# ENVIRONMENTAL STATEMENT

## PROPOSAL FOR MIXED WOODLAND

## LARRISTON
## SCOTTISH BORDERS

### Prepared by

**John Gallacher BSc, CEnv, MCIEEM,**

**Dr Jenny Mulgrew PhD, BSc, MCIEEM**

**Dr Clive McKay PhD, BSc**

**Ross Cameron MLitt, MA**

**Melanie Findlay BSc, MCIEEM**

**Maggie Gilvray BSc, Dip. Cons, CMLI**

**Reuben Singleton BSc, CEnv, MCIEEM**

**David Siddle BSc**

**Stuart Spray MSc MCIEEM**

**Jimmy Wilson BSc**

**Eddie Addis BSc**

### September 2015

## PREFACE

This Environmental Statement (ES) has been prepared to inform a proposal for the establishment of productive mixed woodland on the former hill farm of Larriston, near Newcastleton in the Scottish Borders.

The Environmental Statement includes a Non-Technical Summary (NTS) which provides an "executive summary" of the statement and its findings presented in a non-technical manner. This Environmental Statement comprises the following documents:

- Non-Technical Summary
- The Environmental Statement

In addition to these, the Environmental Statement is supported by the following Technical Annexes which contain detailed technical information which has informed the findings presented in the ES:

- Technical Annex A: Archaeological Walk-Over Survey
- Technical Annex B: Landscape and Visual Impact Assessment
- Technical Annex C: Ecological Evaluation
- Technical Annex D: Habitat Survey
- Technical Annex E: Ecological Site Classification
- Technical Annex F: Breeding Bird Survey
- Technical Annex G: Hydrology
- Technical Annex H: Protected Species Survey
- Technical Annex I: Management of Woodland Edge Habitats

The Environmental Statement may be viewed at the following locations during the statutory consultation period:

- Tilhill Forestry Ltd office, Bank House, 40 High Street, Jedburgh, TD6 8DQ (Tel: 01835 863244) during normal working hours (normally 9.00am to 5.00pm).
- Forestry Commission Scotland, South Scotland Conservancy Area Office, Weavers Court, Forest Mill, Selkirk, TD7 5NY (Tel: 01896 750222) during normal working hours (normally 9.00am to 5.00pm).

Further copies of the Environmental Statement are available for £200 per hard copy or £10 for electronic copy from:

John Gallacher
UPM Tilhill
1 Duckburn Park
Stirling Road
DUNBLANE
Perthshire
FK15 0EW
Tel: 01786 821666

## CONTENTS

## NON-TECHNICAL SUMMARY

### 1. INTRODUCTION

The Non-Technical Summary presents an overview findings from the Larriston Environmental Statement 2015. This Environmental Statement (ES) covers the potential impacts arising from a proposal to establish productive mixed woodland over a net area of circa 1108 ha on Larriston Farm, Scottish Borders. The land has historically been used for extensive sheep grazing.

The overall objective of the Environmental Statement is to:

- Identify the main, or significant, environmental issues relating to the proposed woodland development.
- Identify the nature and scale of the environmental effects that are likely to result from the establishment of mixed woodland.
- Identify areas where adverse impacts are minimised and positive impacts maximised.

### 2. SITE CONTEXT

The land on which this proposed woodland is to be planted has been acquired by a new owner with the intention of afforesting the land, to sequester carbon and produce renewable raw material, as opposed to farming it - given the very difficult economic climate for upland sheep farming. Farming would require resources which are not justified in terms of current and likely future agricultural circumstances.

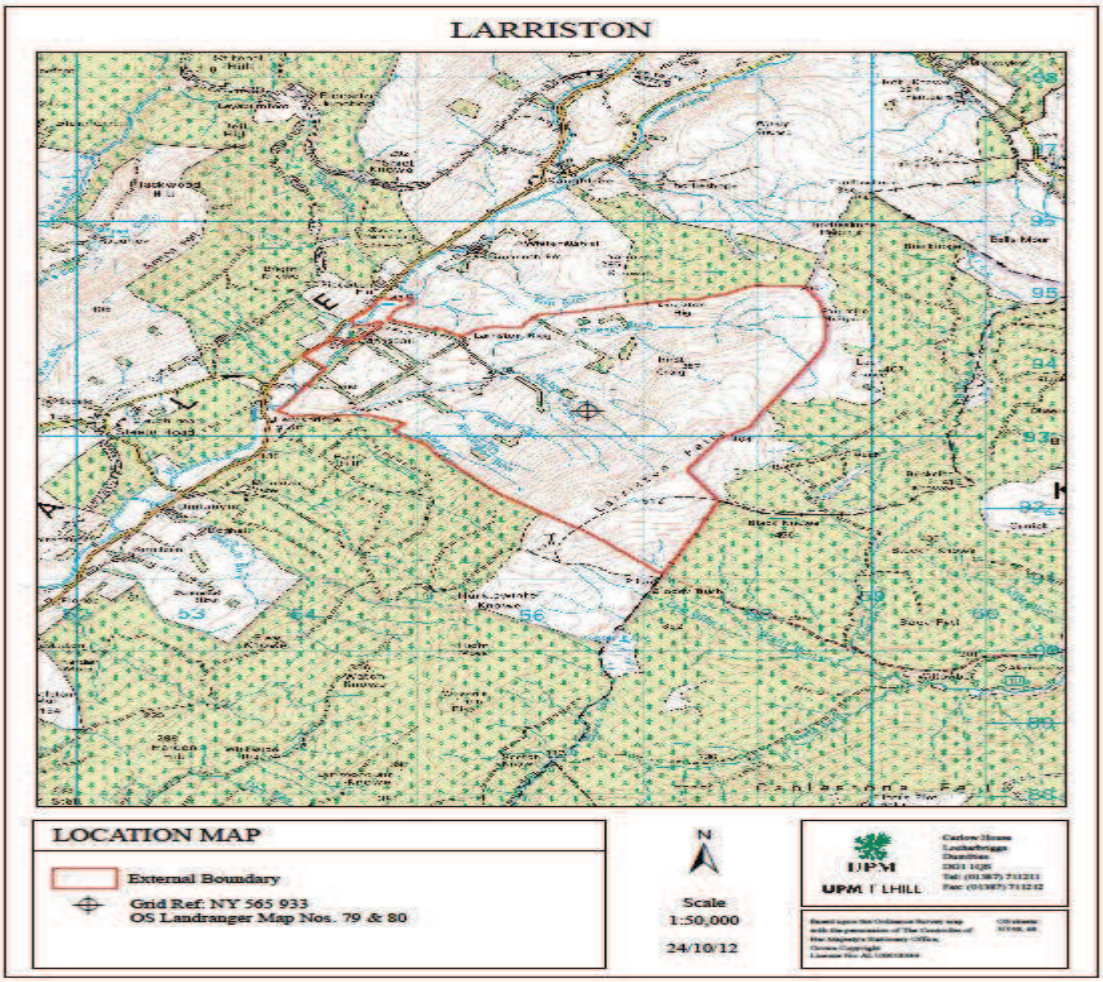
Larriston lies within an area that is defined, in agricultural terms, as mainly being land capable of use as rough grazings (Soil Survey of Scotland, Land Capability for Agriculture). Reflecting this limited agricultural capability, the site is composed of a range of vegetation types including extensive areas of blanket bog (356 ha), marshy grassland (320 ha) and improved grassland (155 ha).These habitats account for 72% of the site.

