



Summary of Proposals

The Kilpatrick Hills site consists of existing forests (predominantly coniferous) to the west, north and east, with a large central area of moorland and blanket bog. The crags and hills form dramatic features in the south, with the escarpment forming the southern edge overlooking the River Clyde having particular landscape importance.

The previous Forest Design Plan (FDP) for the Kilpatrick Hills (2006) covered Auchentorlie forest to the west, Knockupple and Merkins forests to the north and Auchineden to the east. Subsequent to this, the land at Cochno Hill was acquired, and is currently covered by a separate plan (2009). More recently the land joining all these areas, extending down to the A82, (Gavinburn and Auchineden Hill) was acquired by the Forestry Commission.

As a result of the consolidation of land ownership within the site, a new FDP will be produced which addresses the entire area. The purpose of this document is to summarise those elements of the design proposals which will be most likely to have an impact on the environment (i.e. Afforestation, Deforestation, Forest roads & Quarries) and may or may not require an Environmental Impact Assessment.

Kilpatrick Hills FDP – Summary of Proposals

Overview

The majority of the forests were intensively planted over a short period, starting in the north with Merkins (1967-70) and Knockupple (1971), Auchentorlie was planted 1973-4 (with some later filling-in in the early 1980's), and finally Auchineden (1975-79). More recently, Cochno Hill was planted in 2010.

Table 1 - Current land usage

| Land Type | Area (ha) | % |
|---------------------|---------------|------------|
| Open ground | 1731.6 | 50.1 |
| Existing woodland | 1591.9 | 46.1 |
| Agriculture | 85.8 | 2.5 |
| Open water | 44.0 | 1.3 |
| | 3453.3 | 100 |
| Of which: | | |
| SSSI | 39.6 | |
| World Heritage Site | 1.5 | |

Currently, the majority (over 70%) of the existing woodland consists of even aged conifers, with occasional small pockets of broadleaves. The exception is the recent planting at Cochno Hill, which is a primarily broadleaf native woodland.

| Species | Area (ha) | % |
|---|---------------|------------|
| Birch | 91.3 | 5.7 |
| Ash | 37.4 | 2.3 |
| Alder | 15.6 | 1.0 |
| Hazel | 8.7 | 0.5 |
| Oak | 8.9 | 0.6 |
| Mixed broadleaves | 55.8 | 3.5 |
| Sitka spruce | 906.1 | 56.9 |
| Lodgepole pine | 191.1 | 12.0 |
| Larch | 53.4 | 3.4 |
| Norway spruce | 27.9 | 1.8 |
| Scots pine | 15.4 | 1.0 |
| Other conifers | 6.5 | 0.4 |
| Other areas (windblow, felled awaiting restock, riparian areas etc) | 172.8 | 10.8 |
| | 1591.9 | 100 |

Table 2 - Existing woodland

See Map 1 – Overview for details

Kilpatrick Hills FDP – Summary of Proposals

A summary of the overall objectives for the new FDP can be found in the document Kilpatrick Hills FDP - Brief & Objectives.

In order to assess the likely environmental impact of the proposals, a wide variety of relevant data has been collated, including:

- Peat depth survey
- Breeding bird survey
- Open Habitat ecological survey
- Otter survey
- Archaeological survey
- Soil survey of the southern slopes of Gavinburn.
- Native woodland advisory report
- Strategic landscape assessment
- ESC climate & ground data (Accumulated Temperature, Moisture Deficit, DAMS, Soil Moisture Regime, Soil Nutrient Regime)
- Kilpatrick Hills Masterplanning exercise consultation

See **Appendix I – Survey Summary** for further information on surveys undertaken. Surveys were predominantly focused on the newly acquired open ground in the central area of the site, since the existing plantation woodlands are unlikely to see significant environmental changes for the most part.

Kilpatrick Hills FDP – Summary of Proposals

Afforestation

The Kilpatrick Hills form part of the 'Moorland Hills' priority area identified within the current Glasgow & Clyde Valley Forestry & Woodland Strategy, and are predominantly classified as a mixture of 'preferred' and 'potential' in terms of woodland management and expansion.

Within the Moorland Hills area, particular focus is given within the strategy to:

- Continue the presence of productive conifer forests, whilst looking for opportunities to restructure these to improve their landscape and ecological value.
- Increase native woodland cover (and to a lesser extent new conifer woodland), particularly on lower hill slopes and along burns and river valleys.
- Particular emphasis is placed on the potential within the Kilpatrick Hills to expand the existing network of forests and woodlands in order to develop access and recreational opportunities at a regional scale.

From a silvicultural perspective, the south facing slopes at Gavinburn offer the best opportunities for woodland creation in terms of climate, soil fertility and exposure. As such, this area of the site offers the potential for a wide range of species to be grown. Moving north 'up the hill', soil fertility decreases and climate and exposure levels also deteriorate, restricting the range of suitable species. Extensive areas of priority open habitat and deep peat are present, limiting the site potential for woodland creation further.

When considering the type, placement and scale of proposed woodland creation areas, careful consideration has been given to the potential environmental impact of the proposals, and appropriate design used to mitigate against potential impact on key sensitivities.

