED FOR FCS and PA CONSENTING REGIMES ON FORESTRY ROADS/PRIVATE WAYS?

PAs are used to being consulted on forestry activities, including forestry roads, and have good procedures for liaising with and responding to FCS. Accordingly, there is scope for FCS and PAs to **align** the consideration of information required for forestry approval and PN processes where this

makes sense to do so. Provided the required information is submitted at the appropriate stage, the processes should be able to run alongside one another.

Scottish Government Guidance² encourages alignment where appropriate as a means through which more efficient handling of applications can be achieved, whilst reducing the need for any duplication of information. Forestry Commission Scotland considers that alignment can help to:

- Minimise the need for a PA to require prior approval simply because insufficient detail has been supplied at the prior notification stage
- Minimise duplication of approval processes for applicants and unhelpful separation of the felling approval from associated forest road approvals
- Utilise existing forestry consultation procedures to facilitate and inform sound decision making by the relevant PA

Proposals for forestry private ways which are **NOT** submitted to FCS as part of a forestry application (ie are not subject to EIA determination or part of an approved Forest Plan/woodland creation or felling licence application) still require to comply with the PN process for which the relevant planning authority has responsibility.

PAs are advised to liaise with local FCS Conservancy staff if they wish to confirm the forestry purpose and context of any submitted forestry private way PN or wish advice and guidance on forestry matters including whether FCS has considered the need for EIA determination under the EIA Forestry Regulations.

WHAT DOES ALIGNMENT ACTUALLY MEAN IN PRACTICE?

As most forestry roads are included in forestry applications to FCS which are then subject to consultation with the PA, there is merit in aligning the information required as part of the forestry consent process to facilitate the PN process in this way. The key steps to aligning this information will be:

- Ensuring that forest roads proposals are contained in forestry applications submitted to FCS
- That any such proposal contains all the necessary information and specifications required (ie similar to what is required for PN submissions. See Annexes 2 & 3)
- That PAs are aware of forestry road proposals as part of any forestry scoping /EIA screening/consultation and can thus input their views via routine liaison or that any PN proposals submitted directly to PAs have complied with the EIA Forestry Regulations or any other forestry requirements as outlined in the UKFS

² Annex F to the Scottish Government's Planning Circular 2/2015 refers, <http://www.gov.scot/Resource/0047/00479839.pdf>

- That FCS and the relevant PA satisfy themselves that forestry roads are genuinely for forestry purposes and thus may be permitted development (assuming all other criteria for PD are met).

It is a matter for the applicant to ensure they have complied with all relevant statutory obligations before any work is undertaken.

Where forestry applicants include all the necessary information with regard to any proposed forestry way and associated operations as part of their forestry application, PAs will be able to scrutinise such proposals as part of the FCS forestry consultation approval process and to understand and confirm the forestry context. This can be done either at the time of screening/scoping (as part of the routine EIA determination or Forest Plan process) or at the point of formal consultation depending on the sensitivity, scale and details of the proposal.

Applicants may themselves determine the most appropriate stage to submit a Prior Notification and thus help align the respective consents (or not if they so wish). **Applicants should also be aware that any prior notification should be made at least 28 days before they intend to start any work**, in order to allow time for the PA to consider the application and determine if prior approval is or is not required.

It will be critical for any forestry applicant to **demonstrate the necessity** for any proposed forestry private way to help the PA assess how to deal with the PN. If necessity cannot be demonstrated then PDR may not apply and an application for planning permission is likely to be required.

In helping deliver this alignment, FCS will ask applicants to submit forestry private way proposals associated with a forestry consent application in a uniform manner which follows the requirements of the PN process and which demonstrates compliance with the UKFS and associated guidance as outlined in the PN example at Annex 2. This will include:

- A statement of the purpose of the private way showing it as necessary for forestry purposes (NB this, and any appropriate forestry approvals, should be referred to in any subsequent PN application to a PA. This will help avoid additional duplication and delay)
- A description of the construction and design specification of the private way, including material (with reference to the recognised published guidance on such specifications. See Annex 3)
- A site plan detailing the route and length the track is to take along with identified key related aspects such as water crossings, turning areas, and timber stacking area (NB PAs are used to having such details outlined in red and forestry applicants are encouraged to adopt this practice) and its possible significant effects on the environment
- Proposed tolerances associated with the road line and associated activities. Experience to date indicates that tolerances used in Forest Plan approvals are similar to the tolerances accepted by PAs in approval of private ways for other purposes (eg windfarms)

Forestry applicants should also make reference to Annex 3 **‘Forest Road Standard Specifications’** as lifted from the ‘The design and use of the structural pavement of unsealed roads’ Timber Transport Forum (2014) which lists specifications and standards including forest road width, alignment, gradient, passing and turning places, harvesting ramps, construction (including materials), etc and make sure any PN application refers to this guidance and specification (and includes the intended numbers and locations of turning places, timber stacking areas, and other associated activities)

PAs may decide, for most forestry private way proposals that by having them considered under the forestry approval procedures, including consideration and determination under the EIA Forestry Regulations, this has satisfactorily demonstrated that the road is required for forestry purposes. Accordingly they may be content that the road be considered and approved under the forestry procedures with input from the PA on standards, design, etc all accommodated within the forestry consultation and approval process. For those significant larger forest road projects subject to EIA Forestry Regulations consent, PAs are already fully involved and consulted on. **It is important to stress that, irrespective of the above, there remains the statutory requirement to apply for PN to the relevant PA. Alignment of required information does not remove this requirement but can facilitate progress.**

There are already good examples of collaboration between PAs and FCS to facilitate alignment where this is deemed to be in the best interests of all (see the example from Dumfries & Galloway Council at Annex 1). Different PAs will interpret the SG guidance on Prior Notification for agricultural and forestry private ways according to the circumstances and sensitivities in their areas. Nevertheless, given the existing forestry roads consenting regime and the expressed desire to align the forestry and planning authority roles on private ways/forestry roads, **PAs may wish to consider similar agreements with local FCS Conservancies to help better align PA and FCS procedures.**

WHAT MAY AND MAY NOT REQUIRE PRIOR NOTIFICATION

The SG Circular on *Non-Domestic Permitted Development Rights Annex F* should be referred to.

Specific aspects are covered in paragraphs 7 & 8 (definitions of a private way) and paragraphs 15 to 18 (formation, alteration and maintenance).

In general, maintenance should not require PN but forestry applicants are advised to specify exactly what they propose to do for forest road maintenance in any forestry application so as to minimise any potential for confusion with ‘alteration’. *NB forest road maintenance may still require EIA Forestry determination and applicants should seek appropriate guidance from local FCS Conservancy staff and/or include their maintenance proposals and specification in any submitted forestry application.*

Forwarder/harvesting tracks integral to forestry harvesting operations and other standard forestry operations may not be included in the definition of a private way and therefore may not require PN (but may require determination under the EIA Forestry Regulations - local FCS Conservancy staff can confirm if EIA determination is required) though these should comply with the UK Forestry Standard

and be included in any forestry applications as per current practice. If in doubt, speak to the local Conservancy office or PA for further guidance.

Forestry Commission Scotland
Grants and Regulations
National Office
Silvan House
Edinburgh

Annex 1: Example of a Local Agreement between Dumfries & Galloway Council and FCS South Scotland Conservancy for Private Ways (Forestry) Casework

Annex 2: Example of a Prior Notification submitted to South Ayrshire Council which contains the necessary information for a forestry road proposal and which was accepted as permitted development

Annex 3: Forest Road Standard Specifications as lifted from the 'The design and use of the structural pavement of unsealed roads' Timber Transport Forum (2014)

Annex 4: Checklist of likely requirements for submitting a forest road/private way for forestry/Prior Notification consents

Annex 5: Table of acronyms

References

- 'Consolidated Circular on Non-Domestic Permitted Development Rights' Scottish Planning Series Circular 2/2015 Scottish Government (2015) Annex F <http://www.gov.scot/Publications/2015/06/3717>
- The UK Forestry Standard <http://www.forestry.gov.uk/ukfs>
- 'The design and use of the structural pavement of unsealed roads' Timber Transport Forum (2014) <http://timbertransportforum.org.uk/work/toolkit/forest-roads/constructing-and-upgrading>
- 'Constructed tracks in the Scottish Uplands' SNH 2nd Edition (2013) <http://www.snh.gov.uk/publications-data-and-research/publications/search-the-catalogue/publication-detail/?id=513>

Annex 1

Agreement between Dumfries & Galloway Council and FCS South Scotland Conservancy for Private Ways (Forestry) Casework (as an example of collaboration between FCS and a Planning Authority on dealing with forestry roads)

DUMFRIES AND GALLOWAY COUNCIL AND FORESTRY COMMISSION

FCS SOUTH SCOTLAND CONSERVANCY

2015 AGREEMENT FOR PRIVATE WAYS (FORESTRY) CASEWORK

BACKGROUND

This is an agreement between Dumfries and Galloway Council (DGC) and FCS Scotland on procedures and collaboration with respect to applications for Determination of Prior Approval for Private Ways (Forestry)

DGC is the relevant planning authority responsible under the Town and Country Planning (Scotland) Act 1997 and, in respect of this particular agreement, the planning authority responsible for making assessments under the Town & Country Planning (General Permitted Development) (Scotland) Amendment (No. 2) Order 2014

Forestry Commission Scotland serves as the forestry department of the Scottish Government, It has specific responsibilities for Forest Roads and Quarries in respect to the EIA Forestry Regulations 1999.