Other habitats include acidic flush and spring (27 ha), unimproved neutral grassland (24 ha), semi-improved neutral grassland and bracken (68 ha). All of the habitats recorded on

Larriston are typical of an upland fringe setting and have been highly modified by long-term grazing and drainage impacts.

Within the total area of some 1108 ha, 512.52 ha (or 48.9%) is proposed for afforestation. Retention of open ground has been planned to help safeguard areas of archaeological and ecological value, to protect water resources, to provide for internal and external landscape design and to accommodate deer management and public access.

The location of the site is shown below:




## 3. NATIONAL FOREST POLICY

Woodland expansion is a key objective of the Scottish Government to help meet strategic objectives, particularly in relation to counteracting climate change and to stimulate economic development.

The strategic vision for Scottish forestry is contained in the Scottish Forestry Strategy (2006) and the subsequent implementation plans e.g. the Scottish Government's Rationale for Woodland Expansion (2009). The Strategy has an aspiration to increase forest cover from 17.1% to around 25% of Scotland's land area by the second half of this century.

The Strategy identifies a number of woodland creation priorities for Scotland with those most relevant to Halkshill and Blair Park Farm being highlighted:

- **Helping to tackle greenhouse gas emissions.** (Carbon sequestration, timber and biomass production).
- **Restoring lost habitats and adapting to climate change.** (Forest habitat networks and new native woodlands).
- **Helping to manage ecosystem services**. (Sustainable flood management and protection of soil and water resources).
- **Underpinning a sustainable forest products industry.** (Consistent and reliable timber supply for timber processing and wood fuel investments).
- **Supporting rural development.** (Supporting rural businesses and farm diversification).
- **Providing community benefits.** (Provision of welcoming and well-managed woodlands in and around communities).
- **Enhancing urban areas and improving landscapes.**

According to figures published in The Scottish Government's Rationale for Woodland Expansion (2009), the Scottish forestry sector *"sustains 13,200 full-time equivalent jobs, plus around 17,900 full-time equivalent jobs in the tourism and recreation sectors attributable to woodland. Forestry currently makes up about 0.5% of the total gross value added for the Scottish economy, with a proportionally more significant contribution in rural areas".* As well as the £460 million gross value added (GVA) directly attributable to forestry, £209 million GVA of tourism and recreation is attributable to woodlands.

A recommendation of the Woodland Expansion Advisory Group (WEAG, 2012) is the creation of 100,000 ha (10,000 ha annually) of new woodland over the period 2012-22 "*created in ways that meet or exceed modern standards of good practice and deliver multiple benefits"*. The WEAG analysis shows that 46% of Scotland's land is largely unavailable for woodland creation (it is either unsuitable, already wooded or ruled out by policy considerations); and a further 20% is significantly constrained (in particular because of conservation designations). The remaining one third of Scotland's land has the most potential for woodland creation – much of this is farmland, in particular grazing land.

Woodland is a significant carbon sink with woodland creation offering a practical and readily achievable way to improve Scotland's greenhouse gas balance. Woods also provide a sustainable source of near carbon-neutral raw materials. The Scottish Forestry Strategy (2006) states that *"forest management should contribute to climate change mitigation over the long-term through the net capture and storage of carbon in the forest ecosystem and in wood products".*

Creation of new timber producing forests over the next ten years would have a significant positive impact in sustaining timber production and providing long-term confidence for continued investment in the timber processing and wood fuel sector. This is particularly relevant to Ayrshire where there are a number of major timber processing facilities. However, *"current production forecasts indicate that, in less than 20 years, the region will experience a major drop-off in production – particularly from the National Forest Estate. This suggests that new planting of productive conifers will be required to maintain the local contribution to the sustainability of the region's primary and processing sectors"* (Ayrshire and Arran Forestry and Woodland Strategy*).*

