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# **Longrigg Summary of Findings from the Site Survey November 2018**

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## 1. Introduction

This report has been written following a site survey conducted by Will Richardson and Neil Donaldson from the 27<sup>th</sup> to the 29<sup>th</sup> November 2018. This report is presented as an early draft of initial findings by the survey team and is not intended to be a final version. Site survey methodologies are not presented here in detail but will be included in the final version.

## 2. Woodland Description

The area of woodland known as Longrigg is situated to the north of the A861 at Ardnastang, Sunart. Its total area is 87 hectares<sup>1</sup> with a perimeter of approximately 3890 metres.

The woodland is accessed via Longrigg Road, which is mostly paved. Access to the woodland was gained from NGR NM805621. The woodland is surrounded by post and wire fencing, some of which is in need of replacement and or upgrade.

The average annual climatic conditions for the area are a max mean temperature of 12.4 degrees C and a min mean of 6.3 degrees C with approximately 30 days of air frost. There is 1700mm of rainfall annually. The underlying geology of Longrigg is igneous bedrock, rich in silica known as Loch Sunart Facies and the dominant soil types are peaty gleys.

## 3. Constraints

The woodland is surrounded to the north east, north west and south west boundaries by moorland and the south east boundary is against dwellings and gardens. The woodland is within a strategic deer fenced area and natural regeneration of alder, birch and willow is starting to appear on the adjacent moors.

Fencing around the woodland is varied in condition and age. There are three sections where new deer fencing may be needed if any areas of the woodland were to be felled and replanted – the south eastern boundary and sections of the south western boundary and north eastern boundary. These lengths total approximately 1600 metres. In addition, approximately 1100 metres of stock proof fence may need upgrading to deer fence.

The woodland is within the Sunart SSSI impact zone and near to the Sunart SAC. This designation ensures that any work considered in the woodland would need prior consultation with, and approval of, SNH and must not adversely affect the nearby SSSI. The woodland is also located within the Highland Native Woodland Target Area and within the Native Woodland Integrated Habitat Network secondary zone.

The woodland is not generally on steep ground and the terrain is relatively undulating with the highest point at approximately 150 metres above sea level and at the lowest at 50 metres above sea level.

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<sup>1</sup> 1 ha = 2.47 acres

Access to the woodland can be gained via the Longrigg Road which is limited in terms of size of vehicle the road could take and, in its present condition, would not be suitable for use by heavy vehicles. There is also the issue of proximity to the dwellings along the road and the potential impact that vehicular access might have on residents' properties and businesses. There is a bridge on the A861 at the junction with Longrigg Road. This may prove problematic for timber lorries to turn at that junction.

Access within the woodland is limited. Open rides are grass covered in the most part, frequently boggy and many are obstructed by windblow. As a result, there is very little amenity, access or recreational value in the woodland in its current state and timber harvesting would be challenging across the central and northern sections of the woodland.

It does not appear that the woodland is used for sporting purposes of any kind and no deer high seats were found during the survey.

Overhead power lines intersect the woodland at the bottom south western corner and cross over the Longrigg Road at the top south eastern corner (ref FCS Stock Map). The maximum safe clearance is restricted to 4.8 metres which may impose a constraint to harvesting machines entering the woodland as power shut downs may be required.

There are a number of springs and watercourses that appear in and run through the woodland creating wet and boggy areas. Some of these were left as open ground when the woodland was first planted in 1972.

Windblow is evident throughout the woodland and, in particular, the Lodgepole pine areas through the middle section of the woodland are very badly windblown, possibly by up to 50%. The majority of the woodland is windthrow hazard class 4.

The FCS felling sequence map shows recorded archaeology at the centre of the wood on the south western boundary.

With its straight line boundaries, the woodland does not sit well within the landscape.

#### 4. Inventory and Mensurational Data

Planted in 1972, the woodland is a uniform first rotation plantation dominated by three main species; Lodgepole pine, Sitka spruce and Japanese larch. The FCS supplied components table and stock map provide a detailed breakdown of the planting components. Table 1 below provides a summary of the total areas by species and gives an indication of the extent of the windblow.