It is therefore clear that both DGC and FCS have a shared interest and responsibility in respect to Forest Roads and that we wish to work collectively together to best meet these responsibilities. Specifically working collaboratively together will best allow us to achieve the shared objectives of:

- Supporting compliance with Determination of Prior Approval (DPA) procedures under Town & Country Planning (General Permitted Development) (Scotland) Amendment (No. 2) Order 2014
- Minimising duplication of approval processes for applicants & unhelpful separation of the felling approval from associated forest road approvals
- Utilising existing forestry consultation procedures to facilitate sound decision making by DGC

AGREED APPROACH

The proposed approach for dealing with notifications from the sector is as follows:

- Applicants wishing to form or alter a 'private way' for forestry purposes submits suitable proposals to FCS as part of a forestry plan / proposal / EIA request and completes the associated form
- FCS consults DGC as normal on forestry approvals BUT ALSO specifically highlights road / 'private way' proposals (enclosing form and relevant documents) as requiring DPA
- Within 28 days, DGC responds to FCS indicating either
 - Prior approval is required by DGC (and notifies applicant directly of this requirement)
or
DGC is content that prior approval is not required and that case should (where applicable) be determined under the forestry approval process (FCS will notify the applicant)
- Any 'private way' not submitted as part of a forestry approval process would require 'the submission of a DPA application to DGC as per the Order

Signed

David Suttie

Service Manager Planning

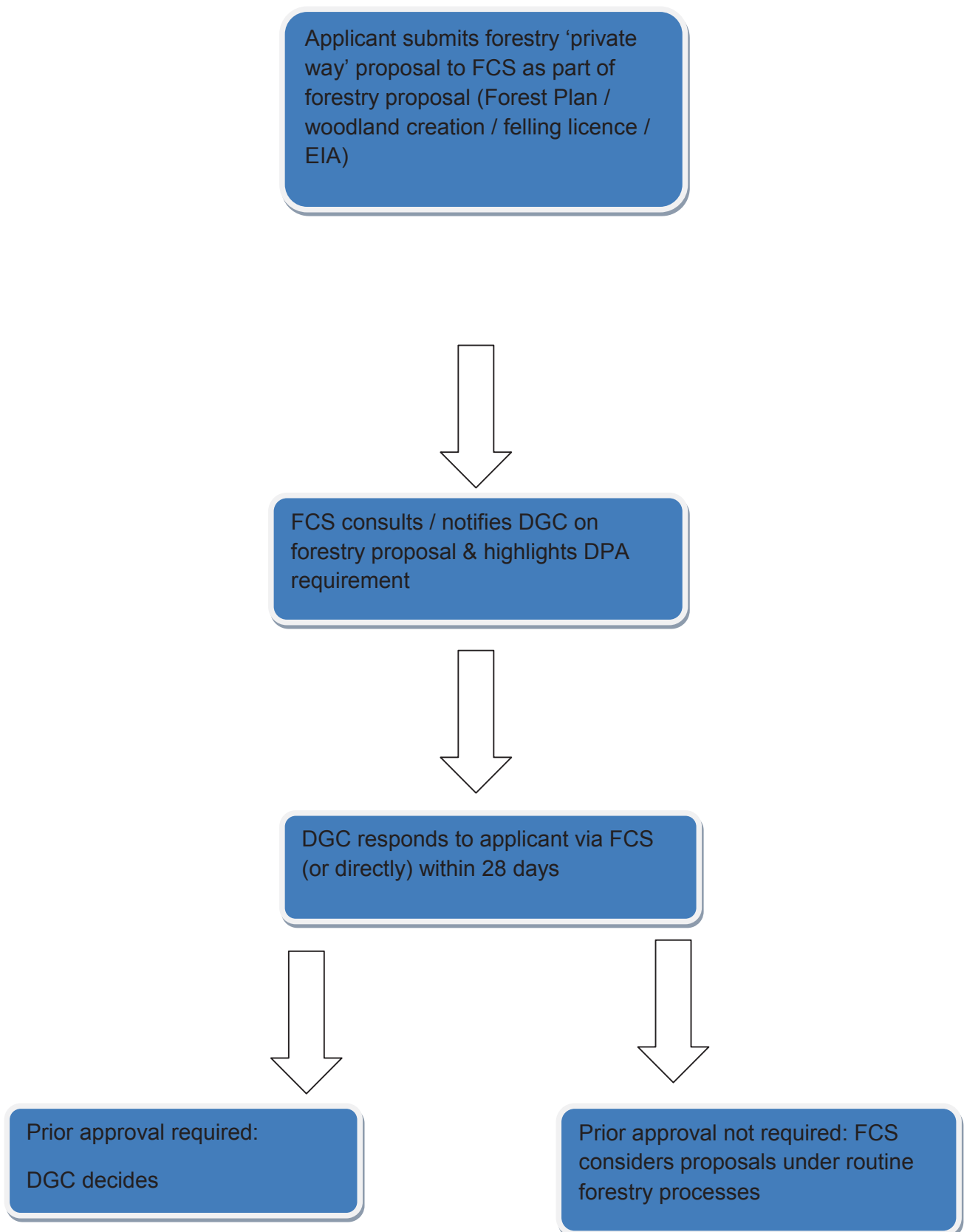
Date:

John Dougan

Conservator, South Scotland Conservancy, FCS

Date:

Flow chart Illustration of Process



Appendix A

Key Contact Names and Addresses

1. FORESTRY COMMISSION SCOTLAND SOUTH SCOTLAND CONSERVANCY

- a. John Dougan, Conservator, South Scotland Conservancy, 55/57 Moffat Road, Dumfries, DG1 1NP

(john.dougan@forestry.gsi.gov.uk, Tel: 01387 272440, Fax: 01387 257888))

- b. Alasdair Hendry, Operations and Development Manager, South Scotland Conservancy, 55/57 Moffat Road, Dumfries, DG1 1NP

(alasdair.hendry@forestry.gsi.gov.uk, Tel: 01387 272440, Fax: 01387 257888)

2. DUMFRIES AND GALLOWAY COUNCIL

- a. David Suttie, Service Manager Planning, Kirkbank, English Street, Dumfries DG1 2HS

(david.suttie@dumgal.gov.uk Tel: 01387 260158 Fax: 01387 260188)

- b. Jessica Taylor, Team Leader (Minor Applications & Enforcement), Kirkbank, English Street, Dumfries DG1 2HS

(jessica.taylor@dumgal.gov.uk Tel: 01387 260824 Fax: 01387 260188)

Annex 2

Example of a Prior Notification submitted to South Ayrshire Council which contains the necessary information for a forestry road proposal and which was accepted as permitted development.



North Ayrshire Council
Comhairle Siorrachd Air a Tuath

Cunninghame House Friars Croft Irvine KA12 8EE

Tel: 01294 324 319

Fax: 01294 324 372

Email: epanning@north-ayrshire.gov.uk

Applications cannot be validated until all necessary documentation has been submitted and the required fee has been paid.

Thank you for completing this application form:

ONLINE REFERENCE 000113981-001

The online ref number is the unique reference for your online form only. The Planning Authority will allocate an Application Number when your form is validated. Please quote this reference if you need to contact the Planning Authority about this application.

Application for Prior Notification and Prior Approval

This form is to be used for notifying the planning authority that you intend to carry out certain development which is "permitted development" for the following types of proposals: *

☐ Farm-related works (non-residential)

☒ Forestry-related works (non-residential)

☐ Demolition of buildings

Please see the guidance notes for additional details and an explanation of the procedures.

Please note that the form should not be used to apply for planning permission – advice and appropriate forms for planning applications can be provided by the planning authority.

NB You should not use this form if your site is located within a "Natura 2000" site. If you are not sure about this you should contact the planning authority.

Site Address Details

Planning Authority:

Full postal address of the site (including postcode where available):

Address 1:		Address 5:	
Address 2:		Town/City/Settlement:	
Address 3:		Post Code:	
Address 4:			

Please identify/describe the location of the site or sites.

