

Threestoneburn EIA harvesting input.

OBJECTIVE

To convert the predominantly coniferous plantation to a mixture of blanket bog and heather moor with riparian native broadleaf planting.

METHOD

To achieve the objective as much of the timber, branches and needles as possible will need to be removed from the site for the following reasons-

- to reduce the nutrient status of the area, thus reducing the competitive advantage of other plant species over the heather and ensuring a quicker return to heather moorland
- to remove the physical obstructions of logs and branches from the site to aid future moorland management practices and access
- to enable remedial work to be undertaken to disrupt the drainage system established prior to the tree planting. This will heighten the water table and help safe guard the peat from drying out.

DETAIL

1. Removal of trees from site

In order to achieve maximum removal of stems, branches and needles from site the following method will be employed where ground conditions and soil type permits.

- Trees felled as close to the ground as possible, either mechanically by felling head, or manually using a chainsaw, A limited amount of pre-felling brashing may be required to enable felling and harvesting heads to grip the stems. This will be done manually by using a chainsaw.
- Whole trees will be dragged using a clam bunk to the nearest roadside. Where possible all dead stems will also be extracted by the same method.
- At roadside the stems will be delimbed and crosscut into merchantable products for onward transport to timber markets.
- The branches, tops, unmerchantable stems, and off cuts will be stored on site for further processing before being transported to biofuel markets.

Clambunk extracting whole trees to roadside



It is recognised that this procedure may lead to the following

1. The clam bunk running on bare ground may lead to soil compaction and rutting. In order to avoid excess soil disturbance and the resultant possible release of carbon, the following precautions will be employed.
 - i. The widest floatation tyres capable of being fitted to the machine will be employed. Due to the dragging nature of the clam bunk traction aids such as wheel chains and tracks will be required. Tracks are to be designed to give maximum flotation and adequate traction (see ref A).
 - ii. Soil compaction and disturbance is related to the number of passes over the ground (Ref B). To reduce the number of passes, extraction distances will be kept to a minimum (ideally less than 200m). To achieve this additional brushed extraction routes will be required to link into the forest road system. These brushed routes will be utilised to minimise soil disturbance.
 - iii. It is recognised that the soil bearing capacity will vary through the year depending upon the weather. The extraction will be planned to work the areas with better bearing capacity in the winter and those with poorer bearing capacity in drier periods. On the areas of deep peat soils (See accompanying map) an alternative harvesting system will be employed and whole tree extraction will not be utilised. All main extraction routes will run along drier areas and the crossing of watercourses will be kept to a minimum and agreed in advance with consultation with the Environment Agency.
 - iv. The recommended method for whole tree extraction is to utilise brush mats at specific intervals as main extraction routes (Ref C). This method will be adopted, especially where soil disturbance is likely to be above the acceptable level, on longer extraction routes, and if weather is unfavourable brush mats will be used on the main extraction routes to reduce the ground damage.
 - v. The removal of the tree crop over such a large area accompanied by the use of whole tree extraction even utilising the use of brush mats could result in greater run off of surface water and a higher risk of siltation of the watercourse. Site planning aimed at reducing this risk and measures such as the following will be employed to minimise the risk-
 - a) use of brush mats.
 - b) protection of the Riparian Zone (Ref D) by felling away from them and not allowing machinery to enter. Adjacent areas felled at an early stage to allow them to regenerate early in the operation.
 - c) extraction across plough scores instead of parallel to them.
 - d) extraction routes running parallel to water courses.
 - e) extraction routes on steep ground are to avoid running directly down the slope for long distances.
 - f) construction of additional drains leading to silt traps and the use of straw bales to filter water.
 - g) regular monitoring of water courses for siltation and discolouring will highlight potential problems and allow preventative measures to be put in place.

These preventative measures will include the following :

- use of brush as barriers to prevent silt reaching water courses
- movement of operations to drier areas of the site in wet weather
- construction of additional silt traps
- reversion to alternative harvesting method (described below) or suspension of operations if forest and water guidelines cannot be adhered to.



Site following whole tree extraction

2. The storage of tops, branches and offcuts for further processing prior to transport to biofuel markets has the potential for nutrients leaching into watercourses. This risk will depend upon the length of time the brush is stored, the weather conditions during storage and the location of the store in relation to watercourses. Initially brush will be stored at the point where the trees are delimbed and the main stem converted for timber markets. These areas will generally be adjacent to the forest road and accessible for further processing.

The length of time the brush is stored will depend upon the availability of the market and the specification of the product required. If markets are available at the time of delimiting and able to take green brush then processing may take place soon afterwards. This will reduce the risk of nutrient leaching to the minimum. If brush cannot be processed and removed from site within a short time scale then the following measures will be employed to minimise the risk of nutrient leaching-

- Movement to drier sites away from watercourses.
- Avoid roadside and other drains. If required block such drains to prevent run off directly into watercourses.

2. Alternative Harvesting system

On the parts of the site where the soil types are generally deeper peat and the original vegetation was blanket bog it will not be possible to employ a whole tree extraction harvesting system (See attached map). On these areas the trees will be felled by harvester and the brush deposited in brush mats that the forwarder will travel upon to uplift the timber. These brush mats will allow the machinery to travel on the wet sites without damaging the soil structure. Main extraction routes will be reinforced with additional brush to ensure that they can sustain the extra traffic on these routes.

3. Further preparation of the site to encourage heather regeneration

On completion of the harvesting operation, the brush mats that have been utilised in the extraction process will, wherever ground conditions permit be removed by brush baler/forwarder unit for processing at roadside. The remnants that cannot be removed will be mulched at the same time as the stumps are reduced in height. The mulching machine used to accomplish this operation will be designed to cause minimal cultivation of the soil and hence disturbance to the peat and consequent carbon release. It is likely to be an excavator based mulching head rather than a tractor mounted

machine. The chips produced from this mulching operation will be spread evenly over the site, to ensure that they do not interfere with the natural blanket bog and heathland vegetation regeneration.

