

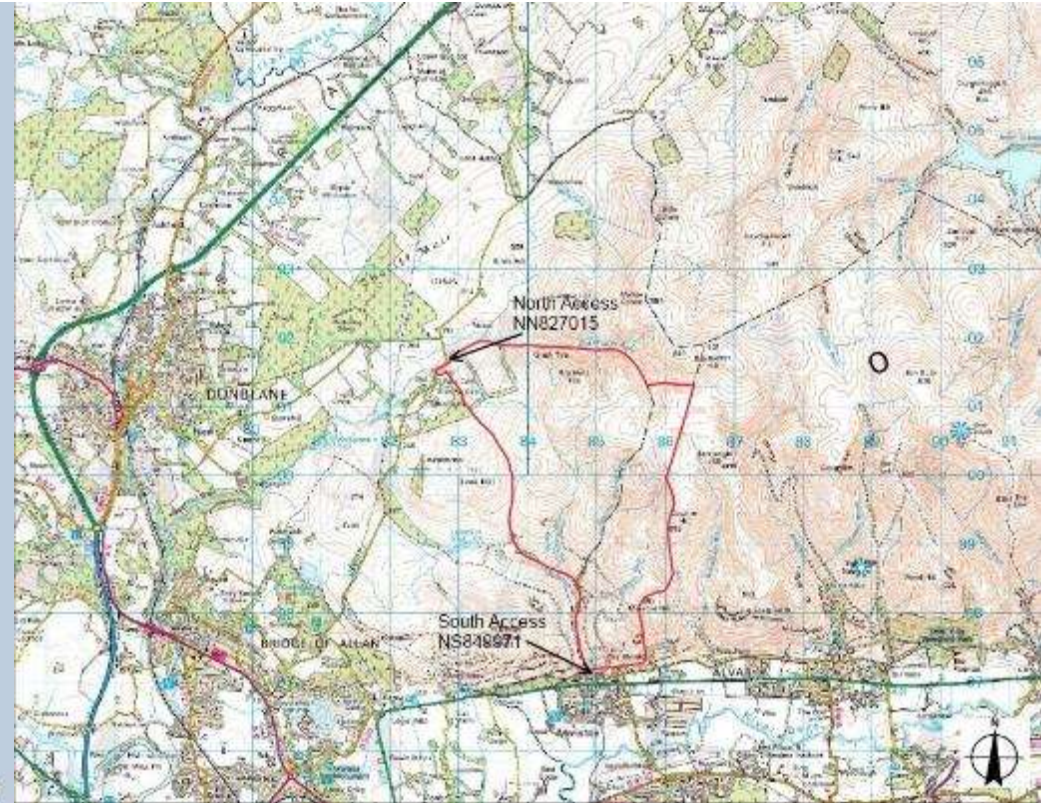


Jerah Case Study Productive Woodland Creation

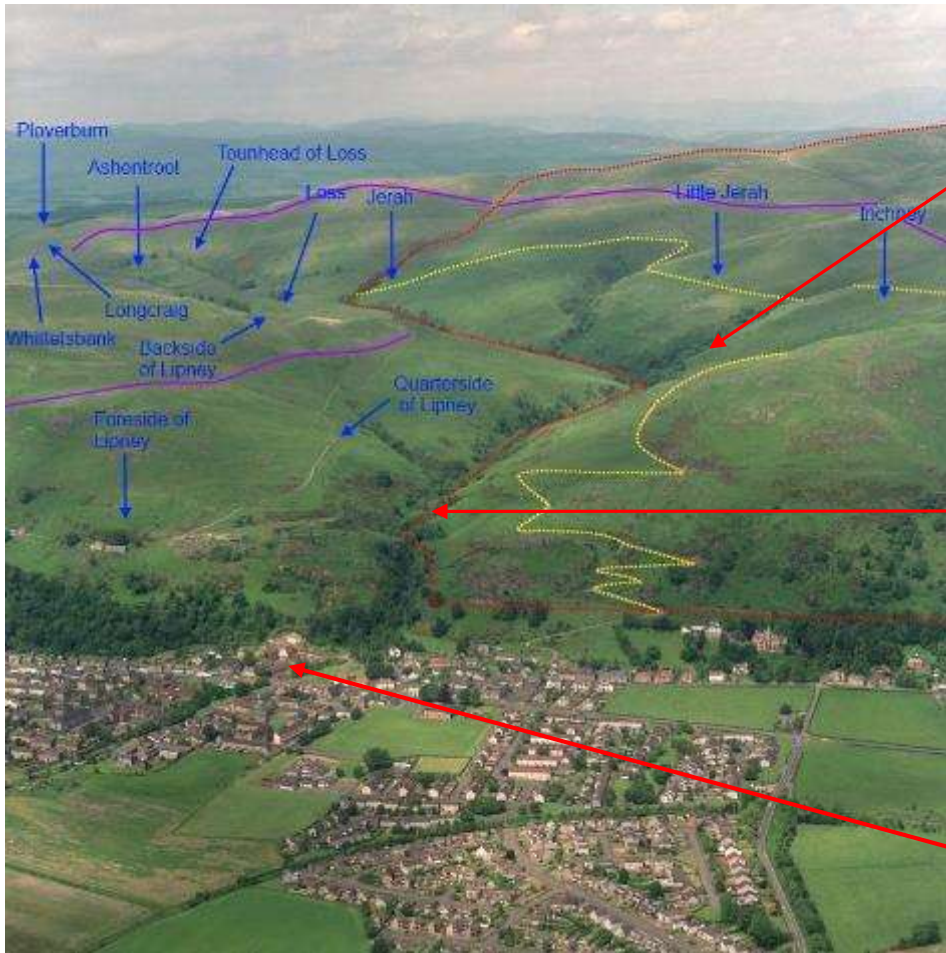
Andrew Vaughan FICFor
Central Scotland, District Manager