## 4. THE FORESTRY PROPOSAL

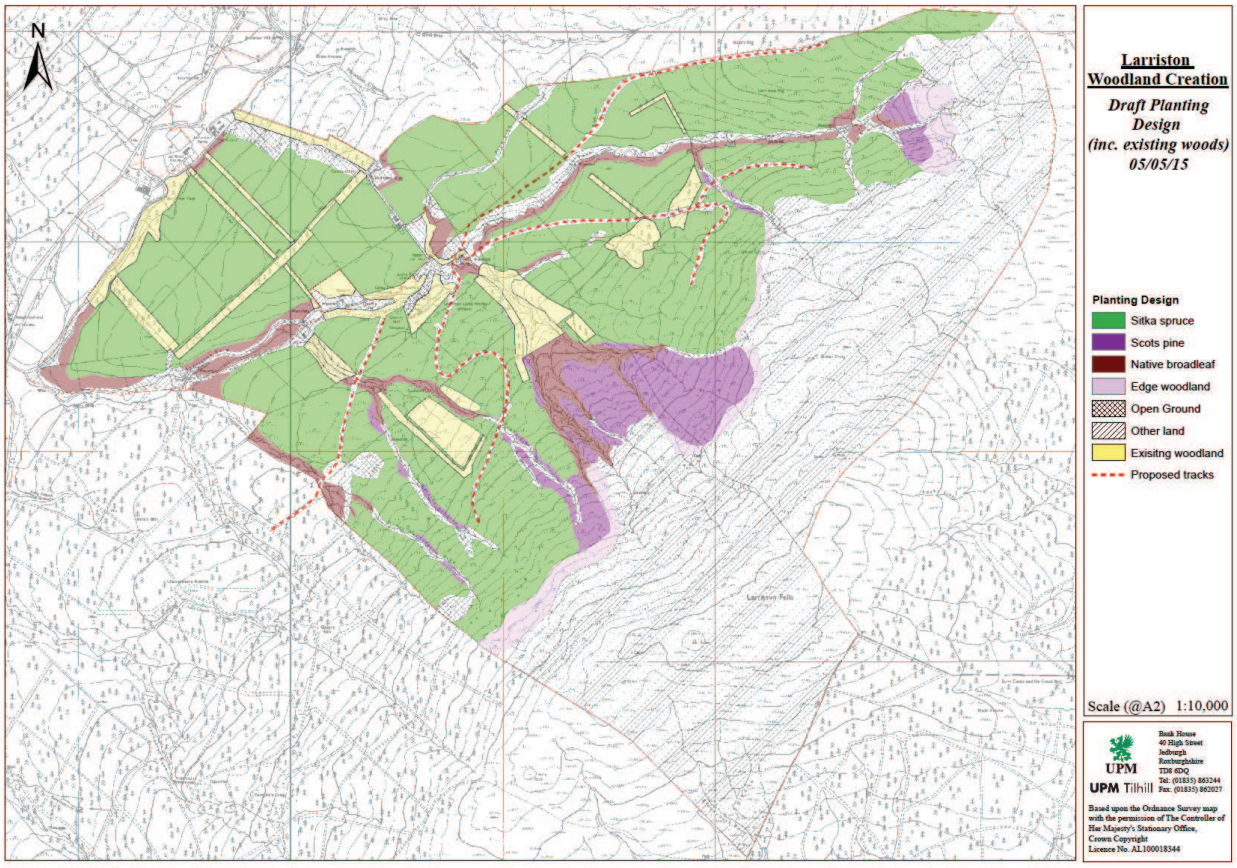
Of the total area of proposed afforestation, 408.22 ha is classed as productive in a commercial sense. The areas of proposed broadleaf native woodland (41.1 ha), low density edge woodland (21 ha) and Scots pine (42.2 ha) are intended to enhance the amenity, landscape and nature conservation value of the forest forming a habitat corridor through the site linking low ground with high.

The owner's objective is to establish a productive woodland, with the right species on the right soil to maximise timber production and sequester carbon. Within this broad objective, every effort has been made to minimise or offset adverse impacts on the archaeological, landscape, ecological and hydrological resources of the site.

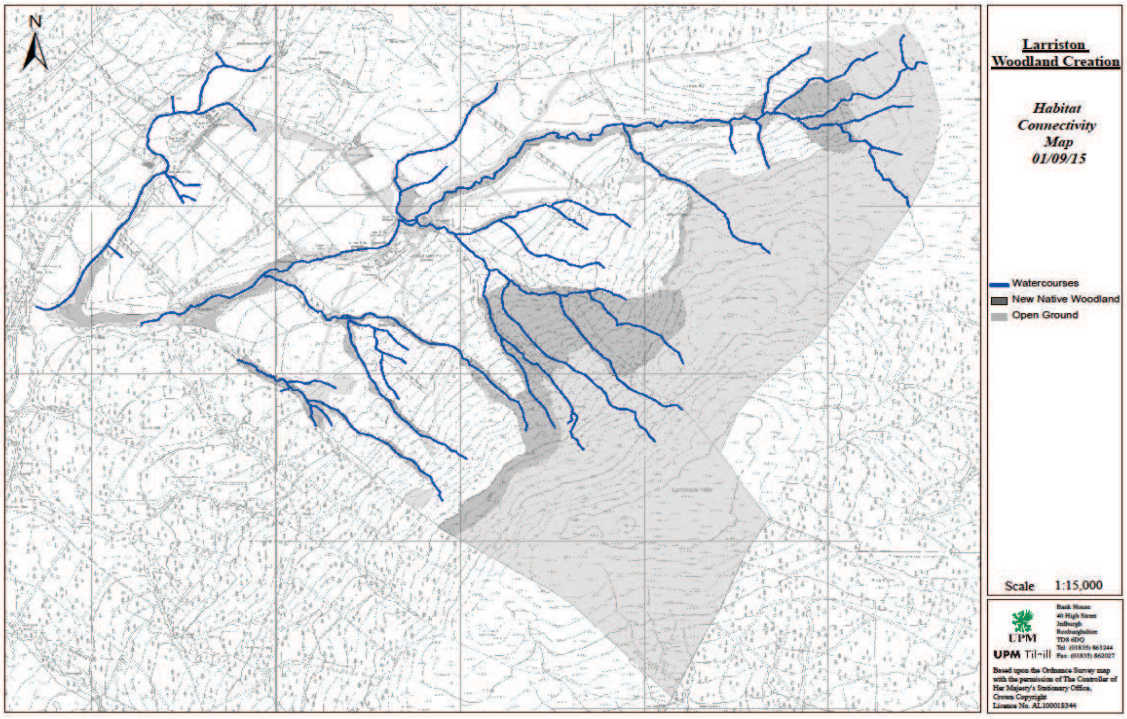
Larriston is serviced by the B6357 an Agreed Timber Haulage Route. Forest roads will be constructed to facilitate forest management operations. A network of rides will be left for future forest road installation, ultimately creating a road network that will efficiently service the whole extent of the site and connect to the B6357 via the existing forest entrance at Hewisbridge Forest.

Unplanted ground reflects the presence of extensive areas of blanket peat above the 400 metre contour, archaeological sites and response to modern forest design principles.

The productive conifer woodland will be dominated by Sitka Spruce, silviculturally suited to the soils and exposure of the site and contributing 70% to the proposed woodland area. Other conifers will include Douglas fir/Norway spruce and Scots pine for both timber production and landscape/habitat enhancement respectively. Broadleaves will also be planted to help develop a native woodland habitat network and a local amenity resource. The proposed design is shown below:




The unplanted area and habitat networks is shown on the map below:




The Environmental Statement has been informed by a number of surveys including an archaeological desk-top and walk-over survey, landscape and visual impact assessment, Phase I Habitat Survey/National Vegetation Classification Survey, peat depth survey, soil survey, breeding bird survey and protected species surveys.

Consultation included the formal Scoping Meeting of the 11th March 2014. As the proposals developed, consultation continued thereafter with Forestry Commission Scotland and a community drop-in day in Newcastleton prior to the statutory consultation period.

The Scoping Meeting, chaired by Forestry Commission Scotland, described the outline proposals and provided the opportunity for comment and feedback. Following this meeting, all consultees were invited to make further comment and this was incorporated into the formal Scoping Report which provided the scope and direction for this Environmental Statement.