Northing	623102	Easting	198534
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Applicant or Agent Details

Are you an applicant, or an agent? * (An agent is an architect, consultant or someone else acting on behalf of the applicant in connection with this application)

☒ Applicant ☐ Agent

Applicant Details

Please enter Applicant details

Title: *

Other Title:

First Name: *

Last Name: *

Company/Organisation:

Telephone Number: *

Extension Number:

Mobile Number:

Fax Number:

Email Address: *

You must enter a Building Name or Number, or both:*

Building Name:

Forestry Civil Engineering

Building Number:

1

Address 1 (Street): *

Galloway Forest District

Address 2:

Creebridge

Town/City: *

Newton Stewart

Country: *

UK

Postcode: *

DG8 6AJ

Proposed Farm or Forestry Works

What farm or forestry related works are proposed? *

- ☐ A new building
- ☐ An extension to an existing building
- ☐ An alteration to an existing building
- ☒ To form or alter a private way

Please describe the materials to be used and the manner of construction of the private way: *
(Max 500 characters)

This application is for the construction of a new private way for forest operations. The specification for forest road construction can be found in Timber Transport Forum - 'the design and use of the structural pavement of unsealed roads 2014' (TTF guidance as attached). Materials to be won on site or adjacent forest land.

Please describe the proposed design of the private way: *
(Max 500 characters)

The private way will be designed and constructed in accordance with the specification provided in Appendix 1. of the TTF guidance as attached. The road is 1335 metres long from an existing forest road, one turning point (as per attached figure 1a), lorry passing bay's constructed approximately every 200 metres (intervisible where possible) and two culverted water crossing point's (as per Appendix 1. of TTF guidance).

You must provide a site plan detailing the route the private way is to take. Please tick the box to confirm that you will attach a valid site plan:*

☒ I confirm that I will attach a site plan giving details of the location of the private way

What is the purpose of the proposed development? * (Max 150 characters)

To facilitate timber haulage from approved clear fell site (approved FDP Kilpatrick No. 0320602). EIA determination requested ref no. S7/32

Prior Notification - Demolition

Are you proposing to demolish a building? *

☐ Yes ☒ No

Checklist - Application for Prior Approval

The additional information below is required if the Planning Authority has responded to a previous prior notification and informed you that your development proposal requires Prior Approval.

I am applying for Prior Approval, and have been asked to provide additional information: *

☐ Yes ☒ No

No additional checklist items are required at this time, and this application will be for Prior Notification only.

Declare - Prior Notification and Prior Approval

I/we hereby give prior notification to the planning authority that I am/the applicant is intending to carry out the works described in this form and the accompanying plans/drawings and additional information.

I certify that the proposed building works are required for the purposes of agriculture and/or forestry and will be designed accordingly. None of the works includes the construction, extension or alteration of a dwelling.

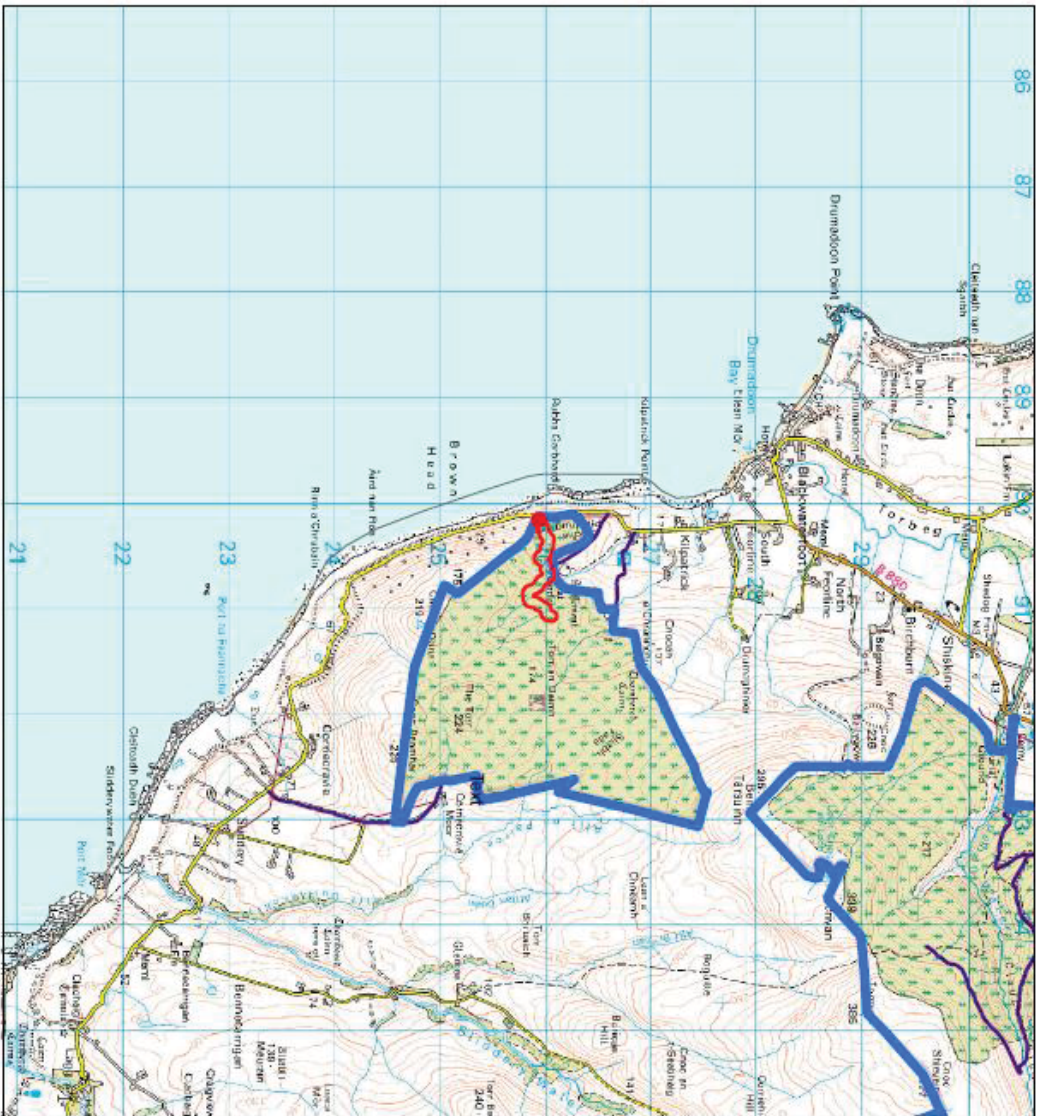
I/we hereby give prior notification to the planning authority that I am/the applicant is intending to carry out the works described in this form and the accompanying plans/drawings and additional information

I confirm that the building has not been rendered unsafe by the action or inaction of any person with an interest in the land and it is not practicable to secure the safety of the building through repair or temporary support works.

Declaration Name:

Declaration Date: 11/03/2015

Submission Date: 11/03/2015



Location Plan

Prior Notification for
Forest Road
Kilpatrick
NR 9015 2593
11 March 2015



Legend

- Existing Forest Roads
- Microfitting proposed road corridor
- FC Boundary

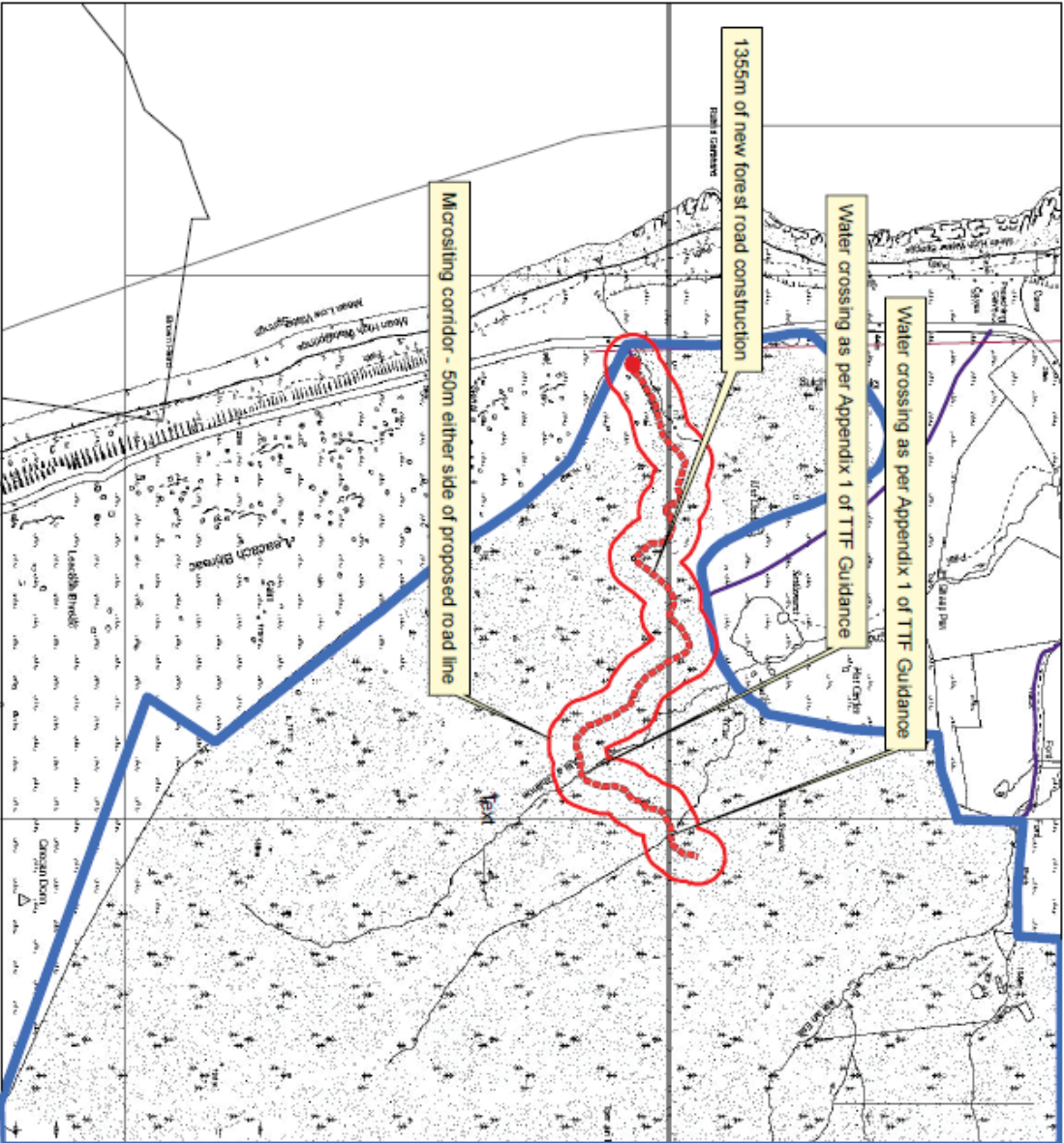


Forestry Commission
Scotland

Galloway Forest District
Creebridge
Newton Stewart
DG8 6AJ
Tel. 01671 402420
Fax. 01671 403708

Map Scale
1:50,000

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SITE PLAN

Prior Notification for Forest Road Kilpatrick
 NR 9015 2593
 11 March 2015

Legend

- Existing Forest Roads
- Kilpatrick
- Microfitting proposed road corridor

Forestry Commission Scotland

Galloway Forest District
 Creebridge
 Newton Stewart
 DG8 6AJ
 Tel. 01671 402420
 Fax. 01671 403708

Map Scale
 1:10,000

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Annex 3

Forest Road Standard Specifications are lifted from the 'The design and use of the structural pavement of unsealed roads' Timber Transport Forum (2014)

Refer to

http://www.timbertransportforum.org.uk/Upload/Documents/22_Thedesignanduseofthestructuralpavementofunsealedroads2014.pdf for full details but see Appendix 1 for specific detailed guidance on standard forest road specifications including road width, alignment, gradients, passing places, harvesting facilities, earthworks, cuttings, roadside drains and ditches, culverts, geosynthetics, construction materials, road material thickness, cross slope as well as reference to compliance with the UK Forestry Standard, EIA Regulations and SEPA requirements.

TimberTransportForum

delivering solutions for a growing UK harvest



Photo: Mulholland Media (courtesy of A. W. Jenkinson Forest Products)

The design and use of the structural
pavement of unsealed roads

2014

Acknowledgements

This document was originally drawn together from the collective knowledge and experience of Forum members in particular David Killer, previously Head of Forestry Civil Engineering for the Forestry Commission. In 2014 Alan Dickerson the Head of Forestry Commission Civil Engineering Central Services updated the references. Links have been added to other relevant documents.

Other Sources of Information

There is a great deal of information on the design and use of unsealed roads freely available on the Roadex website. This includes dynamic [e-learning packages](#) on:

- Permanent Deformation
- Roads on Peat
- Drainage of Low Volume Roads
- Environmental Considerations for Low Volume Roads

The Roadex website also has other [publications](#) including:

- [Floating Roads on Peat](#)
- [Vehicle and Human Vibration due to Road Condition](#)
- [Managing Drainage on Low Volume Roads](#)
- [A Report on Climate Change Adaptation Measures for Low Volume Roads](#)

The Forestry Commission has published:

- [Technical Note on Greenhouse Gas Emissions from Forestry Civil Engineering](#) and
- [Improving Timber Transport](#) which summarises some Scottish timber transport infrastructure projects.

The Timber Transport Forum has produced:

- [Tread Softly; Lower impact vehicles for timber haulage](#).

The Design and Use of the Structural Pavement of Unsealed Roads

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Introduction

Many millions of tonnes of timber are hauled each year in the UK. Hauling timber is an essential part of sustainable forest management, which delivers major economic, social and environmental benefits, including, employment, climate change mitigation, improved biodiversity, renewable fuel, enhanced air quality, flood mitigation, recreation and public health opportunities. The UK's forest industries directly support over 160,000 jobs and home-grown timber is especially valuable in terms of reducing "timber miles" by substituting for imports from around the world.

In some cases, timber haulage involves using roads that were not designed for traffic of this nature. The historical legacy of our road infrastructure is compounded by the fact that councils have faced major pressure on road budgets, with under-funding in highway maintenance a significant long-term issue. Councils have many competing demands on these diminished funds. The timber supply chain functions on small margins. As with most other raw materials, the value in timber products is added much further down the chain. From harvesting to retailing the finished product, timber can increase in value 100-fold, or more. Timber haulage is an essential part of this process, delivering the raw material to this economic activity.

Experience has shown that, by working in partnership, the forest industry and the roads authorities can maintain an effective relationship and ensure that the needs of both are accommodated. A great deal of work has been done in building these partnerships and in developing tools to ensure that they are effective. Originally presented as an Annex to the Timber Transport Toolkit this report deals with the design and use of the structural pavement of unsealed roads. It does not cover the financial appraisal, planning, consultation, construction and maintenance of the road. Neither does it cover road layout, however, for reference purposes, the Forestry Commission Road Specification is attached at Appendix 1.

Principles of Road Design

The principles are mainly directed towards low-volume forest roads but can be applied to unsealed public roads.

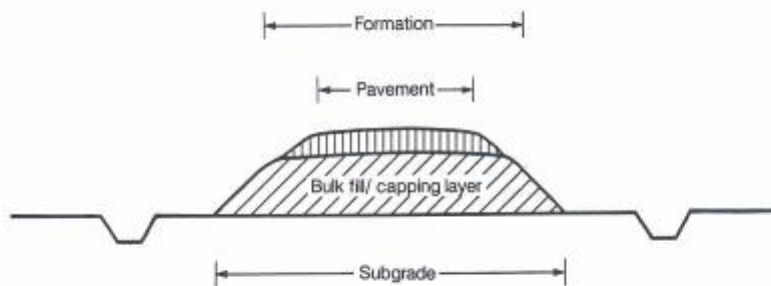
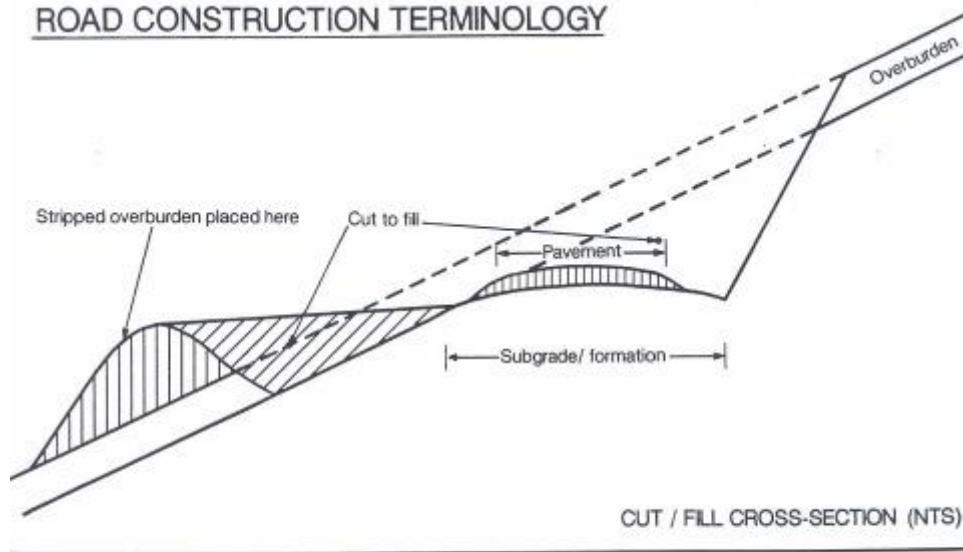
The ideal structural pavement for such roads:

- Can be constructed and maintained at minimum cost
- Carry a range of vehicles from light vans to 44t lorries in addition to recreational users and in-forest machines
- Provide a reasonably smooth surface to optimise vehicle wear, fuel consumption and driver comfort
- Minimises pollution from dust or slurry
- Provides sufficient friction for safe braking and traction

These objectives are achieved by providing a smooth, durable surface that transmits the wheel loads to the ground below (sub-grade) without damaging the surface materials or the sub-grade.

