



## Haxby Plantation Belt Plantations and Whinny Wood Management Scheme

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# Haxby Plantation, Belt Plantations and Whinny Wood Management Scheme

## 1 Introduction

### 1.1 Overview

This document has been prepared by York Potash Ltd (YPL) and details the Haxby and Belt Plantation and Whinny Wood Management Scheme for Phase 3 of the development at Woodsmith Mine. This is required to partially discharge condition 73 of the North York Moors National Park Authority (NYMNP) planning permission NYM/2014/0676/MEIA.

Development of the long-term Woodland Management Scheme is currently ongoing and is being undertaken in consultation with Mark Antcliff, Woodland Officer at the NYMNP.

### 1.2 Compliance with conditions

The wording of planning condition 73, and where the necessary material has been provided within the report, is set out in the below table.

NYMNP 73	Compliance with Condition 73
<i>Prior to Commencement of Development at DNF a scheme to maintain and manage the Haxby and Belt Plantations with the exception of areas agreed for removal as part of the approved works as shown on plan 2309.MH02 rev 02 shall be submitted to and approved by the MPA.</i>	Refer to this document for the Haxby and Belt Plantations management scheme.
<i>The details shall include the phased felling and replanting for long term management of the Plantations.</i>	Refer to sections 4.1, 4.2 and 4.3.

### 1.3 Phase 3 Works

The activities required for the Phase 3 Works comprise the following:

- General site clearance including demolition of all farm buildings and sheds, and localised tree and scrub clearance, as shown on Arup drawing 40-ARI-WS-71-CI-DR-1051.
- Excavation and construction of the south western extension of the upper tiered working platform at around 203m AOD, as shown on drawing 40-ARI-WS-71-CI-DR-1053.
- Excavation and construction of the Platform for the Construction Welfare Facility, Parking Area and Concrete Batching Plant, as shown on drawing 40-ARI-WS-71-CI-DR-1053.
- Construction of temporary and permanent soil mounds, including the basal liner for a future storage facility in the northeast corner of the site for non-hazardous non-inert spoil and three

topsoil, subsoil and inert material storage bunds in the southwestern area of the site, as shown on drawings 40-ARI-WS-71-CI-DR-1053 and 40-ARI-WS-71-CI-DR-1055, with earthworks volumes presented in 40-ARI-WS-71-CI-DR-1054.

- Construction of surface water drainage, a temporary surface water attenuation pond and temporary wetland in the southern area and two permanent attenuation ponds and two wetland areas in the north eastern area, as shown on Drawing 40-ARI-WS-71-CI-DR-1050;
- Construction of a spring and groundwater drainage layer in the north eastern area, discharging into a wetland area, as shown in drawing 40-ARI-WS-71-CI-DR-1080.
- Installation and commissioning of temporary dewatering as shown in drawing 40-ARI-WS-71-CI-DR-1058.
- Erection on site of the Concrete Batching Plant as shown in drawing 40-ARI-WS-71-CI-DR-1050, complete with reticulated water supplies and tanks.
- Construction of the drilling platform and temporary saline lagoon area for the groundwater reinjection well as shown in drawing 40-ARI-WS-71-CI-DR-1057.
- Establishment of construction welfare and security facilities - complete with hook-up of power, communications & water supplies and new waste water collection facilities as shown on drawing 40-ARI-WS-71-CI-DR-1050.

## 1.4 Site and location

Haxby Plantation is a privately owned mature conifer plantation edged with some deciduous trees. It lies to the south-east of Woodsmith Mine and has a separate direct access from the B1416. The plantation is relatively uniform with small rides and areas kept clear of trees for access and a overhead power line. The trees have reached maturity and the tree canopy is approximately 15 metres in height. There are some areas of clear felling and replanting and a stone boundary wall along the B1416. The section of the plantation within the mine site boundary (the site) forms part of a larger wooded area that runs north along Sneaton Thorpe Beck and also connects with Whinny Wood to the north-west of the site.

The Belt Plantations along the western and southern edges of the site screen or heavily filter local views of the site from the west and south, including from public rights of way, from roads including the B1416 and from open access land at UGGLEBARNBY MOOR and Sneaton Low Moor. To the east of the site, woodland cover within the site, including Haxby Plantation and Whinny Wood, interrupts views from Raikes' Lane and adjoining public rights of way. At greater distance, this woodland cover masks or breaks up views to ground levels within the site and contributes strongly to the wooded character of the UGGLEBARNBY MOOR ridge.

## 2 Existing Vegetation

The following commentary is based on habitat surveys undertaken by Paul Chester Associates (2014).