The overall objectives of the Environmental Statement are to:

- Identify the main, or significant, environmental issues relating to the proposed woodland development.

- Identify the nature and scale of the environmental effects that are likely to result from the establishment of mixed woodland.

- Identify areas where adverse impacts are minimised and positive impacts maximised.

The primary aims of the planting proposal:

- To establish a multi-purpose mixed woodland on previously grazed hill land for wood and fuel production and to help underpin a sustainable forest products industry, as an alternative to upland sheep farming.

- To enhance the landscape and maintain and extend the existing areas of semi-natural woodland.

- To provide community benefits through new opportunities for responsible public access, recreation and interpretation of the cultural resource.

- To create a carbon sink and improve Scotland's greenhouse gas balance.

The area statement below is based on the total (gross) area of the proposal which is 1108 ha and the net planting area of 512.52 ha.

**Larriston: Area Statement**

| | | | |
|---|---|---|---|
| TOTAL PROJECT AREA | 1108.2 ha | 100% | % of net planted area * |
| EXISTING WOODS – SEMI-NATURAL AND PLANTED | 56.6 ha | 5.11% | 0 |
| DOUGLAS FIR/NORWAY SPRUCE | 3.2 ha | 0.29% | 0.55 |
| MIXED BROADLEAVES | 41.1 ha | 3.71% | 7.1 |
| WOODLAND EDGE/LOW DENSITY PLANTING | 21 | 1.89 | 3.6 |
| SCOTS PINE | 42.2 | 3.81 | 7.30 |
| SITKA SPRUCE | 405.02 | 36.55 | 70 |
| OPEN GROUND – UNPLANTED (PLUS ROADS) | 67.4 | 6.08 | 11.6 |
| UNPLANTED | 471.68 | 42.56 | 0 |

*Net planted area or forest management unit (FMU) is 512.52 ha of proposed planting plus open ground component of 67.4 ha.

## 5. ENVIRONMENTAL IMPACT ASSESSMENT OF THE FORESTRY PROPOSAL

Environmental Impact Assessment (EIA) is a process that considers how a proposed development would change existing environmental conditions and what the consequences may be. It therefore informs the project design and decision making processes.

The process, reported in full in the Environmental Statement, comprises the following stages;

- Scoping – to define the issues which are to form the basis of the EIA.
- Consultation – to supplement Scoping and agree any specific methodologies.
- Establishment of the site baseline using existing information and/or novel survey.
- Characterisation of the value or sensitivity of identified important characteristics of the environment (receptors.)
- Prediction of the potential change upon the receptors and potential consequences.
- Mitigation of potential impact.

Assessment of impact is based upon established methodologies, techniques and criteria, applied as appropriate.

As part of the EIA process a wide-ranging consultation programme took place. This included the formal Scoping Meeting of the 11th March 2014. As the proposals developed, consultation continued thereafter with Forestry Commission Scotland and the local community, including two drop-in day at Newcastleton Village Hall.

The Scoping Meeting described the outline proposals and provided the opportunity for comment and feedback. Following this meeting, all consultees were invited to make further comment and this was incorporated into the formal Scoping Report which provided the scope and direction for this Environmental Statement.

The main issues, or sensitivities, were identified and summarised in FC's EIA Determination letter. The potential issues are:

- impacts on cultural heritage, particularly the location and extent of archaeological features that may be affected by the proposal;

- landscape and visual impacts from agreed viewpoints;

- impacts on the ecology of the site, particularly those relating to open ground habitats and associated impacts on the breeding bird assemblage and protected species;

- impacts of drainage and afforestation on the hydrology of the site and the risk of diffuse pollution to water courses;

- socio-economic impacts in terms of change of employment from agriculture to forestry;

- impacts of future transport of timber and timber products from the forest particularly those relating to the public road system;

- impacts on the current public use of the site and the implications of afforestation on responsible public access across the site.

This Environmental Statement, requested by Forestry Commission Scotland in their letter dated 27th January 2014, addresses the above issues and submits the following conclusions:

## 6. THE FORESTRY PROPOSAL AND THE ITERATIVE DESIGN PROCESS

The design of the proposed forest evolved over time in environmental information contained within the commissioned surveys. From the initial concept map produced in February 2014, a number of revisions of the planting design have been produced to inform the final planting proposal, which was produced in May 2015. Rather than a single post-design environmental appraisal of identified impacts, e.g. the impact upon views, potentially significant impacts have been identified during the iterative design process and every effort made to incorporate appropriate mitigation within the evolving design. This has usually resulted in a change to the forest design, e.g. the re-design of woodland edge. This has ensured that the findings of surveys and the views of consultees and the local community have been used to inform the final proposed woodland design and thus achieve a "best fit"

within the environment, rather than a final woodland design with little input and a long list of mitigation measures.

## 7. CONCLUSIONS FROM THE LARRISTON ENVIRONMENTAL STATEMENT

**This Environmental Statement, requested by Forestry Commission Scotland addresses issues outlined at Scoping and submits the following conclusions:**

### 7.1 Cultural heritage impacts.

The commissioned cultural heritage report considered the likely impacts on the archaeology and built heritage (historic environment assets) of the proposed woodland scheme. The assessment has been informed by a range of publicly available information sources including the Sites and Monuments Record and the National Monuments Record of Scotland (NMRS).

The assessment was designed to a) identify and evaluate any historic environment assets within the proposed development site through examination of desk-based sources, detailed field reconnaissance and b) to identify historic environment assets within 2km of the proposed development site boundary that could have their settings affected.

The archaeological survey identified a total of 66 sites, of which 8 were new sites, previously unidentified by the preliminary research. The majority of the cultural remains are post-medieval and indicative of the pastoral and agricultural usage of the landscape comprising sheepfolds, boundaries and rig and furrow. A more recent industrial history is located around the Larriston Lime Works, Riccarton Mill, the Tile Works plus a series of bell pits. Of the known sites none have legal protection.

Assessment of the cultural heritage sites shows them to be of negligible/low significance (Cameron, 2014). The landscape is one dominated by pastoral farming and the majority of the sites relate to this activity. There is however some sites assessed as having moderate significance such as possible dwellings, the quarrying landscape and the lime kilns.

Large areas of the proposed planting are allocated for Sitka Spruce while other areas are to be left as open ground, are proposed for native woodland with glades, or will be in areas of transition to open ground. While the planting of Sitka Spruce will have a high level of impact on the settings of the identified remains, the building in of open areas or buffer zones

[around all sites] within the proposal should allow the standing remains to be adequately protected.