The following diagrams explain the terminology used:

ROAD CONSTRUCTION TERMINOLOGY



In looking at the principles of road construction, the following are examined:

- Sub-grade strength.
- Pavement design.
- Selecting pavement materials.
- Aggregate specification.
- Transmitting the wheel load through the pavement.
- Avoiding damage.
- Vehicle selection.
- Best practice for usage.

Sub-Grade Strength

The sub-grade can be the original ground in an overfill road or the ground surface that is left after preparing the basic shape and alignment of the road. In the case of soft ground, or peat, this could be the surface that is left after excavating the weak materials. In either case the sub-grade is the surface that will have to bear the load from the pavement itself and the applied vehicle loads.

Assessing the strength of the sub-grade is one of the most important, but also most difficult, aspects of road construction. Most low-cost roads cannot bear the cost of doing a comprehensive soil survey so the assessment is largely down to the experience of the engineer. Local knowledge and a visual inspection is a good start. This can identify ground conditions from indicative vegetation and from surface evidence of rock, peat etc.

In the poor ground usually associated with upland forests it is likely that the soils will be variable and inaccessible to vehicles in the early stages of the design process. There are no real alternatives to hand probing for weak soils and peat, CBR probes for sound soils and rock sampling for hard materials. The CBR probe is a device which measures the California Bearing Ratio (CBR) of the ground. This is a measure of the sub-grade strength against a standard and is empirically linked to the depth of surfacing required for different loading.

In-situ CBR results can be misleading in non-homogenous soils and different moisture conditions so it is advisable to take a large number of readings to discern an average or trend. If the soil is granular and consistently too dense to use the probe it can be assumed to have a CBR of at least 20%. However it is always worth checking that the dense layer is not just a superficial layer overlying a softer strata.

If access is less of a problem, there are more accurate devices such as the Dynamic Cone Penetrometer (DCP) and Falling Weight Deflectometer (FWD) that can give more reliable results. Putting your heel into the surface and declaring the strength is unlikely to be satisfactory!

If rock is exposed along the alignment, it is important to assess its value for paving material and also the possible need to blast, or rip, it out to achieve the proposed alignment. There are a number of standard hand tests that give an indication of rock strength, but you need to be aware that surface deposits can be weathered and weaker than the bed rock and also that strong surface boulders are not necessarily an indication of underlying geology.

Where it is appropriate, the cost and strength of a road can be improved by staged construction. If a formation can be left for up to a year, it will naturally consolidate and dry out, increasing the bearing strength for the pavement. Similarly, if the pavement can be left for a year before use, it will also consolidate and become more dense and less prone to damage.

In most construction methods the formation is first prepared, compacted, shaped and tested before placing the final top layer of the pavement. This reduces water ingress and minimises rutting of the formation.

Pavement Design

The following table gives an indication of the total thickness of pavement that will be required for the various CBR values. These can vary as moisture content changes and also as a result of applying staged construction. Most forest roads in UK are designed for up to 500,000 Standard Axles of 80kN based on empirical data derived for public roads.

Typical material	CBR (%)	Pavement thickness (mm)
Peat, silt	<2	>850 (consider excavation of the peat or floating the road on peat)
Silty clay	2	700
Heavy clay	3	550
Sandy clay	4	475
Saturated sand	7	325
Fine sand	10	250
Graded sandy gravel	20	150
Rock	250+	Min. 100 to allow grading of surface

A table showing the appropriate pavement thickness for 1 million standard axles is given in Appendix 2.

Sub-grade strength often varies extensively under the formation of a new road. Subsequent drying out of the sub-grade and pavement often increases the strength.

The pavement material needs to be of appropriate strength, but lower layers can often be constructed using a low quality locally won material.

Selecting Pavement Materials

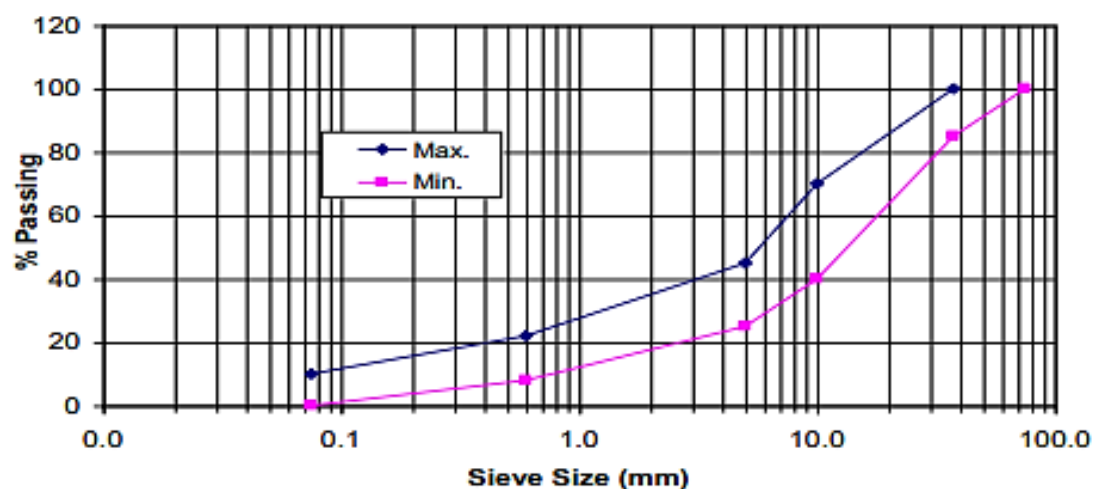
Forest roads are built with aggregates using virtually all types of rocks and gravel in mixtures varying from those “as dug” from a borrow pit to commercially produced stone complying with national specifications. In forestry, there is no single specification that is right for the whole of the UK. It is largely left to each engineer to determine the specification. This is very different from mainstream highway engineering where engineers have little choice but to accept nationally laid down specifications. The winning and placing of roadstone amounts to between 50 and 75 per cent of the construction cost of forest roads so it is vital that the civil engineer appreciates the role of aggregates in forest roads.

For the pavement to perform it needs to have a durable, impermeable top layer that spreads the load and sheds the surface water to protect the sub-grade. This can only be achieved by using a well-graded and bound stone of sufficient strength. Some naturally occurring materials have all these features but in most cases as dug or crushed rock need some form of blending. Materials with an Aggregate Impact Value (AIV) value of < 30 should normally be used in pavements, but use of other tests (e.g. magnesium sulphate soundness test) may be needed to give a more complete measure of durability.

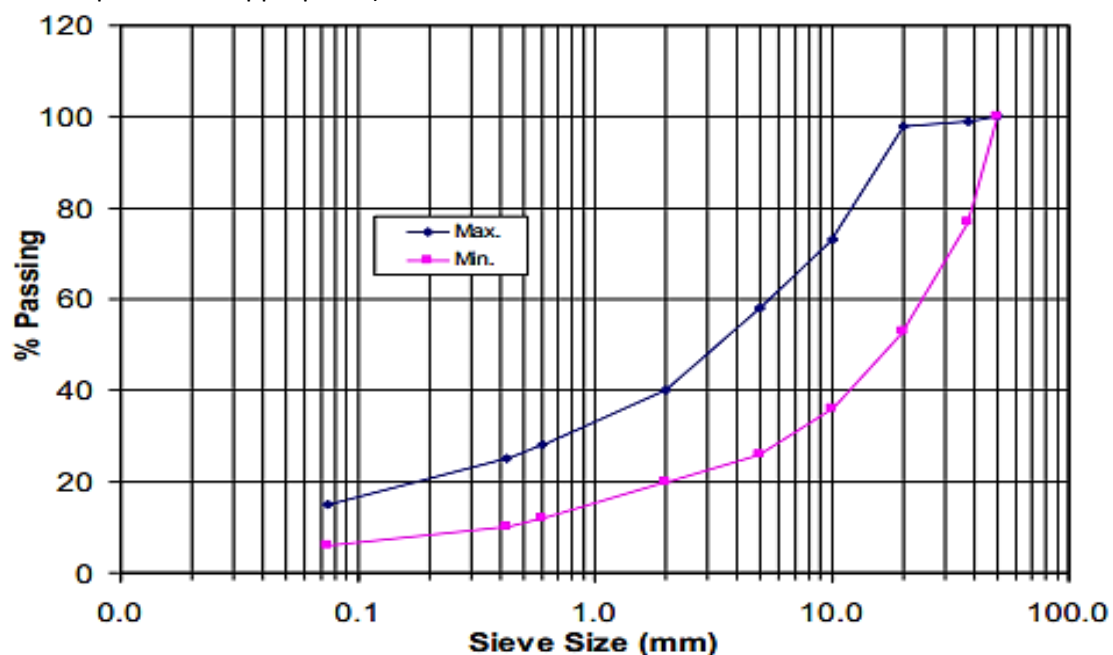
The top 100mm of pavement must be of a durable stone that will not readily break down under the wheel loading. It must also be suitable for grading and rolling. Such material should have an AIV value of < 25 minimum and preferably < 20. If heavy usage by vehicles with tracks is foreseen, the surface material should have an AIV value < 20.