Species	Planting year	Area	Area of windblow (approx.)
Lodgepole pine	1972	39.7ha	50% - 19.9ha
Sitka spruce	1972	23.1ha	15% - 3.5ha
Japanese larch	1972	15.4ha	30% - 4.6 ha
Western hemlock	1972	0.5ha	0%
Scots pine	1900	1.0ha	0%
Open ground/un-plantable		7.9ha	
		87.6ha	28ha

Table 1 – Species by area

Taking into account the areas of open ground and windblow, the table shows that approximately 58% or 50ha has standing trees. A further proportion of this area will no doubt be on water logged ground making harvesting difficult.

There are no signs throughout the woodland of any felling or thinning activity but the FCS felling sequence map marks the woodland down to be felled in the period 2017 to 2021.

The form of the trees varies from compartment to compartment but, generally speaking, the Sitka spruce has performed the best in terms of form and timber quality with a good percentage of sawlog being evident, up to 25% of the standing volume. The larch is generally poor in form with a much lower percentage of sawlog at around 10%, and the pine even poorer at 5% sawlog quality if at all any.

The abbreviated tariffing technique<sup>2</sup> was used to conduct a mensurational exercise on the three dominant species to assess stocking densities and standing volumes. A full description of the methodology used will be presented in the final report to the Sunart Community Company. The results are summarised in Table 2 below.

Species	Area (from FC stocking map)	Stocking density (tree/ha)	Ave dbh (cm)	Ave top height (m)	Ave tariff #	Ave tree volume (m <sup>3</sup> )	Standing volume (m <sup>3</sup> /ha overbark)	% windblown	Total standing volume (m <sup>3</sup> overbark)
Pine	39.7	1034	20	15	24	0.212	219	50	4,347
Spruce	23.1	750	30	24	38	0.80	600	15	11,781
Larch	15.4	887	24	18	30	0.39	346	30	3,730
									19,858

Table 2 – Results of the mensurational exercise

## 5. Property values

### Property Value

The woodland was recently valued at £270,000 on the 1<sup>st</sup> February 2018<sup>3</sup>.

### Timber Values

Commercial property valuations will include an estimate of standing timber values. The better the woodland is in terms of standing timber volumes, the higher the sale price will be.

<sup>2</sup> Matthews, R and Mackie, E 2006 *Forest Mensuration A handbook for practitioners* Forestry Commission, Edinburgh.

<sup>3</sup> DVS Valuation Report 01/02/2018

Table 3 below uses the results of the mensurational exercise and summarises the current market values for different standing timber products

Product (average across all species)	£/t	% of standing volume in woodland	Total volume	Convert to tonnes (1 tonne = 1.2 m3 of timber overbark)	Total value
Chipwood	£15.00	60	11,915	9,929	£148,935
Fencing product or bars	£30.00	25	4,964	4,137	£124,110
Sawlogs	£50.00	15	2,979	2,482	£124,100
Total		100	19,858	16,548	£397,145

Table 3 - Total standing timber values

The values in this table are based on average harvesting and extraction costs and also assume average road haulage costs to nearby markets. Given the access constraints within and to the woodland, it is unlikely these prices would be realised by any future owner as the cost of improving access to and within the woodland would need to be considered and also the cost of restocking, protection and aftercare. The extensive windblow throughout the woodland would also increase management and harvesting costs.

#### Access costs and constraints

As mentioned in Section 3, the main access to the wood along Longrigg Road is currently not suitable for use for heavy vehicles due to its condition. There is also a power line across the road and work may need to be carried out at the junction with the A861.

An alternative access to the wood from the A861 through Ardnastang Common Grazings has been suggested. There is a power line across the potential line of the track.

Considering the costs of upgrade and installation of access to the woodland only, the following notional costs are envisaged:

- Upgrading Longrigg Road – length approximately 1000 m. The edges of the road have subsided due to heavy vehicle use and drainage will likely be compromised. Tarring the edges of the road only, costs would be in the region of £200,000. Tarring the width of the road to 4m wide, the costs would be in the region of £400,000. This is a conservative estimate as the road edges would likely require building up and drainage reinstated prior to tarring.
- Forest track installation through Ardnastang Common Grazings. Length approximately 550m. Installation of a 4m wide forestry track, including drainage would be in the region of £36,000.