All identified cultural sites will be avoided by the proposed planting using a buffer of circa 5 m. With the exception of a small number of sites, the significance of these cultural remains is low and avoidance during planting is considered enough to reduce the direct impact and the impact upon setting is considered to be negligible. Buffering of sites will be undertaken by a qualified archaeologist. Avoidance will result in a residual impact that is judged to be negligible.

Any additional potential archaeological remains identified by the site manager during the site planning phase or by the machine operators during the course of site preparation operations, will be identified on the ground and the local authority archaeologist consulted with a view to assessing the significance of such sites.

Indirect impacts arising from the proposed development on the setting of historic environment assets within the wider landscape are considered to be not significant.

***In summary, the archaeological significance of the cultural heritage remains within Larriston is primarily deemed to be low. Mitigation such as avoidance, through a buffer zone approach, prior to forest operations is considered enough to reduce direct impacts and impacts upon setting. Avoidance will result in a residual impact judged to be negligible.***

**7.2 Landscape impacts.**

The main impact of the proposed scheme would be the infilling of open hill ground, lower ground pasture and between existing conifer plantations.

The landscape context and current character of the area at both a regional and local level is described using existing studies, photographs and field visits and the value attributed to the landscape identified from current policies.

The potential visibility of the proposal was identified through site visits and the construction of a number of digital views. Four representative views were selected for evaluation in discussion with the Scottish Borders Regional Council Landscape Architect, three from the B6357 and one from the former railway line which now forms part of the “Waverley Way”.

The general landscape character is one of simple large scale rolling uplands dominated by conifer forest with extensive harvesting activity and enclosed, diverse, smaller scale valleys of improved pasture, small woods and belts of trees on lower ground. The area is not protected by any landscape designation and the sensitivity of the landscape was judged to be low. The Scottish Borders Woodland Strategy identifies the area as “Preferred” and “Potential” for both upland conifer and native and riparian woodland and the principle of further planting was considered to be in accord with the established regional landscape character.

A local appraisal of the landscape character identifies three areas:

- Larriston Fell: an area of simple, rolling moorland rising towards the high point of Larriston Fell and bounded on two sides by straight edged, mature conifer forest.
- Larriston Rigg: a relatively diverse smooth ridge characterised by shelterbelts, stone walls and lines of single trees enclosing rectangular grass pastures associated with Larriston House policies.
- Larriston Burn: a small scale hidden valley.

The scheme presented at the scoping stage was appraised against the UK Forestry Standard Guidelines, *Forests and Landscape* and potential short, medium and long term effects identified. As a result of this analysis, further detailed survey information and discussions with client and archaeological consultant, a number of planting iterations were considered resulting in the proposed planting design shown.

There would be no internationally, nationally or locally designated landscapes affected by the project and the impact of further planting on an area already dominated by large scale spruce forest was judged to be of minor magnitude and not significant.

Adverse impacts would arise where there are conflicts with the principles described in the landscape guidelines. Beneficial impacts would arise where the proposals will improve some aspect of the present landscape or view. Otherwise, the planting of forest and woodland was regarded as neutral.

Locally, the impact of the proposed planting design on the hill ground of Larriston Fell was considered to be of major magnitude, significant at a local level, on balance beneficial in that the current geometric side margins and small conifer blocks would be absorbed into the new planting but some aspects of the proposal (diversity, relationship of the upper margin to the topography) would be suboptimal in meeting all the landscape guidelines. Part of the scheme will affect the early 19th Century policies of Larriston House and the impact on Larriston Rigg was considered to be of major magnitude, significant at a local level and

mainly adverse in terms of reduction of diversity and loss of the pattern of fields and policy woodland. Retention of the open fields on the valley floor accords with the landscape character.

The area is of limited visibility although partial views are obtained from various places along the public road and from lightly used recreation and hill routes and summits in the area. In relation to the context and the likely number of viewers, the sensitivity of the four views selected for detailed appraisal was judged to be low. From the B6357 the impact on these views was considered to be minor or moderate in magnitude, beneficial and adverse in nature but not significant. Changes would be prominent in the view from the Waverley Way but need to be judged in the context of the adjacent forest which, as it grows, will intermittently obscure views from here. In this transitional context, the overall impact was judged to be major in magnitude and both adverse and beneficial but not significant. New tracks would be visible on the lower half of the hill ground from the Waverley Way and from the B6357 at Hewis Bridge, but views would be of relatively short duration lasting until the adjacent woodland reached an age of about 15 years and should be viewed in the context of existing forest roads and operations in the area and the potential impact was not judged significant.

***There would be some beneficial change to both the landscape and visual resource as a result of this project, but because there are also adverse impacts, it was considered that while the likely impact of most of these changes was not generally judged to be significant. The project would affect the early 19th Century policies of Larriston House and this impact was considered to be of major magnitude, significant at a local level and adverse in terms of reduction of diversity and loss of the pattern of fields and policy woodland.***

### 7.3 Ecological impacts

The main ecological impact of the proposed scheme is the loss of open ground habitats to productive woodland with concomitant effects on species that require open ground for all, or part of, their life cycle.

Habitats

The proposed project has been subject to a full habitat survey in 2014. Existing information and field work were used to evaluate the current, or baseline, ecological value of existing habitats and assess the potential impacts of planting productive woodland.

The area has historically been managed as extensive hill grazing land. The dominant vegetation type, occupying some 356 ha is blanket bog. Marshy grassland is the second most common habitat type on the site and covers an area of 320 ha. Other habitats include improved grassland (155.21 ha), coniferous woodland (75.29 ha), bracken (68.29 ha), unimproved neutral grassland (23.59 ha) and unimproved acid grassland (20.93).

The mapped vegetation communities reflect the topography of the site; most of the mid slopes are composed of marshy grassland with small patches of modified bog while bog and modified bog occupy the flattest areas on the hilltops. The lower lying fields, have been reseeded to create improved grassland covering an area of 155.21 ha.

The main habitat interest of the site lies within the blanket bog, marshy grassland, rich-fen communities of the Larriston Burn and the steep slopes of the associated sikes which contain small areas of both unimproved neutral and calcareous grassland.

Blanket bog, marshy grassland, base-rich grassland and unimproved neutral grassland are priority habitats within the UK Biodiversity Action Plan which is reflected in the Scottish Borders Local Biodiversity Action Plan.