Surfacing may need a binder / sealer of fines or cohesive material to provide a sealed and smooth running surface. The selection of binder will depend on aggregate type and the potential for any pollution. Selection and placement of the pavement materials is probably the most important element of a successful road. A well-graded material is required, such as:

- Type 1 granular sub-base [Clause 803 of Department for Transport's Highways Agency, Manual of Contract Documents for Highways Works (MCHW):



- or the so called 'Swedish specification' (which Forestry Commission Civil Engineering has adopted when appropriate):



Aggregate Specification

The role of the constituent parts of a roadstone aggregate can be understood by considering the mix in two main parts. These parts are:

a) The aggregate which provides the shear or structural strength, where there is:

- Enough crushed rock or gravel retained on a 20mm sieve (i.e. coarse gravel sizes) to give the strength and hardness needed to resist the abrasive action of traffic and,
- Enough sand and other material passing the 20mm sieve and retained on the 200 micron sieve to provide the interlocking of soil grains and thus increase shear strength.

b) The binder which holds the above material together, where there is:

- A quantity of mainly silt and sand (particles 200 micron to 5 microns) to act as a filler and to provide a capillary bond necessary for stability when the binder clay loses cohesion in wet weather.
- Enough clay (particles smaller than 5 microns diameter) to retain the minute adhesive films after the larger films of capillary moisture have evaporated and thus provide the adhesion through soil suction required to maintain stability during dry weather.

The conventional wisdom is for the depth of any construction layer to be not less than twice the thickness of the largest particle size. This allows the layer to be compacted to a high density without large voids spanned by large particles. Compaction plant is most effective when layers are between 100mm and 225mm thick. Thus a maximum aggregate size for a surface layer would be 100mm. This falls into line with practice in UK where generally the maximum sizes are 100mm for main forest roads and 50mm for forest drives open to the public in private cars. However, using more open-graded specifications results in increased elastic stiffness and shear strength. An open-graded material could be the better choice in some circumstances. If the area is low lying and in need of good drainage, an open-graded mix could still provide a stiff and permeable base.

It is rare for a forest engineer in the UK to sample and test for grading before building a road. The stone is generally used as it is dug or processed and a balanced mix obtained by taking materials from different parts of the stockpiles.

The grading may be assessed by looking at the mix to see if there is a range of different sizes. Particle Size Analysis is used to determine the grading of the mix.

The following gradings are recommended for use in UK forests:

	Percentage passing		
B.S. Sieve size	150mm	100mm	40mm
	Road base	Road base	Surfacing
150mm	100		
100mm	70-95	100	
40mm	45-72	50-80	100
20mm	30-56	35-65	60-80
10mm	20-45	20-50	40-70
5mm	12-32	15-40	23-55
600um	5-15	7-16	10-25
75um	2-8	2-8	7-15

Often roads are compacted when completed and not during construction which runs contrary to engineering principles. This arises mainly because of the difficulty of rolling in between loads on a single-track forest road. Forest roads are compacted in the wheel tracks of the tippers leaving the centre and edges loose. This unevenness of compaction is not good for the overall structural strength.

Transmitting the Wheel Load through the Pavement

The gross weight of a lorry is spread between the axles depending on lorry configuration and loading pattern. The Road Vehicle (Construction and Use) Regulations 1986 and subsequent legislation, give the permitted axle weights for these different configurations. This forms the basis for calculating the damaging factor for each of the axles, although axle weighing devices now provide a much better record of actual weight.

The axle load is then transmitted to the road through the tyres. The impact of this load depends on the tyre pressures, single/twin tyres, road friendly suspension, road shape and speed.

A large tyre “footprint” will spread the load better, especially when this is in the main body of the structural pavement. The best result would be with multiple tyres using the full cross-section of the road, the worst result would be single tyres at high pressure right on the edge of the road. Unfortunately, this is exactly what we tend to have with super-single tyres.

For a given load, the tyre footprint can be increased by decreasing the tyre pressure – this is the basis of Tyre Pressure Control Systems (TPCS).

The road surfacing layer, like any unbound material, comprises solids, air and water. The relationship between these three components dictates the behaviour of the surface under load. A well-graded material can be compacted to a high density leaving little room for air and water. This also means

that each particle is physically touching another particle thus spreading the load down through the layer with little opportunity for displacement and movement.

When the tyre load is applied the majority of the load is taken directly by the aggregates. If the surfacing had not been compacted so well, there would be more air and water in the mix allowing more room for particle displacement. If the rock is weak, this movement will also crush the aggregate leading to further break-down and movement. Without consistent aggregate interlock the applied load will be taken partially by the aggregate, but also by the water between the particles. Water cannot compress, but it does build up pressure within the pores of the surface. This pressure dissipates with time, but if another series of wheel loads follow the pressure does not have time to dissipate and actually builds up. The applied tyre load is then carried by the particle-to-particle contact, but also by the water pressure. Water does not provide any shear resistance, so that there is more lateral displacement, which leads to further surface movement and the start of rutting.

So the ability of a surface to carry wheel loads depends on the strength of the aggregate, density, moisture content, load and frequency of load.

Avoiding Damage to the Pavement

Rutting of the road surface is often the first manifestation of failure that prompts the engineer to take corrective action. The camber or cross-fall needs to be re-graded to prevent erosion of the surface. More significantly, it is a consequence of internal pavement strains or failure of the road in carrying the load. Ruts may occur more often in single-track forest roads, because there is no edge restraint and occasionally a lack of construction depth due to the desire to economise with the depth of stone.

The Roadex e-learning package on [Permanent Deformation](#) identifies three modes to classify rutting:

Mode 0	The compaction of non-saturated materials after construction by traffic. This mode is self-stabilising and causes the material to stiffen. We see this most times in the construction of a forest road where the tippers impose better compaction in the wheel tracks than the vibrating roller does outwith the tracks.
Mode 1	In weaker granular materials, local shear close to the wheels may occur. This gives rise to a characteristic dilative heave immediately adjacent to the wheel track. The material undergoes large plastic shear strains leading to relatively loose, heaved material.
Mode 2	When the aggregate is better, then the whole pavement may rut. This can be visualised as the sub-grade deforming with the aggregate deflecting bodily.
Combined Modes	Nothing is ever simple and, in practice, rutting will take place in a combination of the three modes above.

Engineers may minimise rutting by:

- Selecting high quality aggregate.
- Compacting the aggregate well, so as to maximise its performance.
- Making the layers thick to reduce the stresses applied to the sub-grade.

Vehicle Selection

The road structure performs in relation to the applied loads and the materials in the pavement and subgrade. We have examined the road design side of the equation but the selection of vehicles and the resulting load patterns is equally important. Consideration needs to be given to:

- Reducing wheel loads by using twin tyres, tyre pressure control systems to reduce inflation, reduced loads etc.
- Reducing impact on the road surface by ensuring a smooth surface, gradients within specification, use of drivers trained to minimise impact, legal loads, lower speeds etc.
- Reducing use by non-road vehicles such as forwarders with band tracks.

Best Practice for Usage

Road Facts:

1. The strength of a road pavement is reduced to half its dry strength when it becomes very wet. Avoid the HGV use of the road in very wet weather if possible.
2. Clean side drains allow rain to drain away quickly. Regular monitoring and maintenance is essential particularly following periods of heavy rain.
3. Roads are strong when frozen but are greatly damaged when used while they are thawing. Roads must not be used by HGVs in periods of heavy thaw.
4. Do not use salt to de-ice roads – Salt attracts moisture and keeps the road excessively wet for a year or more.
5. Muck brought on to roads that becomes mixed with the roadstone greatly reduces road performance in wet winter conditions.
6. An overloaded vehicle greatly decreases the life of a road.