#### Other Values

##### Natural Capital and Payments for Ecosystem Services

It is worth considering the Natural Capital Values of a woodland. Natural Capital is defined as stocks of natural assets which include geology, soil, air, water and living organisms. From



Natural Capital we derive ecosystem services for which payments may be possible. These payments could take the form of specific grants for the management of the woodland for specific purposes, usually linked to habitat protection and improvement and potentially carbon.

The Forestry Grant Scheme (FGS) is a Scottish Government run grant programme for the sustainable management and creation of woodland in Scotland. There are 6 options available to support the sustainable management of woodlands. These are summarised in Table 4 below including the potential relevance to Longrigg.

Option	Description	Relevance
Woodland Improvement Grant	Provides capital grants for a range of activities in existing woodlands such as increasing species and structural diversity, supporting the preparation of forest plans and deer management plans, improving biodiversity, resilience and diversity of even aged woodlands.	Yes – funding for forest and deer management planning, restructuring and regeneration.
Sustainable management of forests	Options to support the management of existing forests and woodlands with a high environmental value.	No
Tree Health	Supports the protection of woodland from the impacts of non-routine tree pests and diseases.	Possibly if the larch became infected with <i>P. ramorum</i> . This option will pay to prevent spread of the disease and restore affected areas.
Harvesting and Processing	Supports the purchase of specialised small scale harvesting and processing equipment at the local level.	Yes – 40% grants available on the purchase of cost effective small scale harvesting and extraction machines and primary processing equipment such as mobile sawmills and firewood processors.
Forest Infrastructure	Supports forest access in small scale or undermanaged woodlands.	No – this option is limited to existing woodlands of up to 50ha in size.
Forestry co-operation	Supports landscape scale projects involving a number of landowners.	No – unless other private landowners are engaged in a joint project within the same landscape area.

Table 4 – Summary of FGS options

## Carbon

At present, carbon values for forestry are quite low. The Department for Energy and Climate Change published figures in 2015 that showed central carbon values for 2015 at £5.94/tCO<sub>2</sub>e rising to £6.69 by 2020. The theoretical carbon value of the standing timber would be in the region of £110,706 at 2020 prices. It is not known if the standing carbon values of existing woodlands in the UK are being traded but the carbon values of new woodlands are. The Forestry Commission Woodland Carbon Code provides a standard for UK woodland creation projects where claims are made about the carbon dioxide they sequester.

## 6. Future management opportunities

### Timber Production

The woodland has been created as a commercial plantation and would suit being managed as such, all constraints being fully considered. The species present; pine, spruce and larch, are suited to the geology and soils typical for that area. That said, as there has been extensive windblow, particularly through the middle section of the woodland, combined with boggy ground, the commercial harvesting of the woodland would be challenging.

If timber harvesting were an objective then access to and within the woodland for machinery and timber wagons would need to be confirmed. Small scale machines with lighter footprints and small timber wagons such as rigids and wagon and drags would be more suitable due to the considerable access constraints. Access by such vehicles would need to be consulted on with both local residents and the local authority before commencing. Other significant harvesting constraints and cost considerations would be negotiating the overhead power lines, clearance of windblown areas, restocking felled areas and protecting the woodland from deer and livestock.

The most productive areas would be the spruce compartments and these could be felled to generate income but would need to be restocked. Costs for restocking with spruce would be in the region of £2,500 per ha.

### Other Management Options

Future management would be best directed by producing a detailed long term forest plan, meeting the requirements of the United Kingdom Forestry Standard and which would set out the management objectives for a 10 year period and ensure the woodland was managed sustainably and in line with government guidelines and best practice.

Once the plan was approved by the Forestry Commission, a felling licence can be secured under which the woodland would be managed, so simplifying the procedures involved. As shown in Table 4 funding can be sought to help pay for the production of long term forest plans. The grants are paid at £25 per ha so a grant of approximately £2,200 could be applied for.