All areas of blanket peat (>50cms deep) will be retained as open ground habitat. In addition, areas of unimproved neutral and calcareous grassland will not be subject to the afforestation proposals. Further, all these areas will be buffered to ensure they are not directly or indirectly impacted by any proposed ground preparation, drainage or planting operations.

The main habitats that will be subject to the proposed afforestation proposals will be improved grassland, acid grassland and marshy grassland. Of these, improved grassland is of low ecological value. Unimproved acid grassland at Larriston is considered to be of low ecological importance at the local scale while the wet/marshy grasslands are more species-rich (than acid grassland) and in view of their UK HAP status, they have a medium local importance and low regional importance.

*Acid grassland*

Acid grassland is one of the most widespread and common habitat in the uplands with an estimate of the upland resource being in excess of 1,200,000 ha. Most having been derived from the ecological over-grazing of dwarf shrub-heath. It has been estimated that within this

proposal some 8.73 ha will be subject to afforestation leaving a residual area of 12.2 ha.

The ecological significance of this change is considered to be low on account of the widespread nature of this habitat across the UK and the low ecological value and area of the Larriston examples.

*Marshy grassland (including acid to neutral flushes)*

Marshy grassland is a more limited habitat within the uplands (estimated at 56,000 ha) compared to acid grassland. The habitat survey for Larriston considered the site to hold some 320.98 ha with 209 ha potentially subject to afforestation leaving a residual area of 112 ha.

The ecological impact of afforestation on this habitat is therefore considered to be significant at the regional scale on account of its more limited extent, the area of the habitat within Larriston and the higher species richness compared to acid grassland.

*Base-rich (calcareous) grassland*

Within the UK there is an estimated 40,000 to 50,000 ha of this habitat. There are no figures for the area of this habitat within the LBAP. The habitat survey for Larriston identified 4.7 ha of this vegetation community which will be protected from the afforestation proposals as part of the unplanted ground.

*Unimproved neutral grassland*

Within the UK there is thought to be less than 15,000 ha of this habitat so the figure for the Scottish Borders is likely to be small. There are no figures for the area of this habitat within the LBAP. An area of circa 23.59 ha was identified as part of the habitat survey for this site which will be protected from any proposed afforestation as part of the unplanted ground ground.

***The impact of this project on marshy grassland, of regional ecological value, is considered as ecologically adverse resulting in the loss of 209 ha. This means the loss or alteration of one or more key elements of the baseline condition such that the post development character/composition of the baseline condition will be materially***

***changed. Some 112 ha will be retained post development.***

Breeding birds

The project area has been subject to a breeding bird survey to help forewarn of potentially negative impacts which afforestation might have on species of bird presently occupying open hill ground. Breeding bird surveys were carried out in 2014. A total of 45 species was recorded, 39 of which are likely to breed on site. Of these, 20 are of conservation concern in the UK (Red or Amber List species), nine of which are also UK BAP priority species (JNCC 2007).

The most significant impact of loss of open ground relates to those species where the background population trend is one of decline. The possible displacement from the site of a proportion of the breeding population of nationally declining species of Curlew and Skylark is judged to be a significant adverse impact. However, it should be noted that both species are present in very low numbers on Larriston, with neither making up more than 0.01% of the Scottish population or 0.006% of the UK breeding population of that species.

In the short-term, project implementation is likely to result in birds of the open hill benefitting from the removal of sheep grazing. However, abundance of these species is likely to decline as the canopy of planted conifers closes in approximately 10 years. The adverse impacts of woodland planting range from reduced breeding performance to displacement of birds from the planting area. Direct effects involve loss of feeding and breeding areas. Indirect effects may occur due to wider-scale influences such as edge effects, which may result in increased nest predation by crows and foxes on birds nesting in open ground adjacent to planted areas.

The project will create a range of new habitats on site, some transient (newly-planted, pre-thicket and thicket stage plantation) others more permanent (coniferous and deciduous woodland) which will benefit bird communities of scrub and woodland habitats. The retention of 539.08 ha of unplanted ground (48.6% of the 1002 ha site) should help to reduce displacement effects and recovery of moorland vegetation should benefit a range of species. The inclusion of 21 ha of low density broadleaf and 42.2 ha of Scots pine planting on the forest/moorland edge is likely to provide suitable habitat for a number of species of conservation concern, particularly Hen Harrier and Black Grouse. On balance, the breeding bird assemblage at Larriston is expected to benefit from the planting proposal.

***The magnitude of impact upon passerines is generally assessed to be negligible due to their very low abundance on site, with the exception of Skylark and Meadow Pipit. Although two pairs of Grasshopper Warbler may be lost through the loss of open ground to closed canopy woodland, this species is likely to increase in the short-term in newly planted areas (Fuller 1982) and in the medium-long term may become established in unplanted riparian areas within the forest. Red Grouse are present on areas of blanket bog, which will not be planted. Magnitude of impact upon waders is assessed to be low due to their current low abundance on site. In the short-term, Barn Owl are likely to benefit from the proposal, and in the longer term are unlikely to be adversely affected.***

Protected species (non-birds)

The site was subject to an Otter, Water Vole, Badger and Bat survey using standard methodology. The presence of Red Squirrel in the local area was ascertained using local knowledge and recently submitted species records. The protected species survey aimed to identify places of shelter which may potentially be impacted by the building or upgrading of tracks. Nine Otter holts including structures potentially used for breeding were recorded. Use of the site by Badger was high with 28 sett entrances recorded on site, 21 of which were in current use. A sample of lower ground on the property recorded five of the eight Bat species found in the Scottish Borders. There was no evidence of Water Vole using the site.

Native woodland woodland establishment according to site type along riparian corridors is likely to improve the prospects for Otter through provision of additional cover and by improving the biological productivity of watercourses. Native and conifer woodland may also provide habitat for Badger in areas with suitable soils for sett construction. Bats may use conifer woodland to forage, although semi-natural woodland along riparian corridors is likely to be most beneficial by improving habitat connectivity and providing good foraging and roosting opportunities. Woodland planting is likely to benefit Red Squirrels by improved habitat connectivity, provision of a variety of food resources, and provision of preferred tree species for drey building.

In recognition of the presence of protected species within the site, all forest management operatives will be briefed using the UPM Tilhill Toolbox Talks. This requires that all works in the vicinity of protected species sightings/structures stops immediately upon discovery. Contact will be made with one of the UPM Tilhill ecologists in order to assess the situation and take action to ensure legal compliance. All water courses will be buffered to ensure that

diffuse pollution does not compromise water quality, a key consideration in maintaining healthy fish populations for foraging Otters.