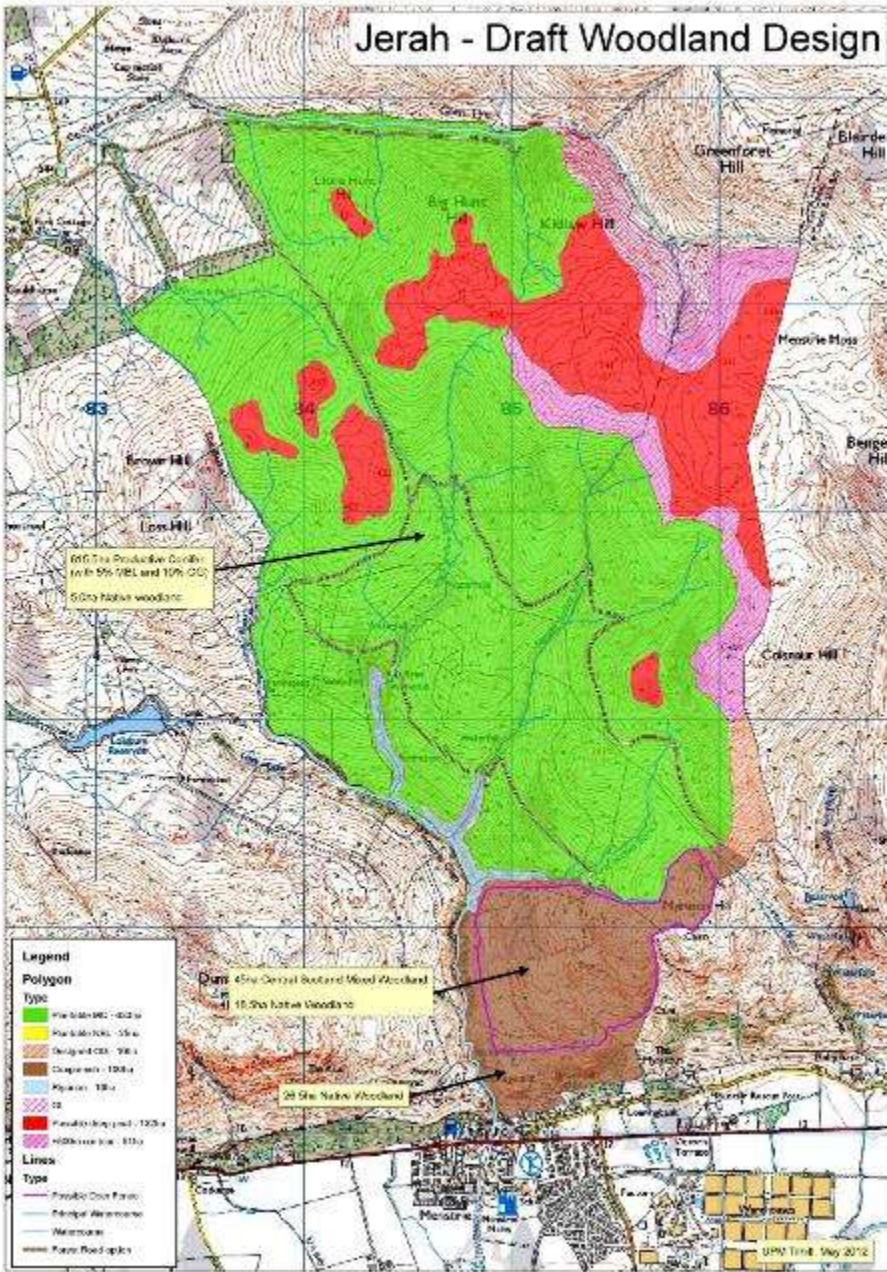
October 2017

Jerah Woodland – location, area

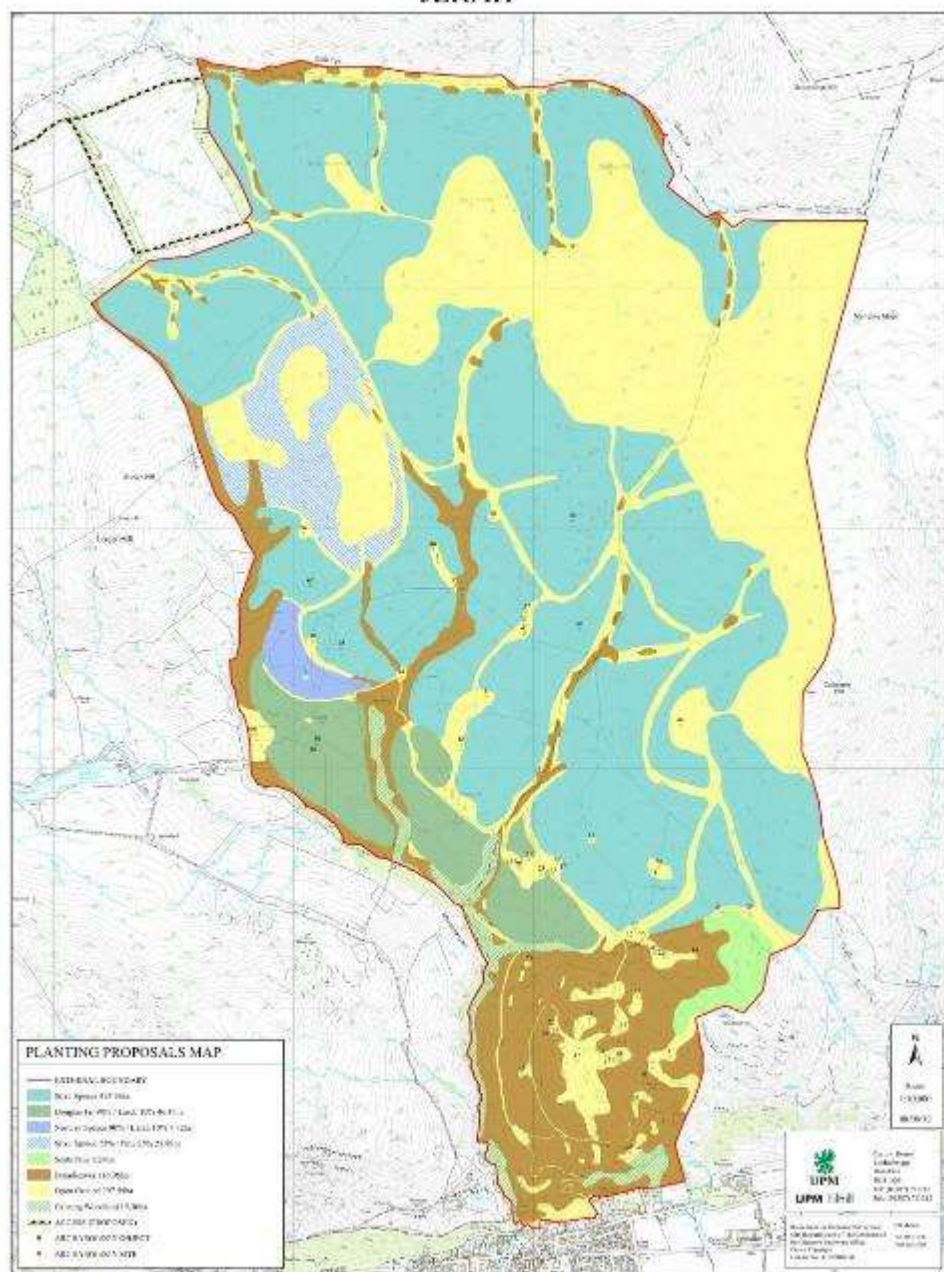


Jerah Woodland – site constraints





V1 – April 12



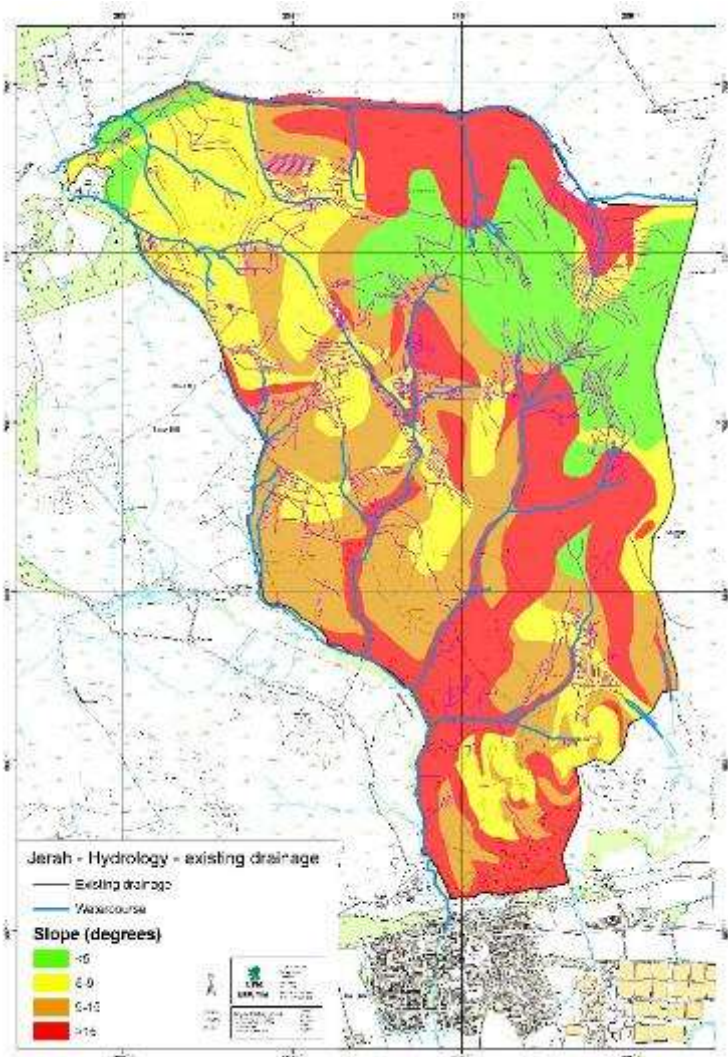
V3 – Aug 12

Jerah Woodland – EIA & Site Constraints

Scoping (Jan 2013):

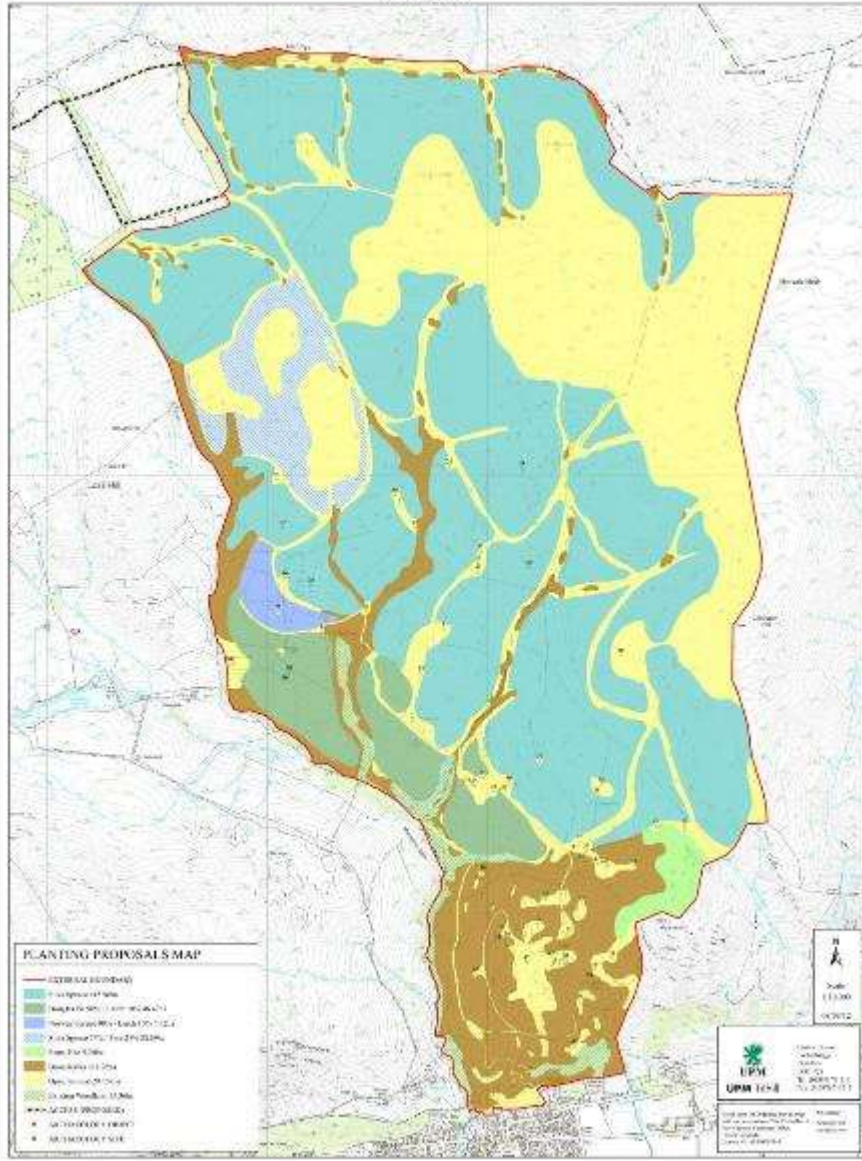
- **Archaeology** – Sheriffmuir battlefield, Menstrie Glen
- **Landscape** – 7 viewpoints and local landscape character
- **Public Access** – walkers, paragliders
- **Hydrology** – flood risk and water quality
- Public roads – damage to infrastructure and disruption
- **Ecology:**
 - Impact on bird populations
 - Change in open ground habitat
- **Deer** – impact on population and protection requirements
- Site Access – **landscape impact** and **diffuse pollution risk** of proposed road
- Farm economy – impact of change of land use