The Haxby Plantation mature woodland is an almost complete even-aged conifer plantation with the majority of species being a combination of unmanaged Scots Pine *Pinus sylvestris* and Lodgepole Pine *Pinus contorta* planted in the early 1960's with intermittent stands of older, pre 1960's, Scots Pine. Within the main areas of planted woodland, naturally occurring trees are rare or absent. There are however sections towards the southern boundary where the composition is mixed with deciduous canopies including Alder *Alnus glutinosa*, Downy Birch *Betula pubescens*, Downy Birch x Silver Birch *Betula x aurata*, Goat Willow *Salix caprea*, Goat Willow x Grey Willow *Salix x reichardtii*, Grey Willow *Salix cinerea subsp. cinerea*, Rowan *Sorbus aucuparia* and Silver Birch *Betula pendula*. There are a limited number of mature Beech *Fagus sylvatica* within the main woodland blocks but occasionally feature along the western woodland edge.

It is suggested, through the review of historic maps, that Haxby plantation was planted on a previous moorland/moorland fringe habitat, the northern section of the woodland, particularly in the area of Sneaton Thorpe Beck and its tributaries is probably representative of a plantation on an ancient woodland site (PAWS).

National Vegetation Classification (NVC) woodland types have been identified along Sneaton Thorpe Beck corridor including;

- W7 *Alnus glutinosa-Fraxinus excelsior-Lysimachia nemorum* woodland, W6 *Alnus glutinosa-Urtica dioica* communities along the valley floor and in damper sections.
- W10 *Quercus robur-Pteridium aquilinum-Rubus fruticosus*, W11 *Quercus petraea-Betula pubescens-Oxalis acetosella* and W16 *Quercus ssp.-Betula ssp.-Deschampsia flexuosa* woodland types on the drier valley sides.

Canopy species at Sneaton Thorpe Beck include Ash *Fraxinus excelsior*, Downy Birch, Pedunculate Oak *Quercus robur*, Rowan and Sessile Oak *Quercus petraea* with other species including Alder, Goat Willow and Grey Willow in wetter habitats in valley bottoms. Other tree species include Sycamore *Acer pseudoplatanus*. The shrub layer is open with infrequent occurring Hawthorn *Crataegus monogyna*, Hazel *Corylus avellana* and Holly *Ilex aquifolium*.

The Belt Plantation canopy is dominated by Alder with infrequent Downy Birch, Downy Birch x Silver Birch, Goat Willow, Rowan, Silver Birch and Scots Pine, and very infrequent Sycamore. There is an open shrub layer with species including Alder, Holly and Rowan.

Target notes extracted from surveys for the Belt Plantations are as follows:

Target Note 41 – This refers to a woodland plantation to the west of the application site. The woodland forms part of a larger linear plantation which borders long sections of the B1416. Approximately 70m wide, the plantation is mixed with mature Alder, Downy Birch, Scots Pine and Silver Birch, along with rarely occurring European Larch *Larix decidua* and Pedunculate Oak. The shrub layer is sparse with occasional Holly, Rhododendron and rarely occurring Gorse. The woodland is open and grazed at times and has a typically grass-dominated and species-poor ground flora. Characteristic species include grasses such as Creeping Soft-grass *Holcus mollis*, Sweet Vernal-grass *Anthoxanthum odoratum* and Yorkshire-fog *Holcus lanatus* along with more rarely occurring Bramble *Rubus fruticosus agg.*, Broad Buckler-fern *Dryopteris dilatata*, Broad-leaved Dock *Rumex obtusifolius*, Common Sorrel *Rumex*

*acetosa* subsp. *acetosa*, Hedge Bedstraw *Galium album* and Hogweed *Heracleum sphondylium*. Characteristic woodland species, although typically rare, are present locally, for example, Hairy Wood-rush *Luzula pilosa*, Lords-and-Ladies *Arum maculatum*, Wood Sage *Teucrium scorodonia* and Wood-sorrel *Oxalis acetosella*. The woodland is locally damp, particularly in its southeastern section where a small open shaded ditch is present.”

Target Note 42 – “Forming a continuation to the woodland described in Target Note 41, the southern section is more open and disturbed with additional planted species such as Leyland Cypress *Cupressocyparis leylandii* and Norway Spruce *Picea abies*. The associated ground flora in this section is typically a more open grassland with patchy ruderals. Species present include frequent Broad-leaved Dock, Cock's-foot *Dactylis glomerata*, Common Nettle *Urtica dioica*, False Oat-grass *Arrhenatherum elatius*, Hogweed *Heracleum sphondylium* and Yorkshire-fog *Holcus lanatus*.”

Target Note 43 – “To the south of the access to Dove’s Nest Farm, this is a narrow approximately 8-10m wide band of plantation woodland which forms the boundary with the B1416. The plantation is mixed and characterised by Scots Pine and Silver Birch with occasional Gorse *Ulex europaeus* and rare or very rarely occurring Goat Willow, Grey Willow and Pedunculate Oak. The plantation has a poor ground flora throughout which is dominated by grasses such as Cock's-foot, Creeping Soft-grass, Tufted Hair-grass and Yorkshire-fog.”