***The impact of proposed woodland planting is judged to have a significant beneficial impact upon otter and red squirrel. Bats are likely to benefit from areas of broadleaved woodland but an adverse impact is expected in areas of conifer woodland, although both of these impacts are judged to be not significant. No significant impact upon badgers as a result of the planting proposal is expected.***

**7.4 Hydrology**

Conversion of land from extensive stock grazing to woodland may have a number of hydrological consequences with large scale afforestation in particular having a number of hydrological impacts. Potentially negative consequences, in the case of Larriston, include reduction of water quality and increased risk of flooding. Equally, there are a number of potential benefits including improved water quality by cessation of potentially polluting agricultural activities and reduced risk of flooding by improved catchment management.

***Water quality***

Water quality can be adversely affected by ground preparation, forest road construction and chemical use if best practice guidance is not applied. The proposed methods of woodland establishment including continuous mounding, screefing and shallow ploughing will minimise the impact of planting on soils and water. All riparian zones within the project area will have defined buffer zones where no drainage, ground preparation or chemical use will occur.

A Diffuse Pollution Control Plan (DPCP) has been drafted to cover roading, drainage and ground preparation operations. This will be discussed and agreed with FCS and SEPA prior to any project implementation. The DPCP represents the application of forest industry best practice contained within the Forests and Water Guidelines and the General Binding Rules.

In terms of the current classification status (SEPA) it is noted that:

- The Larriston Burn is classified as having an overall status of Good and an overall ecological status of Good.
- The Liddel Water is classified as having an overall status of Moderate with an overall ecological status of Moderate. The main pressure on this water body is diffuse pollution sources.

The development of woodland will (in part) help address the Moderate status of the Liddel Water. Common issues encountered in upland catchments include water contamination by faecal indicator organisms from sheep and cattle grazing, sediment delivery plus associated nutrient losses linked to soil poaching, soil compaction (leading to increased run-off), damage to streamside areas by livestock and exacerbation of landslips due to long-term grazing impacts.

In the longer term, the creation of woodland habitats, including native riparian woodland, as envisaged by the proposed woodland design, will boost biological productivity of watercourses while enhancing silt and sediment retention. Woodland planting will replace previous pressures such as animal grazing and associated faecal and nutrient inputs, plus help to reduce soil damage and erosion.

***Flood risk***

Flood risk can be increased by ground preparation and site drainage activities if best practice is not followed. Equally, flood risk can be reduced as a result of afforestation and improved catchment management.

There is a Potentially Vulnerable Area (PVA) in relation to flood risk (SEPA, Local Plan Districts and Potentially Vulnerable Areas) at Newcastleton on the Liddel Water some 6 km south west of Larriston. The PVA Datasheet notes that in relation to catchment hydrology there is Moderate catchment flood storage and attenuation capacity. This is partly due to the dense network of agricultural surface drains/grips and mole drains across much of the catchment including Larriston. Many of these drain directly into adjacent watercourses and are therefore not compliant with current best practice.

Trees can help alleviate flooding; by their greater water use, due to the significantly higher infiltration rates of woodland soils, and by the greater hydraulic roughness of floodplain and riparian woodland. The proposed new woodland will dampen extreme variations in water run-off and therefore help address the moderate catchment flood storage and attenuation identified within the PVA Datasheet.

The management of the drainage system for this proposed woodland scheme will ensure that large quantities of surface water do not build up and that water flows off the site in a managed and controlled (slow) manner. Drains will not connect to water courses and where possible existing non-compliant agricultural drains (i.e. those connecting directly to

watercourses) will be blanked off.

***Overall, the impact of this project on the hydrology of the site is deemed to be neutral in the short-term but beneficial and significant over the medium to long-term. In relation to water quality, ground preparation, herbicide use, track construction and watercourse crossings will comply with Forests and Water, associated General Binding Rules and SEPA registration/licensing. There will be a low risk of diffuse pollution through application of buffer zones and a Diffuse Pollution Control Plan.***

***In relation to flood risk, there is a short-term risk from ground preparation and drainage operations which will be controlled by a buffer zone approach and DPCP. In the medium to long-term, afforestation will cause peak flow flood response to lengthen and increase flood storage and attenuation capacity.***

**7.5 Economic impacts – employment**

A key document when considering new planting in the Scottish Borders is the Woodland Strategy Technical Advice Note (2012) which requires a consideration of impacts in relation to employment, use of local skills and the need to consider integrated land management options.

Economic comparisons of agriculture versus forestry in upland situations has recently been made (Bell 2014) which shows:

- Forestry produces three times the economic output of farming before subsidy.
- Forestry's spending in the local economy is double that of farming.
- Forestry trades at a significant surplus, farming at a loss before subsidy.

Furthermore, farming requires a public spend of £22,600 per FTE to survive - forestry receives a modest contribution (one sixth that of farming) towards the provision of public benefits.

Analysis by the Woodland Expansion Advisory Group of the impact of the Scottish Government's woodland creation target on livestock farming suggests that creating 100,000

hectares of woodland over 10 years on such land would, at worst, cause a 2% reduction in livestock numbers.

Larriston Farm extends to approximately 1108 ha and in agricultural terms can be described as having 155 ha of improved pasture and 897 ha of rough grazing and 56 ha of existing woodland, tracks, scree and other. The farm currently carries 1,200 Blackface ewes and followers along with 40 to 50 summer grazing cattle. The commissioned economic analysis was based on the original concept planting design where the planting proposals were to plant 625 hectares of the farm leaving approximately 360 ha of poor quality rough grazing on the highest ground along the south-eastern boundary unplanted.

***Loss of agricultural capacity***

The estimated stock numbers for Larriston, prior to purchase, was 1,200 hill ewes and followers, 400 mule ewes and followers and 35 suckler cows and followers. If this agricultural capacity were lost in its entirety, (the concept planting design was to plant 625 ha of the 1108 ha present) the loss of capacity would not seem significant at a national or regional level when compared with Scottish Government census figures showing the Scottish national breeding ewe flock totalling 2.6 million ewes of which the Scottish Borders regional flock comprises 438,000 ewes.

Statistics at a more local level are not readily available but if the maximum potential flock was 1,920 ewes this represents only 0.4% of the total number of ewes in the Scottish Borders region.

The loss of agricultural capacity is unlikely to have a detrimental effect on other agricultural units in the locality as they are run independently of each other. Any unplanted areas could be made available to neighbouring units allowing them to increase in size and potentially strengthen their economics.