Jerah Woodland – site constraints

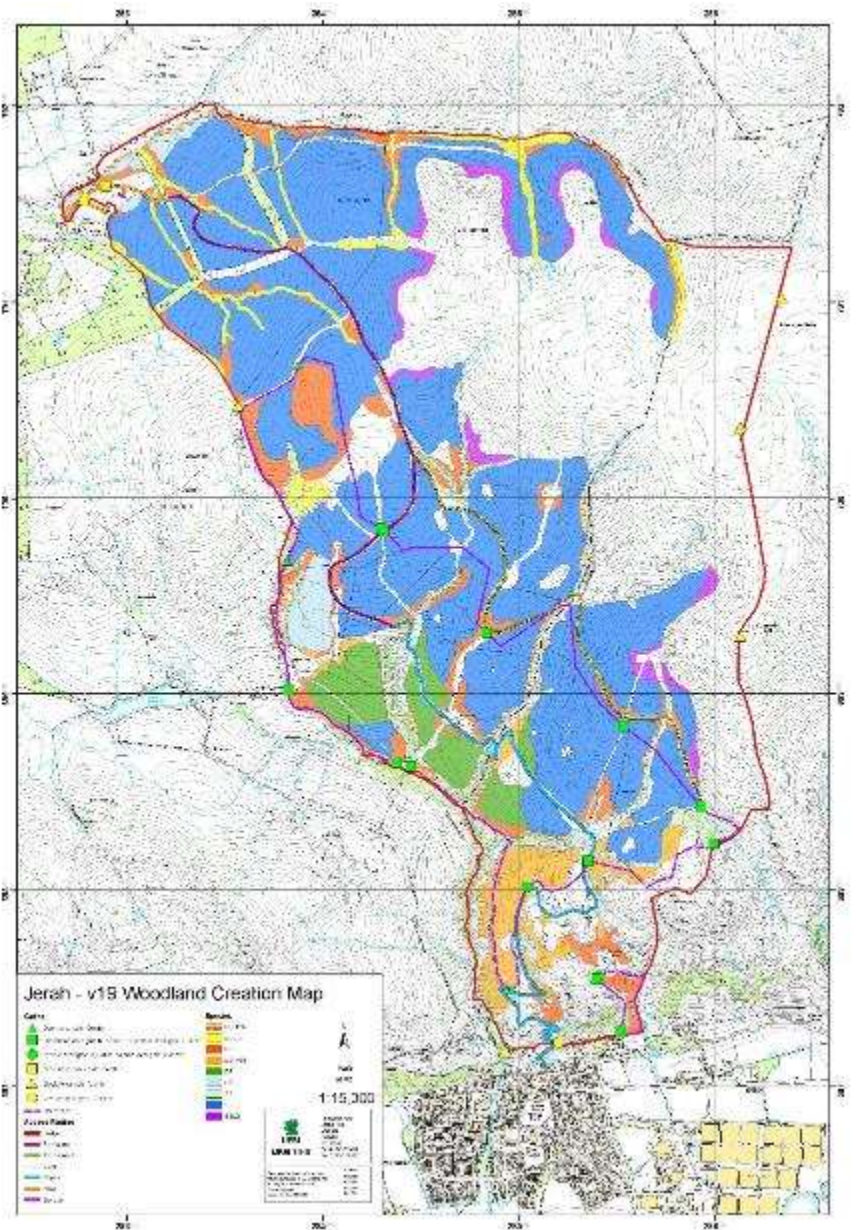


- Recent history of flooding
- Proximity to community
- Site aspect open to SW
- Moderate to steep slopes
- 96km of drainage
- SEPA concerns
- Clackmannanshire Council monitoring
- Heriot Watt University

JERAH



V3 – Aug 12



V19 – Dec 14

Jerah Woodland – landscape

Additional SSILD to create increased habitat potential to forest edges in place of previous standard SS planting

Hilltop left unplanted to create connections with open space to adjoining land

Hillsides opened up to create improved connections to wider hills and moors, retain remote, open character and reduce dominance of forest within landscape

Additional broadleaves to soften top margin and strengthen existing woodland

Open space network breaks up edges of site and links to surrounding landscape



Draft version 17



Cultivation – diffuse pollution control



Cultivation – diffuse pollution control



Cultivation – diffuse pollution control



Cultivation – diffuse pollution control



Cultivation – diffuse pollution control

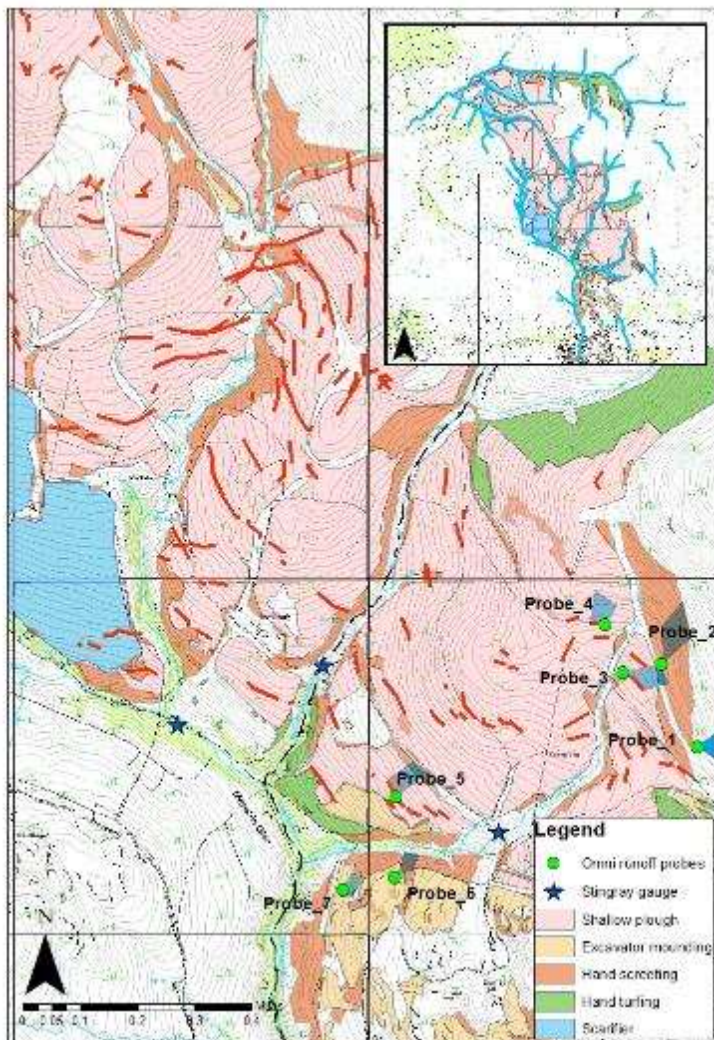


Jerah Woodland – Summary

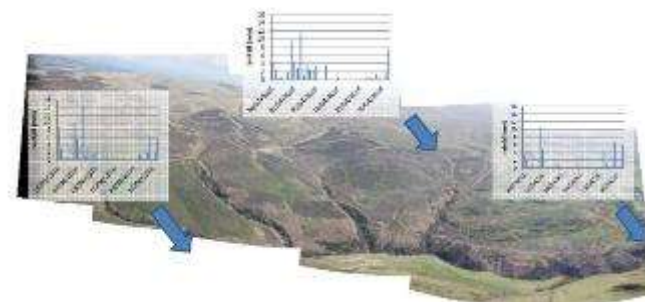


- EIA – 24 months, contract issued December 2014
- Commenced on site end January 2015, completed planting June 2015.
- 1.3M trees x 16 species x 583ha, integrated by landform into landscape
- 2 x Research Projects
 - archaeology site study(cultural heritage & carbon capture)
 - hydrology PhD (run-off and woody debris)
- Reduced flood risk – maintain quality, reduce extremes of quantity
- Multi-benefit site, with timber production the primary objective
- Significant interest – WWF, WT, FCS, SEPA, Scottish Water, World Forum on Natural Capital 2015, International Conference on Flood Management 2017