The understorey planting within the central western Belt Plantations is sparse allowing filtered views through the plantation into the site, especially during the winter period. The Belt Plantations have a height ranging between 8-14m above ground level. A native species plantation exists along the central eastern edge of the site adjoining Sneaton Thorpe Beck woodland and Haxby Plantation.

Target note 56 from the recent habitat survey work indicates that:

“This is a mature damp willow dominated woodland comprising predominantly of Grey Willow with more occasional Goat Willow and hybrid Goat Willow x Grey Willow. Other tree species include rarely occurring Downy Birch, Hawthorn, Holly and Rowan, with very rare Beech *Fagus sylvatica* and Scots Pine. The shrub layer is poorly developed, with occasional examples of the canopy trees whilst the ground flora comprises of locally abundant Wood-sorrel and locally frequent Creeping Soft-grass along with more occasional Bramble, Broad Buckler-fern *Dryopteris dilatata*, Common Bent *Agrostis capillaris*, Creeping Buttercup *Ranunculus repens*, Soft-rush *Juncus effuses* and Tufted Hair-grass *Deschampsia cespitosa* subsp. *cespitosa*. More rarely occurring species include Hard-fern *Blechnum spicant*, Male-fern *Dryopteris filix-mas*, Marsh Thistle *Cirsium palustre* and Wood Speedwell *Veronica montana*.”

### 3 Restoration

In terms of landscape character and setting, the restored site would reflect and reinforce the existing wooded character of the Ugglebarnby Moor ridge in distant views, whilst screening local views into the site and maintaining very distant, inter ridge views across the site between open moorland with cultural heritage features (chains of Bowl Barrow tumuli) at Latter Gate Hills in the east and Sleights Moor in the west.

There will be no removal of woodland within Haxby Plantation as part of Phase 3.

The long-term management of the woodland and site restoration scheme will retain most of the woodland in these areas and within the Belt Plantations along the southern and western edge of the site. Large areas of new woodland and scrub planting are proposed to integrate the new landform into retained and adjoining tracts of woodland cover.

Areas of existing native broadleaved woodland and colonising scrub and ground flora will be retained where practicable. The edges of removed coniferous plantation will be replanted with broadleaved woodland mixes adapted from NVC habitat types found at Sneaton Thorpe Beck, (W6/W7, W10 and W11 types) and used according to compatibility with local ground conditions. To protect the remaining woodland from the threat of windthrow, fast growing tree species suitable for the damp environment including Alder, Birch and Willow will be introduced along the woodland edges. Coniferous stands will be retained to provide screening value. Gradually, a native understorey of fast growing shrub species will be introduced to the plantation, using stock from locally based sources to ensure species are genetically adapted to the environmental conditions associated with the area. Woodland edges and glades will also be created to improve biodiversity. Long term management is designed to retain and improve the screening value of the plantation, particularly during the winter months, whilst gradually improving biodiversity. Rhododendron will be managed out across the site at the earliest opportunity.

### **3.1 Management of Belt Plantations**

The Belt Plantations will be retained and managed as screening woodlands along the western and southern edges of the site. Management operations will include retaining the majority of Scots Pine to maintain screening benefits, with some removal of Scot's Pine and non-native species to allow light for planting of a native understorey and field layer to increase plant diversity and improve low level screening value and biodiversity. Small-scale coppicing and glade creation will also be undertaken, subject to maintaining a continuous visual screen at understorey level.

### **4.3 Management of Whinny Woodland**

The management of this small woodland will be via minimum intervention, allowing the continued development of a native broadleaved woodland. As natural regeneration is good, it will not be necessary to undertake any further restocking. With a small woodland like this, it is possible to speed up regeneration through a process of repeated selective felling. However, at this location, opening the canopy to such an extent may have a detrimental effect through windthrow and is not likely to be undertaken as a matter of course. Through minimum intervention, it is anticipated that the current woodland structure of mature canopy will slowly continue to decline, with a mixed understorey of restocked native broadleaves and natural regeneration of birch and alder becoming dominant. Monitoring of the woodland at intervals of five years would be sufficient to assess the development of the restocking, existing mature canopy and the development of any natural regeneration.