***Employment***

The farming business at Larriston, prior to purchase by the current owner, part employed one full time shepherd (also part employed by the larger neighbouring unit that the farm was run in conjunction with) as well as employing casual help at lambing time. The total direct employment probably totalled 1.5 Full Time Equivalents (FTEs).

Detailed analysis by Bell (2014) concluded forestry supporting the same number of direct and indirect jobs as farming once the forest approaches a “normalised” 40 year rotation but during the development phase building up to this and at the felling/restocking phase, a higher number of jobs were created.

There is no reason why this should not be the case at Larriston, with planting initially creating more employment than agriculture and in the longer term at least an equivalent amount.

Where possible, all contractors used on the site, including ground preparation, fencing, roading and planting contractors, will be locally based.

***Associated assets and integration of forestry with agriculture***

The Woodland Strategy Technical Advice Note 2012 requires consideration of associated assets such as buildings, use of large unplanted areas and integration with agriculture to maximise rural employment opportunities.

The proposed woodland design has ensured that the amenity and development potential of the existing properties will not be adversely affected. Indeed, taking Larriston Farm as a whole, the planting proposals (with their ability to provide an economic return significantly in excess of sheep farming) could provide funds to invest for example in the former estate courtyard.

Finding an economic use for the 472 hectares of unplanted ground on the south-eastern boundary of the unit will remain a challenge, such ground is loss making with regard to sheep farming and few other agricultural options exist. However, it will be stock fenced giving the potential for grazing in the future.

***In looking at the current base-line situation, the planting proposals would appear to be at worst neutral or at best positive as compared to sheep farming with regard to employment and its effects on associated assets such as the buildings and properties present.***

### 7.6 Timber haulage

The potential impacts of timber haulage, should this scheme proceed, includes an increase in timber traffic levels leading to the potential for disruption and inconvenience to the local community. These impacts will not take place until circa 2045 but there will a short-term increase in traffic movements during the woodland establishment phase and shelterbelt fellings but this is considered to have minimal potential for disruption.

***Short-term***

Deliveries of plants and materials will take place over a 6 month period during the initial planting operations. These will be limited to standard rigid wagons at most on a weekly basis during the planting phase. There will also be low loading of excavators for ground preparation and roading works which will be limited to one trip each way per machine with potentially 5 machines being brought in. Otherwise this phase will be limited to light vehicles for labour and site supervisors.

Following the completion of the initial establishment works felling of the existing mature & semi-mature conifer shelterbelts will be undertaken should market conditions be favourable. The timber will be extracted to a location where it can be easily accessed and uplifted by timber lorries for onward transport. This haulage will be undertaken by standard configuration timber lorries (44t GVW). Access will be directly onto the B6357, which is an approved route for timber haulage. Approximately 4,000 tonnes of timber will be produced over a 10-12 week period. This will equate to 148 lorry loads of timber, or on average 1.7 to 2.1 lorries per day.

All of the above vehicle movements relating to the establishment phase and haulage of timber produced through harvesting of shelterbelts will access the site via the existing access road through Larriston Farm, and will exit onto the B6357 at NY542943.

***Long-term***

Should this scheme proceed, timber haulage will be from Larriston using a forest road connection into the adjacent Hewisbridge plantation. From here the timber will use the existing Hewisbridge exit onto the B6357, directly onto and Agreed Timber Transport Route.

The projected timber production from Larriston is expected to be 8,000 tonnes per annum for a twenty year first rotation period (producing 160,000 tonnes in total) commencing around 2045 (400 ha @ average 400T per ha). A typical harvesting unit currently produces around 500 tonnes of timber per week over a typical 18 week working period. Timber haulage over a twenty week period would result in the movement of 450 tonnes from site per week (25 tonnes per load) which equates to 18 loads per day per five day week or 3.6 loads per day. All of this timber would currently pass through Hewisbridge and then onto the B6357 using the existing exit point.

By way of mitigating potential impacts, all timber transport will follow the Timber Transport Management: Best Practice Guide. This aims to ensure that best practice involves the forest owner and agent considering the status of the roads and the impact on communities well in advance of planned harvesting and seeking agreed solutions where issues arise. Timber transport will also follow the Road Haulage of Round Timber Code of Practice which aims to "*improve the efficiency, safety and environmental standards of timber transport*".

Prior to felling operations, discussions will take place with the Local Authority. These will cover mitigation options such as management of timber traffic to avoid peak times and as a result improve the interface with other road users. Selecting the best route in terms of length, time, safety, community impacts is of paramount importance in terms of timber transport as are planning operations to minimise the frequency of vehicle movements on a particular route and avoiding convoys of timber vehicles on public roads. These mitigation measures are captured within the Road Haulage of Round Timber Code of Practice which will be applied to any future harvesting programme at Larriston.

***The impact of timber haulage on the infrastructure of surrounding roads and disruption to local users is likely to be adverse in the long-term though this can, in part, be mitigated by use of advances in technology, sensitive vehicle configurations and application of best practice.***

**7.7 Public access**

A project of this nature can result, if poorly planned, in the loss of or impeded public access as a result of establishment of closed canopy woodland and deer fencing. Viewpoints from the site can also be lost as a result of woodland establishment. Equally, access

opportunities will be enhanced as a result of track construction and internal views will be improved by use of open space and broadleaf planting.

Local Authority data was used to help assess the current access arrangements within and beyond Larriston. This has ensured that the current access routes have been taken fully into account in the design of the proposed planting scheme.

It is anticipated that recreational users will increase as a result of project implementation with walkers and cyclists taking advantage of improved access opportunities. The change of ownership and direction of land management has therefore created an opportunity to encourage responsible public access as a result of track creation and ensuring that this links with known routes used by the public. The type of user is however likely to change, with those more keen, or confident, in using defined tracks displacing those for whom an open, treeless landscape is the attraction.

All current defined access routes within the property will be maintained and protected from all operational activities and tree planting will be held back to prevent the eventual spread of trees compromising the public access routes. A number of new tracks will be created resulting in enhanced access opportunities including links to Core Path 114. Furthermore, the altitudinal planting limit is the 400 metre contour. This will ensure that the hill tops along the Larriston Fells will remain open both as areas of public resort and maintenance of views across the wider landscape. A large area of Scots pine and low density broadleaf planting will help “soften” the forest edge when viewed from the east.

Overall there is no anticipated loss of public access to the estate or surrounding hills, no loss of views from hill tops and enhanced access opportunities as a result of project implementation.

***The impact of this project on public access is deemed to be positive and significant at the local scale.***