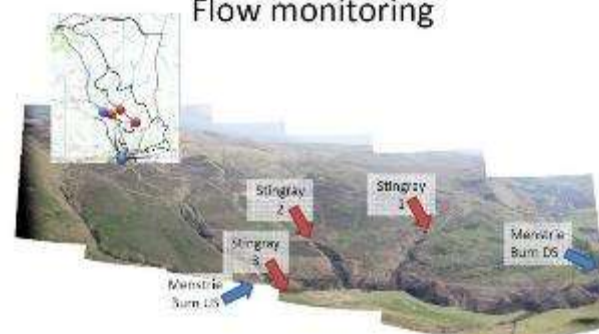
Run-off research



Rainfall monitoring



Flow monitoring



Locations:



Woody debris monitoring

Significant woody debris
& debris dams



Natural pinch points
& obstructions

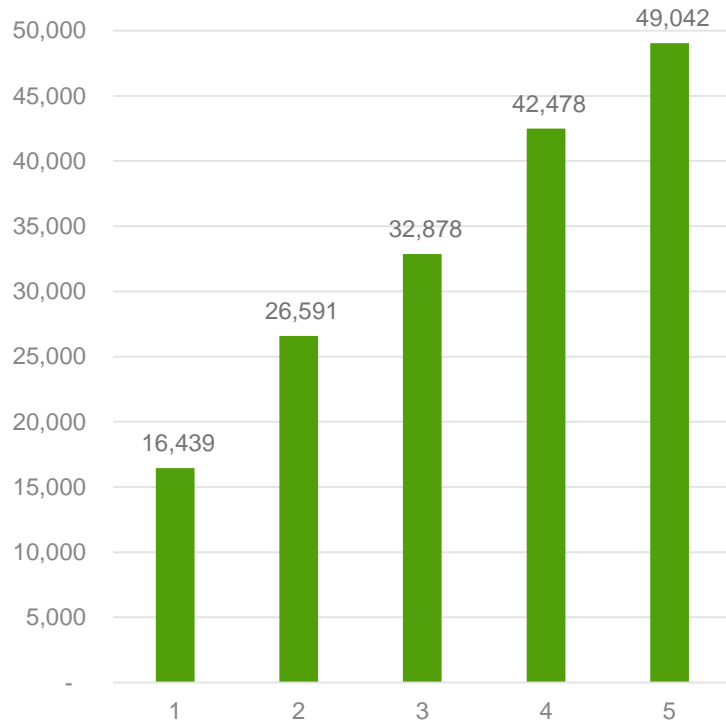


Canalised channel and low crossing structures

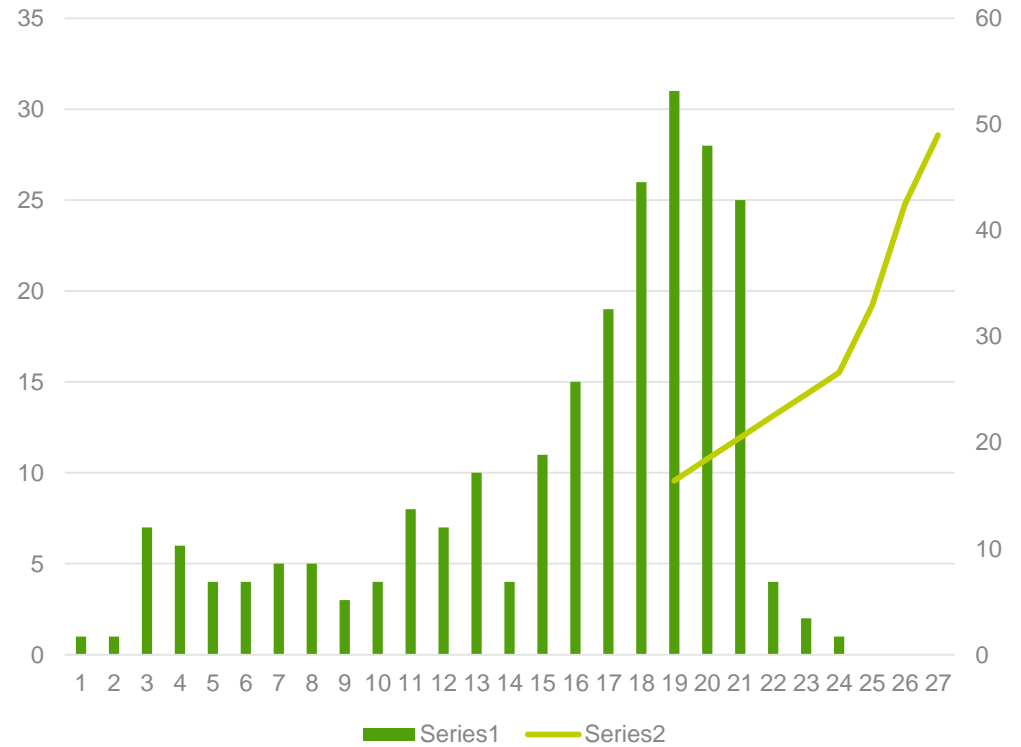
EIA – Tilhill’s experience



ES word count



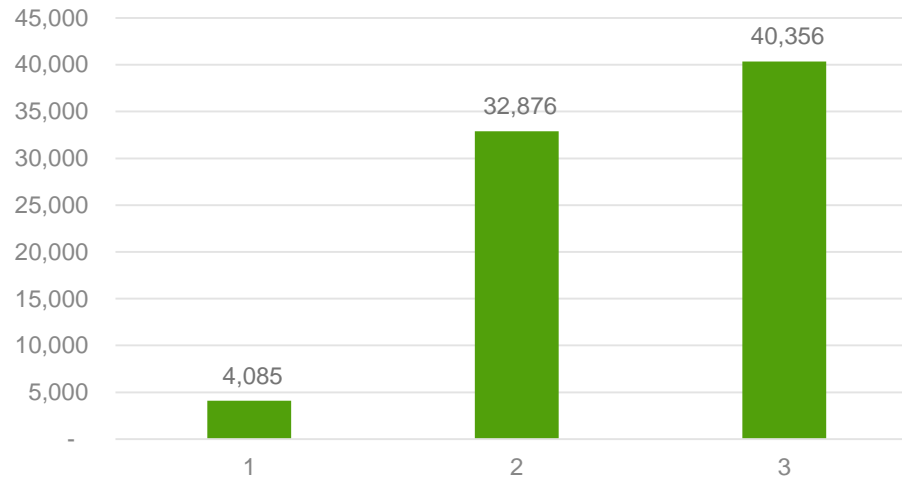
Onshore Wind Farm Commissioning



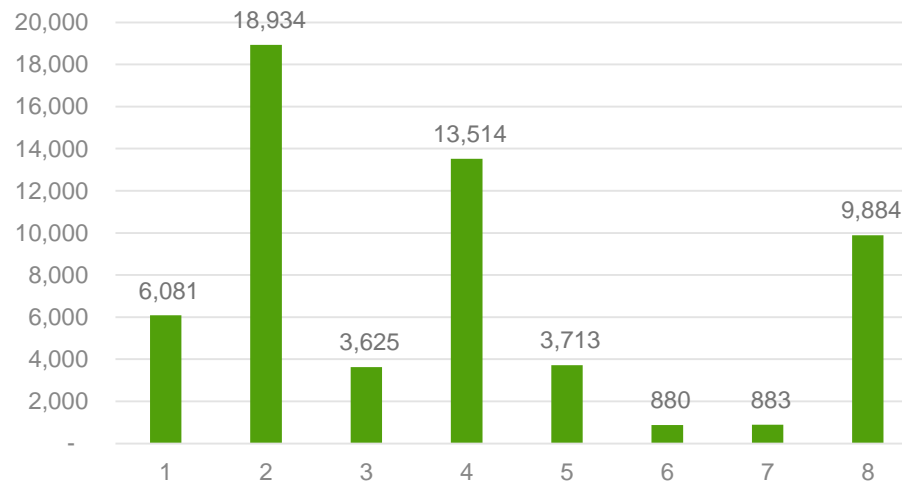
EIA – Jerah experience



Environmental Statement - 77,317 words



Addenda - further 57,513 words



EIA – Jerah issues



EIA process

- Stakeholder limitations – resources, knowledge, experience, policy conflict, narrow field of view, perceptions
- Subjectivity – resistance to change (and Sitka spruce?)
- Industry (mis)perceptions
- No timeframe proposed for EIA process – “mission creep”

Jerah specific

- £-qualified support (archaeology)
- Archaeologists vs Historians
- Dealing with public expectations – consultation vs engagement vs empowerment
- All encompassing = too long (137k words) = too complex
- = managing perceptions

Woodland Creation – Application Process



Complaining about a
problem without
proposing a solution is
called whining.

- Teddy Roosevelt



Woodland Creation – Application Process

- Engage with stakeholders, communities and vociferous detractors