## 4 Soil Types, Soil Handling, Restoration Soil Depths and Cultivations

### 4.1 Soil types

A survey of soil resources at the site was undertaken by Land Research Associates in 2014. Based on this information, typical soil characteristics and depths can be summarised as follows:

Topsoil	
Typical depth	Description
200-300mm	Woodland areas – humose medium clay loam to black amorphous peat

Subsoil Description	
Typical depth	Description
Upper subsoil 300-400mm	Woodland areas – dark greyish brown medium clay loam, black medium clay loam and grey heavy clay loam
Lower subsoil 300-400mm, over boulder clay	Woodland areas – strong brown sandy clay loam to grey clay

The report indicates that all soils are susceptible to compaction and should be handled during suitably dry conditions using methods that minimise the potential for compaction.

### 5.2 Soils Handling

Topsoils, upper subsoils and lower subsoils would be separately stripped, stored and re-spread to the final profiles below in accordance with best practice soil handling techniques.

Given the disturbance likely to be caused by tree stump removal in woodland areas, it is expected that the topsoil and upper subsoil resource in these areas would have to be stripped and used as a single resource.

### 5.3 Restoration Soil Depths

The proposed restoration soil profiles would be applied to the site:

- Woodland areas over natural soils (or mounds formed from natural soils) – 300mm topsoil over 400mm upper subsoil;
- Woodland areas over capped excavated material – 300mm topsoil over 400mm upper subsoil on 1300mm lower subsoils, to form a total rootable depth of 2000mm;
- The proportionate depth of upper and lower subsoils may be varied depending on availability of each type of subsoil but the overall 2000mm rootable depth would be maintained.

The surface of underlying natural soils would be loosened to 200mm depth prior to subsoil spreading, to provide a key and reduce potential for a root pan to form.



## 5 Planting Strategies

The following woodland planting mix, based on the NVC W10/ W11 woodland types will be used to create shrub canopies within coniferous plantations as part of the management plan.

Native Planting Mix (adapted from NVC W10 and W11 types), average density 2500nr plants/hectare				
Botanical Name	Common Name	%	Size (cm)	Type
<i>Quercus robur</i>	Pedunculate oak	25	20-40	BR
<i>Betula pendula</i>	Silver birch	20	45-60	BR
<i>Quercus petraea</i>	Sessile oak	15	20-40	BR
<i>Betula pubescens</i>	Downy birch	10	45-60	BR
<i>Crataegus monogyna</i>	Hawthorn	10	20-40	BR
<i>Corylus avellana</i>	Hazel	10	60-90	BR
<i>Sorbus aucuparia</i>	Rowan	5	45-60	BR
<i>Ilex aquifolium</i>	Holly	5	30-45 min 3 breaks	2L

Within damper areas, a woodland planting mix based on NVC type W7 will be used.

Native Broadleaved Woodland Planting Mix in Damper Areas (adapted from NVC W7 type), average density 2500nr plants/hectare				
Botanical Name	Common Name	%	Size (cm)	Type
<i>Alnus glutinosa</i>	Alder	40	45-60	BR
<i>Betula pubescens</i>	Downy birch	15	45-60	BR
<i>Quercus robur</i>	Pedunculate oak	10	20-40	BR
<i>Crataegus monogyna</i>	Hawthorn	10	20-40	BR
<i>Corylus avellana</i>	Hazel	10	60-90	BR
<i>Quercus petraea</i>	Sessile oak	5	20-40	BR
<i>Sorbus aucuparia</i>	Rowan	5	45-60	BR
<i>Ilex aquifolium</i>	Holly	5	30-45 min 3 breaks	2L

In very damp areas, the proportions of Alder and Downy Birch will be increased to replace the other species.

All plants will be protected from rabbit and vole damage, with suitable grow tubes and shrub shelters (for Holly) with support stakes.

## 6 Establishment Maintenance and Aftercare

All areas of the site will be subject to a 5 year aftercare period to ensure correct establishment of proposed habitats. Key establishment and maintenance operations will involve:

- Beating up of woodland and woodland edge planting areas to ensure a minimum establishment rate of 85% of the original planting numbers;

- Maintenance of a 900mm diameter weed and grass free zone around each tree and shrub planting station for 36 months after planting;
- Checking and firming of grow tubes, stakes and ties;
- Eradication of notifiable or pernicious weeds across the site in general, including Rhododendron control;
- No fertilisers or other nutrients would be applied to any areas; and
- Litter picking and removal of rubbish will be undertaken at regular intervals.

## **7 Long Term Management**

All woodlands will be managed to maintain landscape structure and screening of the site, while promoting nature conservation benefits, where possible and in accordance with the approved Landscape and Ecological Management Plan that will be developed in satisfaction of Planning Condition 57.

Management of existing mature plantations will commence during the construction phase and will continue during the operational phase of the scheme. Thinning, replacement and replanting will be undertaken to remove less desirable species and improve age structure and species diversity. Woodland thinning within newly planted areas will be undertaken at approximately year 15 after planting, with the aim of increasing habitat diversity and establishing Oak as the climax species.