Drivers should: -

7. Drive smoothly and carefully at a speed where they can stop safely. Remember it takes much longer to stop on a gravel road.
8. Reduce speed in line with the prevailing weather, road geometry and road surface conditions.
9. Where possible vary their position on the road from preceding road users and spread wear over the road.
10. Drive their vehicle round the outside of bends, increasing their visibility distance and avoiding breaking the inside edges or the ends of culverts.
11. Drive in an appropriate gear for the vehicle weight / road gradient and engage in good time.
12. Excessive power transmitted to the road surface causes corrugations or ravelling of the surface and loss of roadstone.
13. Keep vehicle wheels away from road edges that are weaker and away from soft verges where you may be bogged.
14. Align their vehicle approaching bridges to avoid hitting handrails and kerbs.

Vehicle operators should: -

15. Ensure they comply with Road haulage of round timber code of practice in particular that vehicles are not overloaded and that the maximum axle weights are not exceeded.
16. Avoid lifting non-drive axles of tractor units to increase traction.
17. Avoid intensive use of the road over short periods of time. Spread the road usage out into a slow and steady rate in order to allow the road to “recover”.
18. Use twin or multi-wheeled vehicles as appropriate and avoid the use of ‘super-single’ vehicles where possible.

Conclusion

Forest roads are being built across the country every working day through the year. They are often located in areas of extreme landscape and environmental sensitivity or in areas of peat or hard granite that many “normal” civil engineers would declare as impossible or far too expensive for the required purpose. It is under these conditions that forest engineers work to provide low-cost roads that meet the demanding requirements of their customers.

Each road is unique and requires an individual design and assessment of ground conditions that lead to the design of pavement thickness, drainage etc. There is no doubt that a skilled machine operator can make a good road without excessive planning or supervision, but if a road fails, it can have disastrous consequences for safety, environmental pollution or landscape. For these reasons the stress on good planning and design should continue. The landscape and ecology of an established forest can be irreversibly damaged within hours by the indiscriminate use of a large civil engineering machine.

Although forest roads rarely hit the headlines, it gives a sense of satisfaction to see timber lorries using roads and bridges that were a nightmare to build, but are now an accepted part of the forest landscape.

Appendix 1. Forestry Commission Standard Road Specification

FORESTRY COMMISSION ROAD SPECIFICATION WITH REFERENCE TO THE Department for Transport HIGHWAYS AGENCY *DESIGN MANUAL FOR ROADS AND BRIDGES* (DMRB) AND *MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS* (MCHW)

This specification is the standard for forest roads built by outside parties on FC land. Any reduction in this standard is to have the FC Engineer's written approval before construction starts. Road survey and design should also have taken place before felling takes place.

Design speed	25 km/h.
Design loading	Full C&U (currently 44 tonnes).
Road Width	3.4 m running width (+/- 200 mm) - widened on inside of bends to suit radius (see table page 3).
Road alignment	Roads shall fit into the landscape and be constructed to a uniform horizontal and longitudinal profile. They shall avoid unstable ground and any features that require preserving.
Felled width	25 m average recommended.
Max gradient	<8% in general to be preferred, but gradients up to 10% acceptable. Small lengths (<200m) up to 12.5% <u>may</u> be permitted provided that they are contained within an overall gradient of 10%. For restrictions on gradient on bends, see table.
Min gradient	2% except over short sections on crests and sags. (This is an important requirement.)
Passing places	20m long and at least 3m wide with 10m splays. Spaced to be inter-visible with a maximum spacing to be agreed.
Bridge approaches	Minimum approach straight is 20m.
Turning places	Turning "T's" to be 26m in overall length (i.e. from far edge of road to end of 'T'), 4m wide with 11m radii.
Harvesting facilities	Ramps and stacking areas supplied as required. For guidance: ramps provided every 40m; stacking areas 30m by 3m provided every 200m. Surfaced where there is a risk of erosion.

Earthworks	Earthworks will be undertaken in accordance with Clauses 601 & 602 of the MCHW. Unsuitable materials to be stripped and removed. The formation shall be shaped to keep it free of standing water. Minimise disturbance of peaty soils to retain the stored carbon.
Cuttings	Cutting slopes must be stable and free of overhangs and loose rock. The maximum slope to be 30% for slopes up to 2m high. For slopes more than 2 m high, the maximum slope to be 1 in 2 (50%) for fine grained soils, 1 in 1½ (67%) for other soils, and 1 in 1 for rock slopes.
Embankments	Unless agreed beforehand, the fill material to be free draining and non-cohesive, placed in layers and effectively compacted in accordance with Clause 612 of the MCHW. Slopes as for cuttings.
Roadside drains & ditches	A roadside ditch shall be provided on the uphill side of a road and on both sides where the road formation is at or below the adjacent ground. Drains shall have a depth of not less than 150 mm below the formation edge and a longitudinal gradient of not less than 2%. Ditches and drains shall not lead directly into watercourses. Filters will be provided in and adjacent to the drains and culverts to avoid pollution and sedimentation of watercourses. Drains can help in temporary storage of flood water.
Culverts	All pipes shall be to Clause 501 of the MCHW - excavated in accordance with Clause 502; bedded, laid and surrounded in accordance with Clause 503; and backfilled in accordance with Clause 505. Laid in natural ground or in bed of original watercourse where applicable. Aim for bed continuum, for flora and fauna. Minimum size 300 mm although 450 mm preferred. Inlets to be provided with erosion protection. Outfalls should be so constructed as to eliminate possible erosion. Ditch relief culverts should be spaced as required with a maximum spacing of 200m. Where appropriate, culverts to be designed for 1 in 50 year storm. Where the diameter is greater than 1.2 m, the culvert to be designed for 1 in 100 year storm. Bridges are preferred, including for flora and fauna riparian zones.
Geosynthetics	Used as necessary over silty clay and peat formations.
Road construction	Capping layer of durable rock or road base to Clause 613 of MCHW to improve subgrade CBR to a minimum of 5%. Road metal Granular Sub-base Type 1 to Clause 803 and laid in accordance with Clause 801 of MCHW. Material for the running surface shall have a minimum Magnesium Sulphate Soundness Value of 85. Principal or arterial

forest roads shall have a minimum compacted surfacing thickness of 100mm of hard wearing well bound continuously graded aggregate

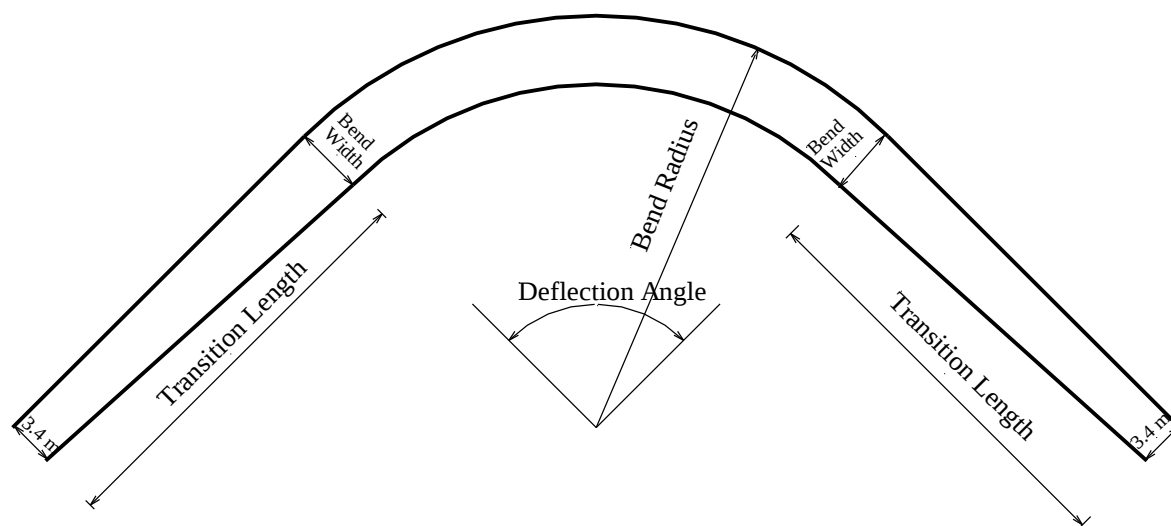
Road metal thickness	<u>Subgrade</u>	<u>Min. Road Construction Depth</u>
	5% CBR	450 mm
	7% CBR	325 mm
	10% CBR	250 mm
	>10% CBR	To be agreed by FC Engineer, but 100 mm minimum.
Cross slope (camber or crossfall)	The surface shall be cambered with 5% falls from the crown, or with a 5% crossfall sloping inwards on steep side slopes.	
Water Guidelines	UKFS Guidelines on Forests and Water (FC) Account must also be taken of any requirements of EA/SEPA.	
Fuel spillage	A written procedure to be in place prior to work start.	
Signs	The site to be adequately signed.	
Blasting	Excavation of rock by blasting shall only be undertaken by suitably qualified personnel appointed in writing.	
Quarrying	The method of working (and re-instatement where applicable) of borrow pits and quarries must be in accordance with the <i>Quarries Regulations 1999</i> , and approved by the Forestry Commission.	