As mentioned in the Forest District Plan, there are opportunities to re-shape the woodland, particularly along the southern edge, and it would seem sensible to consider the introduction of a more diverse species mix including native and non-native broadleaves.

As the woodland is restructured over time, areas felled off could be regenerated through a combination of natural regeneration (pine and spruce regeneration is evident in some areas of the wood and birch, alder and willow seem to be regenerating naturally in the surrounding moor and grazings) and planting. A mix of broadleaved species such as oak, sycamore and hazel on the lower sections and birch, alder and willow on the upper and more wet areas of the wood may be more beneficial to community ownership than the current uniformity in age class and species present.

Diversifying age and species compositions would provide a more diverse habitat, improving the amenity value of the woodland and its potential to produce a range of products that

could be processed and used locally such as firewood, biomass chip and sawn products such as posts, rails and beams. The FGS can provide rates of up to £550/ha to restructure age and species composition at the point of replanting following felling over a three year period.

## 7. Analysis of risk

With the ownership of any property comes risk. Woodlands have a diverse range of risks associated with them and those most apparent for Longrigg are summarised in Table 5 below along with a risk rating (low, medium, high), potential outcome and any controls that could be implemented.

Risk	Description	Rating	Outcome	Controls
Fire	Wildfires starting within or spreading to the woodland from surrounding moorland.	Medium – risk of wildfire damage to mature woodlands is considerably lower than to young plantations or open moorland but the significant areas of windblow will increase this risk.	Damage to standing trees, boundaries and neighbouring land or property, personal injury or even loss of life.	Enforcement notices, patrolling and/or monitoring of the site, fire beater points throughout the woodland, maintain rides and tracks as firebreaks, easy access to a source of water e.g. water course.
Pests and diseases	Infectious tree diseases (P. ramorum in larch and needle blight in pine), browsing damage by mammals, particularly deer.	Medium to high	If standing trees are known to be infected with a notifiable diseases (e.g. P. ramorum in larch) then the trees would require felling by law under a Statutory Plant Health Notification. Browsing damage by mammals is greatly reduced in mature woodlands but any natural regeneration or restocking can be affected.	Monitor condition of trees. Carry out pre-emptive felling of larch trees. Thin pine trees to make conditions less habitable for needle blight. Ensure boundaries are secure. Control mammals.
Windblow	Trees blown down during stormy weather.	High	Significant areas in the wood are already windblown and this increases the likelihood of further areas being affected. Windblow leads to reduced value of the standing timber crop and increase risk of wildfire damage.	Thinning and providing a more diverse age range of trees and species within the woodland will greatly reduce the risk from windblow.

Risk	Description	Rating	Outcome	Controls
Roads, rides and tracks and soils	Damage caused by timber harvesting and extraction operations.	High	Longrigg Road is not suitable for any kind of heavy traffic/use and there are potential issues with getting timber lorries onto the A road at the junction with Longrigg Road. There are no in forest roads or tracks and harvesting machines would need to travel on brash mats within compartments. Significant damage to soils with resulting runoff will occur.	Operational planning and creating new access prior to felling operations will reduce the risk.
Boundaries with neighbouring properties	Liability of upkeep and repairs to damaged properties and boundary fences with neighbouring land.	Medium	Blown trees and branches falling on and damaging fences and properties.	Pre-emptive felling/clearing trees back from boundaries. Erecting new and upgraded deer proof fences.

Table 5 - Analysis of risk

### Insurance

In addition to the above risk mitigating factors, it would be prudent to take out public liability insurance which would indemnify the insured for accidental bodily injury to visitors and loss of or damage to property of a third party such as neighbouring properties, fences and buildings. The premium for such insurance cover is dependent on the limit of liability but, for a limit of £5 million in any one claim, the cover would cost in the region of £200 per annum. Cover will not normally extend to activities carried out in the woodland such as horse riding, shooting, mountain biking and orienteering. These activities should be insured by the organiser or individual running those activities. It is possible to insure the growing timber from fire and windblow and this would attract an additional premium.