 - Engage with public expectations (consultation vs **engagement** vs empowerment) where they align with our client objectives...and acknowledge where they don't
 - Inform and challenge misperceptions
 - Informed and competent statutory consultees
 - Collaboration (and consensual) not confrontation (and adversarial)
- Develop and promote better industry practices (educate public perception)
- Overhaul woodland creation consultation & EIA framework – streamlined and issue focussed
 - EIA – more objectivity, use UKFS compliance to filter issues...
 - Then focus analysis and mitigation on remaining issue(s)
 - Agree timetable in advance (and then police it)
 - Stakeholders should reference their points of view
 - Introduce tolerances
 - LUS2 constraint analysis
 - Reduce length, complexity, cost (and stress!) of Environmental Statement
- Dedicated FCS team for large, complex projects

Woodland Creation – Application Process

Owner's Objectives



Due Diligence

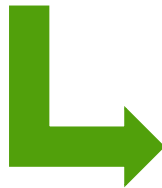
- UK Forest Standard
- Scottish Forestry Strategy
- Regional Indicative Forestry Strategy
- Land Information Search constraints
- Designations
- Priority Habitats & Protected Species
- Geology, Soils, Hydrology, Landscape
- Peat depth, ESC
- Constraints & Opportunities
- Draft Design v1 & Budget
- Consult FCS
- Client concept approval