3. Forest road requirement

The current forest road system will be upgraded for 44 tonne gross weight articulated lorries. Some extensions of the current road system will be required to limit the timber extraction distance and these have been programmed and are detailed and identified in Appendix 18 New Roads and Quarries.

4. Traffic associated with the timber and biofuel harvesting

The lorry traffic associated with the timber harvesting and marketing will be approximately 12,000 articulated timber lorry movements spread evenly over the 3 year working period. Attempts will be made to evenly distribute this during the working week and avoid evening, early morning and weekend haulage, however there may be a requirement for short periods in excess of the average level to meet market demand.

The haulage of the biomass will entail approximately an additional 4000 articulated lorry movements over the period.

All haulage from the site will be in accordance with the 'Road Haulage of Round Timber Code of Practice' (ref E), road transport regulations and industry best practice.

5. General standard of work and emergency planning

All work undertaken by Tilhill Forestry Ltd will comply with EN ISO 14001 and OH SAS 18001, and be undertaken in accordance with forest industry best practice.

All operators on site will be given instruction and guidance in the practices to be employed on site prior to work commencing.

Specific plans will be in place to deal with the following-

a. Oil and fuel spills

- All work will be in accordance with the Forest and Water Guidelines (ref D)
- All machinery will carry absorbent pads to deal with spillages and central stores of equipment to deal with larger spillages will be available at all times.
- All operators will carry the emergency telephone numbers for the emergency services and the Environment Agency.
- Larger booms will be located at strategic points down stream from the site, available for instant use in the event of a pollution incident.
- All fuels and oils will be stored in bunded tanks at specific locations away from watercourses.
- Due to the length of time machinery will be on site, specific machine refuelling and maintenance areas will be designated and drip trays placed under machines while stored, refuelled and during maintenance.
- All chainsaw oil used to lubricate chains will be bio degradable.

b. Public safety

- Two public rights of way run through the site and the site was dedicated as access land under section 16 of the Countryside and Right of Way Act 2000.
- The Rights of Way will be kept clear at all times and clearly marked.
- There may be a requirement to apply for limited closures or diversions for health and safety reasons.
- Site signage will be in accordance with ref F and HSE best practice.
- When machinery is working within the risk zone of a right of way a banksman will be employed to advise the machine operator when the path is being used.

c. Medical emergencies

- There will be at least one First aid appointed person on site when work is being undertaken
- There will be a site first aid kit available at all times
- Each machine/operator will carry a personal first aid kit
- Each operator will have emergency contact telephone numbers and the location of the emergency services r/v point.
- All operators will be in contact via CB or 2 way radio.
- A site safety officer will be on site when work is undertaken. He will ensure that Site safety rules are adhered to and be responsible for co-ordinating activities in the event of any emergency.

d. Wildlife and ancient monument conservation

- All activities will be in accordance with the Wildlife and Countryside Act (1981).
- All operators will be briefed on the procedure for reporting nesting birds, red squirrel dreys and other occurrences. The felling plans will be designed to ensure that red squirrels do not become isolated, by maintaining connectivity through the remaining mature conifer habitat to facilitate red squirrel movement. Felling will commence in the eastern portion of the forest and work clockwise, so that the final area to be felled will be in the north-eastern portion of the forest, to the north of Threestoneburn house. This area amounts to 60 ha and consists of a Sitka spruce/Lodgepole pine mixture (See attached map for details).

The squirrel survey confirmed the presence of red squirrels in this portion of the wood and this area provides the best connectivity to the riparian migration route to the east.

This area will in effect become a safe haven for the red squirrels during the duration of the felling elsewhere in the wood and no felling will take place in this section during the February to September breeding season. Supplementary feeding will take place in this area to ensure that the squirrels have a dependable food supply.

Once the remainder of the forest is felled this section will be felled in the following Autumn (either October 2011 or 2012).

- Plans, working areas and timings will be modified as necessary to comply with legislation.
- Plans will be in place to protect any ancient monuments. All known monuments will be demarcated with tape and no machinery will be allowed within 20m of the scheduled site. If any trees are located on the monument they will be felled by hand. In consultation with Northumberland National Park Authority and English Heritage an archaeologist will be employed, if required whilst working in the vicinity of the scheduled sites.

e. Fire Prevention

Although there is no intention to carry out any burning of materials on the site at any time, because of the number of machines present it will be necessary to have a fire emergency plan in place for the duration of the operations.

Lilburn Estate have an existing fire plan drawn up in consultation with their neighbours and Northumberland Fire and Rescue Service. This plan will be amended to include the deforestation operation. The plan will include the following items:

- all machine operators on site to have list of emergency contact numbers
- all machines to have fire extinguishers available
- estate emergency equipment such as pumps and water bowsers to be kept on site
- Northumberland Fire & Rescue Service to be shown area prior to commencement of operations so they can make further recommendations if necessary

6. References

- A. Traction Aids in Forestry. Forestry Commission Technical Note .August 2006
- B. Feller Clambunk Trials:Kielder. Forestry Commission Technical Development Branch Report 15/94
- C. Whole-Tree Harvesting. Forestry Practice Guide. Forestry Commission 1997
- D. Forests and Water Guidelines 4th edition. Forestry Commission 2003
- E. Road Haulage of Round Timber Code of Practice 3rd edition Roundwood Haulage Working Party 2003
- F. Managing Public Safety on Harvesting Sites. Forest and Arboricultural Safety and Training Council