HORIZONTAL BEND RECOMMENDED WIDTHS AND GRADIENTS

Outside Radius	Minimum Widths For Maximum Angle of Deflection (°)				Transition Straight Length	Maximum Gradient on Outside Radius
	15	45	90	180		
	Running surface width					
m	m	m	m	m	m	%
90	3.8	3.8	3.8	3.8	-	10
60	4.0	4.0	4.0	4.1	20	8
45	4.0	4.2	4.5	4.5	20	7
30*	4.0	4.7	5.0	5.1	25	6.5
25		4.8	5.1	5.3	30	5
20		5.0	5.6	5.9	30	4.5
15			6.3	7.0	40	4
10**				10.0	40	3

* Preferred minimum radius

** Absolute minimum hairpin

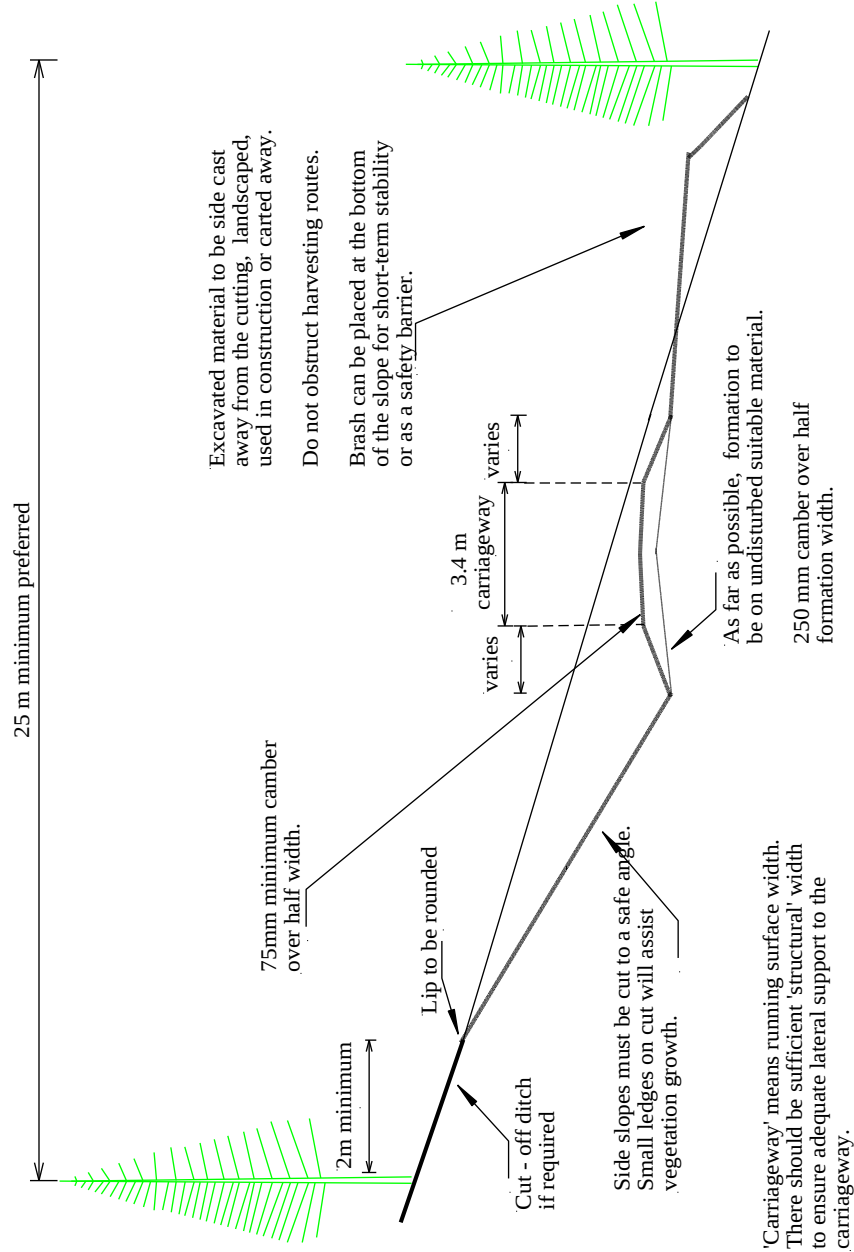


Bend Widening



EXAMPLE CROSS SECTION

Typical Road Cross - Sectional Details



Cross Fall up to 20 Degrees

Appendix 2 Higher Standards of Construction

1. The design loading for roads is usually expressed in terms of Standard Axles (SA) of 80kN. A normal articulated 6-axle vehicle loaded to 44 tonnes will equate to something like 4.4 SAs and will carry a payload of about 29 tonnes.
2. On the basis of the above figures, 500,000 SAs is about equivalent to 113,600 vehicle movements of fully loaded 44 tonne vehicles (i.e. all other movements including empty running etc. have been ignored for the purpose of this simplistic analysis).
3. This, in turn, is about equivalent to the movement of 3,300,000 tonnes of timber.
4. In any major forest, it should be possible to work out the likely movement of timber over the assumed timescale for the life of the road. If it appeared that the road would wear out before it was economically sensible to reconstruct it, it could well be cheaper to construct to a higher standard immediately.
5. The following table gives an indication of the total thickness of pavement that will be required for the various CBR values for 1,000,000 SAs. It will be obvious that the increase in thickness over a design life of 500,000 SA is not very large.

Typical material	CBR (%)	Pavement Thickness (mm)
Peat, silt	<2	>1000 (consider excavation to firmer subgrade or use of geosynthetic)
Silty clay	2	750
Heavy clay	3	600
Sandy clay	4	500
Saturated sand	7	350
Fine sand	10	275
Graded sandy gravel	20	175
Rock	250+	Min. 100 to allow grading of surface

Annex 4

Checklist of likely requirements for submitting a forest road/private way for forestry/Prior Notification consents

- Does the proposed activity come under the definition of a private way (para 7, Annex F, SG Planning Circular 2/2015 provides guidance on the criteria to be met)? If so PN will be required. If unsure, then discuss with the relevant PA
- Have you commenced work on your proposed forest road/private way? NB no work should begin on a likely proposal until the appropriate consent is given.
- If you are undertaking maintenance, have you confirmed with the relevant PA or FCS that this does not require PN or EIA consent?
- Have you undertaken preliminary/informal discussion with the Planning Authority/Forestry Commission Scotland to identify any potential sensitivities and/ or whether or not your proposal is likely to be considered as permitted development? Have you addressed any identified sensitivities in any proposed submission?
- Do you require additional permission/consent? For example:
 - for accessing directly onto a public road
 - permitted development rights affected by a planning consent condition
 - the proposal is located within a National Scenic Areas
 - impact on a Natura 2000 sites
 - Permits or licences from SEPA under the Water Environment (Controlled Activities) Scotland Regs 2011

- Is the proposed road contained within an application for approval/consent under an FCS approval/consent regime?
- Is an EIA determination required from FCS under the EIA Forestry Scotland Regs 1999?
- In seeking approval for any forest road/private way under the respective consent regimes, have you submitted the information required?
 - Statement of purpose showing the proposal is necessary for forestry purposes
 - Description of the construction and design specification (including reference to agreed standard specifications)
 - Site plan with details of route and length, , water crossings, turning areas, timber stacking areas
 - Tolerances proposed for road lines and associated activities
- Have you aligned the information required for both the PN and forestry consent procedures? If so, you will help facilitate prompt consideration of your application(s)

Annex 5

Table of acronyms

CAR	Controlled Activity Regulations administered by SEPA http://www.sepa.org.uk/regulations/water/
EIA	Environmental Impact Assessment (Forestry) (Scotland) Regulations 1999
FCS	Forestry Commission Scotland
PA	Planning Authority http://www.gov.scot/Topics/Built-Environment/planning/Roles/Planning-Authorities
PN	Prior Notification. Guidance on Permitted Development and the PN process for agricultural and forestry private ways is available at http://www.gov.scot/Publications/2015/06/3717
SEPA	Scottish Environmental Protection Agency
SNH	Scottish Natural Heritage
UKFS	UK Forestry Standard http://www.forestry.gov.uk/ukfs