Woodland Creation – Application Process

Owner's Objectives

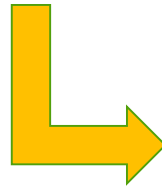


Due Diligence



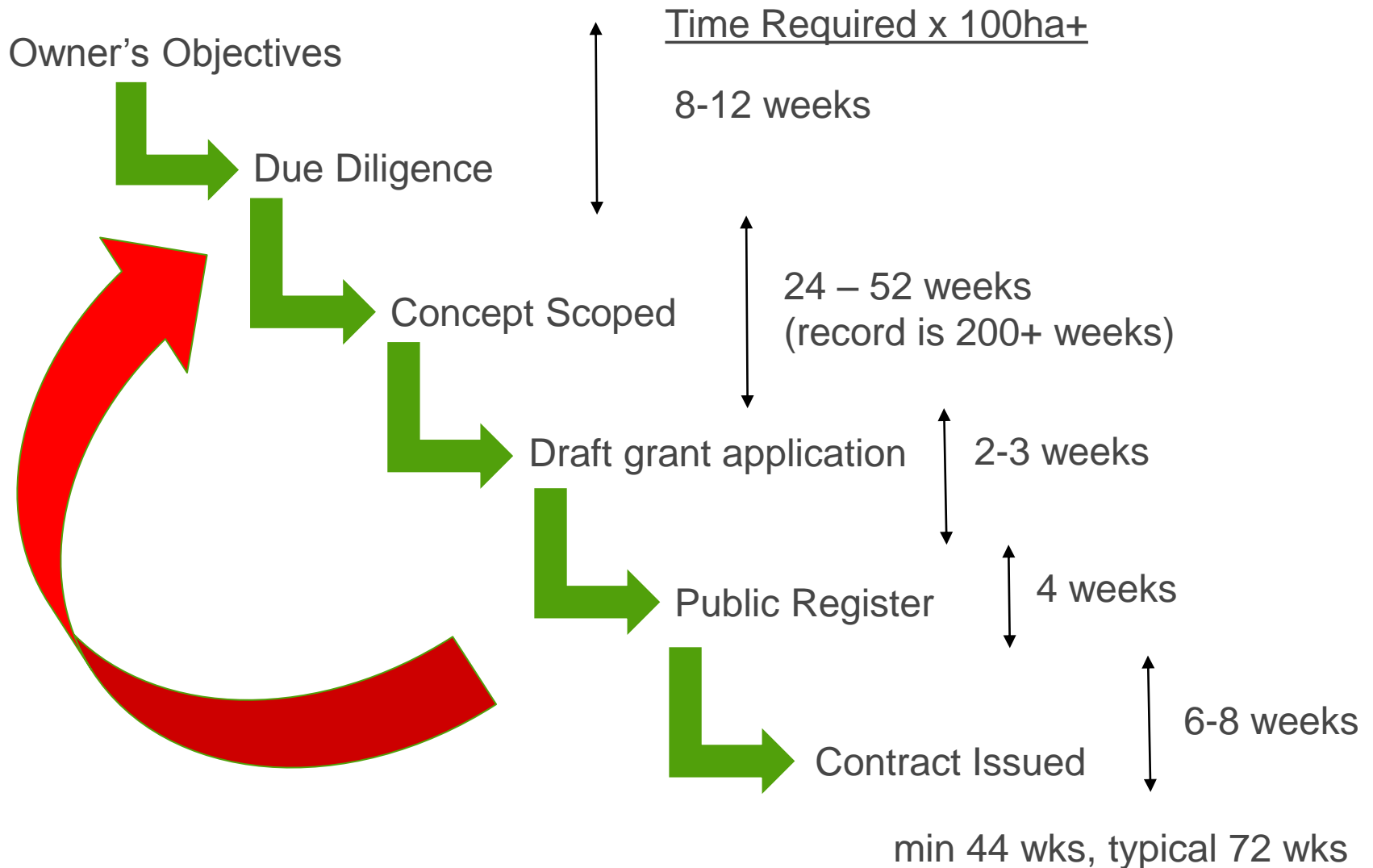
Concept Scoped

- Statutory and Relevant Stakeholders
- EIA determination



Significant environmental impact => EIA

Woodland Creation – Application Process



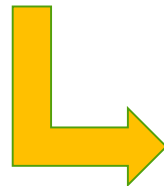
Woodland Creation – FGS Application Process per Mackinnon Report



Owner's Objectives



Engage with stakeholders => Issues Log



- Human Health
- Cultural Heritage
- Soil
- Biodiversity
- Landscape
- Water
- Air
- Climate Change
- Land Use

Woodland Creation – FGS Application Process per Mackinnon Report



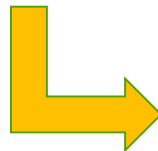
Owner's Objectives



Issues Log



Due Diligence

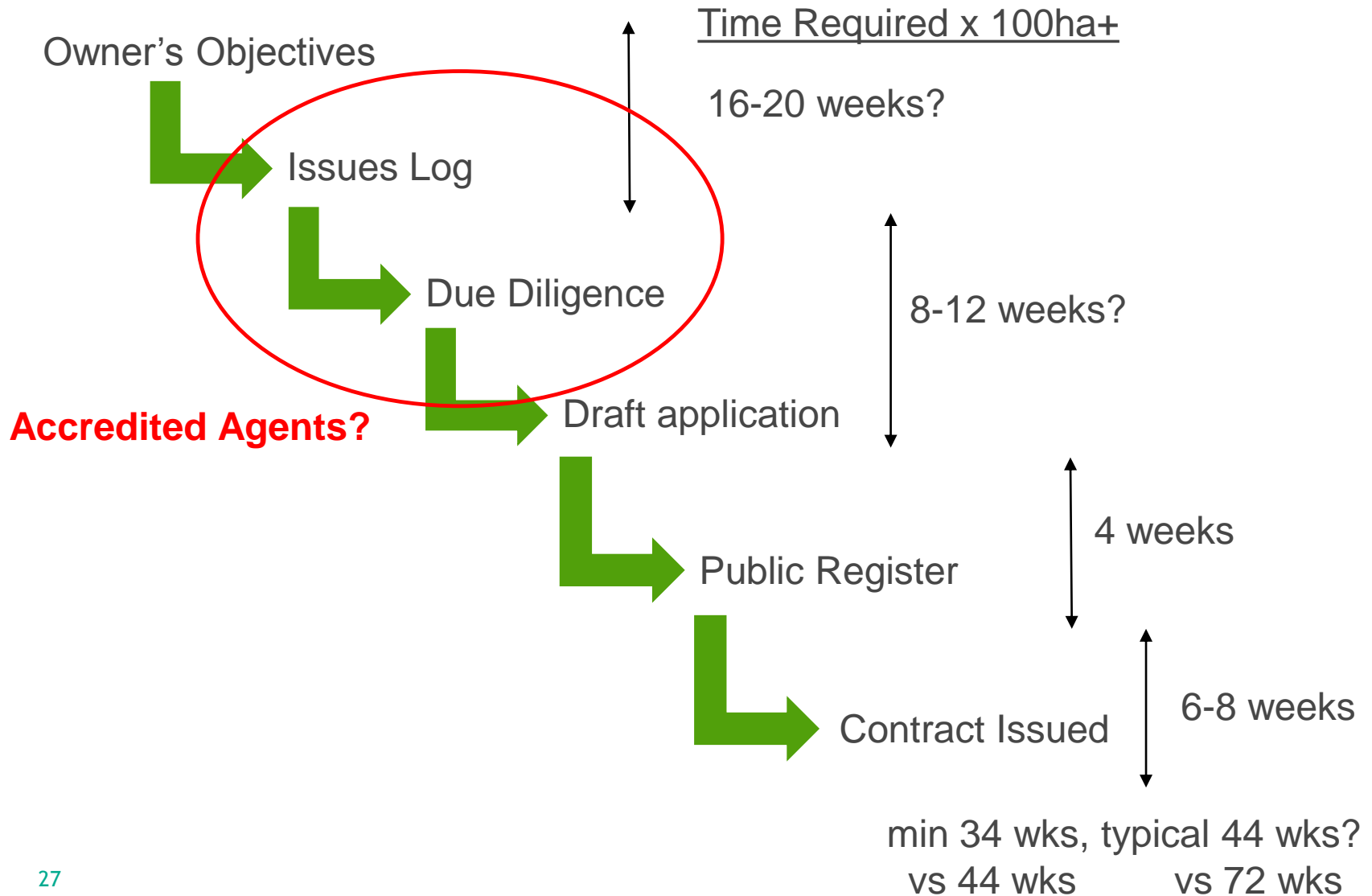


- Sensitive sites scoped
- Community Consultation
- EIA screened



EIA processing agreement

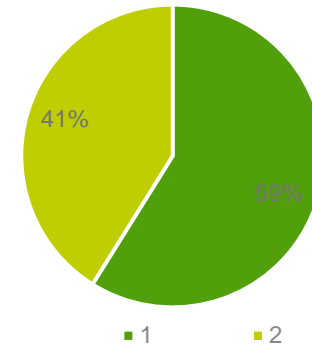
Woodland Creation – FGS Application Process per Mackinnon Report



FGS – as at August 2017 clearing

- 17,574ha submitted (£81.2M @ £4,619/ha)
- 12,170ha approved (£56.2M @ £4,622/ha)
- Average 21ha

- 9,200ha x 2017/18
- 12,000ha x 2018/19



Diffuse Pollution

the Good
“compliant”



the Bad
“poor practice”



& the Ugly
“prosecution?”




Diffuse Pollution

- Assess site & operations
- Identify risks
- Avoid where possible
- Manage Source
- Control Pathway
- Monitor Receptor
- DP Risk Assessment and Operation Map

Forestry and Water Scotland

- Know the Rules booklet &
- Cab sticker
- SEPA & FCS guidance
- Videos
- Web resources
- Shared UK-wide



Keep Your Distance Minimum working distances from watercourses, including connected ditches and drains

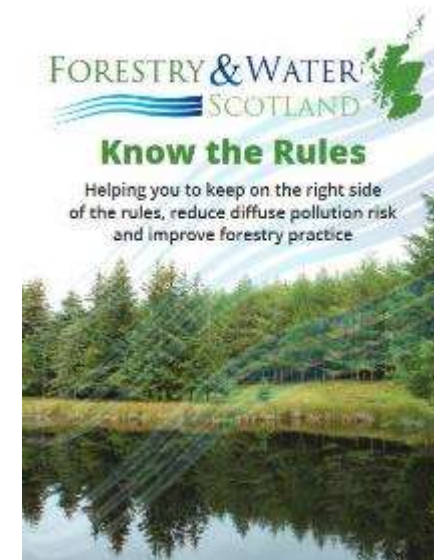
Width up to 1m	Width 1 - 2m	Width > 2m	Drinking water supply	Fuels and Oils
5m	10m	20m	50m	
<ul style="list-style-type: none"> No harvesting, brush tracking, ground preparation machinery No application of inorganic fertiliser No pesticide preparation, application, storage or cleaning of sprayers 	<ul style="list-style-type: none"> No ground preparation No storage or application of fertiliser No pesticide preparation, application, storage or cleaning of sprayers 	<ul style="list-style-type: none"> No ground preparation No fertiliser storage No application of inorganic fertilisers No pesticide application 	<ul style="list-style-type: none"> No fertiliser storage No pesticide application or drift No pesticide storage 	<ul style="list-style-type: none"> No refuelling within 10m of any watercourse No storage or handling of fuels and oils within buffer areas

Always follow the UK Forestry Standard Forestry and Water Guidelines

In the event of a pollution incident, contact the SEPA Pollution Helpline on **0800 80 70 60**

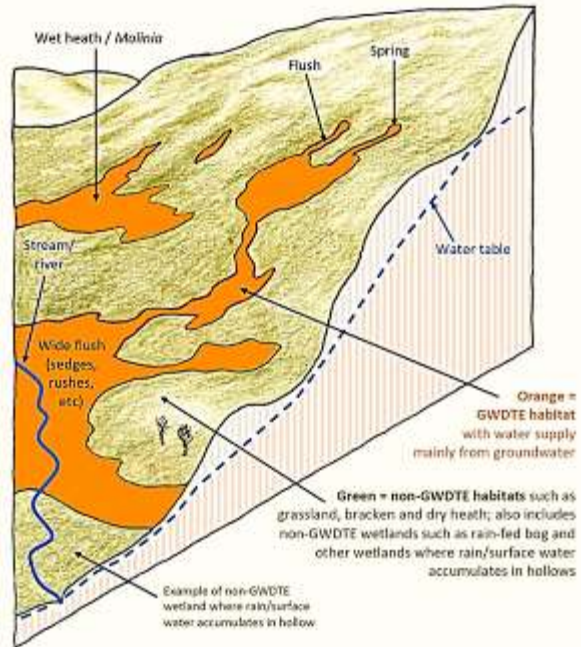
For more information on diffuse pollution and how to reduce the risks from forestry activities see www.Forestrywaterscotland.com

Logos: The Scottish Government, SEPA, Forestry Commission Scotland, FCS, Confor, FCA, dpmag



Ground Water Dependent Terrestrial Ecosystems

Typical distribution of Groundwater Dependent Terrestrial Ecosystem (GWDE) habitats in an upland landscape



Note: levels of botanical, ecological and ecosystem services interest within GWDE and non-GWDE habitats can vary from low to high, and are important considerations with regard to land management planning.



Bulletin 119 update – Soil Cultivation

FC Scotland Practice Guide Soil cultivation techniques	
<p>Introduction</p> <p>Cultivation can be necessary for the good survival and growth rates of planted trees, but only appropriate techniques should be used. Under the UK Forestry Standard (UKFS) 'Forests and soil' Guidelines, forest owners, managers and practitioners are required to protect or enhance the quality of forest soil, maintain soil fertility levels, avoid damage to soil structure and function, and not subject adjacent environments to adverse effects. Forest soils are those that support forests and woodlands, including post-industrial or brownfield soils that are being restored.</p> <p>On some high fertility mineral soils, any form of ground disturbance can actually be counterproductive, simply promoting more weed growth and competition.</p> <p>Working by this Practice Guide will demonstrate compliance with the UKFS Soils Guidelines on sites which do not require special measures. Sites which require special measures, for example because of high biodiversity value of ground flora, must be cultivated according to specialist advice.</p> <p>Reasons for cultivation</p> <p>Cultivation – any method of soil disturbance to aid the establishment of trees – is undertaken to prepare a favourable planting site and help manage surface water. Choosing species that are optimal for the site will reduce the level of cultivation needed, in turn reducing the cost of operations and any negative impacts on the forest soil, neighbouring land and water supplies, and the adjacent environment.</p> <p>Operations are typically designed to address the following potential soil limitations:</p> <ul style="list-style-type: none"> • Suppress competitive vegetation by creating a weed-free planting position; • Mix mineral soil with surface humus or expose soil to a planting position horizon where rooting can access mineral soil and organic material; • Break iron pans by cultivating through the pan; • Manage excess surface water by creating drainage channels; • Create a planting position above the water table by either raising the height of the soil or breaking (where possible) the impediment to drainage (e.g. iron pans); • Mineralising shallow peat by improving aeration and reducing bulk density. <p>Table 1 demonstrates the relationship between soil type (and its typical characteristics) and the likely objectives for cultivating that soil.</p> <p>Varying cultivation technique according to soil type and location.</p>	<p>John Gallacher I would have thought sites of high biodiversity value for their ground flora should not be cultivated. Open ground sites of high biodiversity value should not be replaced with trees.</p> <p>Martin Craig There needs to be a balanced approach to species choice in economic, environmental and social.</p> <p>Andrew Vaughan Replace with 'may'</p> <p>John Gallacher For most new wood and creation schemes there is no forest soil?</p> <p>Andrew Vaughan Add '... that increasing attention to surface horizons which, in turn, improve the ability of tree roots to exploit soil substrate'</p> <p>Andrew Vaughan Add '... which will act to promote more stable and secure rooting'</p>
<p>It is important to note that many soils require only one or two forms of amelioration, and treatments in excess of what is required may have negative effects on plant development. Table 2 summarises the benefits and limitations of the cultivation treatments commonly used in Scotland. In order to comply with UKFS Requirements, only those techniques that</p>	