Best practice will be followed at all times, using guidance and tools such as ESC (Ecological Site Classification) site/ species modelling software for species selection, Forests and Water Guidelines to ensure water and drainage is managed correctly and Forest Landscape Design Guidelines will be adhered to, ensuring well considered woodland creation plans are developed.

Landscape and Heritage

From a landscape perspective, the impact of the woodland creation proposals will be most significant in two broad areas – the central plateau and the south facing Kilpatrick Braes.

The former is characterised by a sense of wildness, and the intention is to compliment this through the establishment of native woodland in organically shaped areas which reflect specific habitat opportunities, in order to create woodland which is both visually and ecologically diverse, and which will enhance the sense of wildness in the interior.

Kilpatrick Hills FDP – Summary of Proposals

The felling and restocking of the existing plantations will offer the potential to integrate better with these new woodland creation areas, providing a more natural transition between the forest blocks and the open moorland.

The southern slopes are the most significant location in terms of landscape and visual sensitivity - due in part to their diversity and high visibility, and also because they contribute to the setting of a number of important features, including both the Clyde Estuary, Forth and Clyde Canal and the Antonine Wall World Heritage Site and its associated buffer zone.

Preliminary consultations with Historic Scotland indicate that the key concerns for the Antonine Wall are:

- To avoid planting on the course of the Wall, and on a suitable size buffer either side.
- Preserve key views from the course of the Wall up the slopes to the ridges and crags of the Kilpatrick Braes.
- Avoid planting blanket blocks of conifers that would impact on the landscape character of the buffer zone.

Careful design of the proposed planting on the slopes immediately above the course of the Antonine Wall will help to preserve views out through the use of open ground, lower density planting and shrubs.

The proposals for the wider southern slopes (which fall within the associated buffer zone) will be carefully designed to respect the cultural context of the area and to maintain a balance between woodland and open space, retain views of the tiered cliff faces and skyline, and contribute to landscape diversity.

In the south west corner of Gavinburn there is an existing mature broadleaf woodland which will be complemented by an area of native woodland planting in the immediate vicinity. Historically, much of the Kilpatrick Braes has consisted of mixed plantation woodland (see Native Woodland Report for more information), and the intention is to continue this tradition through the establishment of productive broadleaf or mixed woodland on the lower slopes. Given the landscape sensitivity the expectation would be that this area would be managed through a Low Impact Silvicultural Systems (LISS) approach – e.g. through the use of Continuous Cover Forestry rather than a clearfell-and-replant approach. Further up towards the crags, the existing mature woodland on the bracken-covered terraces will be selectively underplanted with a mix reflecting the current varied makeup in order to maintain its character in the long term.

Although the slopes to the south east of the site, above Duntocher are eminently suitable for growing productive conifers, they are highly visible to the wider Glasgow area, and so a visually softer native woodland design has been proposed which will tie in

Kilpatrick Hills FDP – Summary of Proposals

with the small areas of existing mature woodland, and to the newly planted native woodland at Cochno Hill.

Best practice will be informed by the Forest Landscape Design Guidelines, Creating New Native Woodland Bulletin, Landscape Impact Assessment and the full involvement of the FCS Senior Landscape Architect.

Open Habitats

When considering the location of proposed areas of woodland creation, the type and quality of open habitat detailed in the Open Habitat survey has been given careful consideration. Proposed areas are predominantly located either on non-priority habitat areas, or on areas of low quality priority habitat where the proposed woodland type potentially represents a more beneficial habitat, and a presumption has been made against any planting on areas of deep (<0.4m) peat

Consideration has also been given to the extent and contiguous nature of Habitat Networks (both Open and Forest) created through the design proposals, with the aim being to develop networks more extensively within the site and also to tie in with existing networks in the surrounding area.

Best practice will be ensured through following the Forests and Biodiversity Guidelines, UKWAS Biodiversity Guidelines, UKBAP Guidelines and the involvement of the FC Open Habitat Ecologist and local Biodiversity Manager.

See [Map 2 Potential Afforestation](#) for details of proposed woodland creation areas.

Please Note - the map is only intended to provide a broad indication of potential woodland types/locations, based on information collated to date. Specific species choice and the final shape of planting areas will obviously evolve over the course of the design process.

Kilpatrick Hills FDP – Summary of Proposals

Table 3 - Indicative woodland creation

| Indicative Species Choice | Estimated gross area (ha) | Estimated net area (ha) | Notes |
|----------------------------------|---------------------------|-------------------------|--|
| Productive Broadleaves | 21.4 | 18.2 | Better soils/more sheltered conditions on south slopes at Gavinburn offer potential for growing productive broadleaves |
| Productive Conifers | 14.3 | 12.2 | Take advantage of suitable ground adjacent to existing plantation at Auchentorlie. |
| Productive Broadleaf/Conifer mix | 13.9 | 11.8 | Potential to plant a diverse range of broadleaves or alternative conifers on the more sheltered southern slopes. |
| Expand existing mixed woodland | 28.4 | 14.2 | Existing mature woodland ought to be underplanted now to maintain its character in the long term. |
| W4 | 141.9 | 106.5 | Concentrate planting on better soils |
| W4/W17 | 30.2 | 19.6 | |
| W7 | 40.2 | 30.2 | |
| W9 | 73.7 | 55.3 | |
| W17 | 32.9 | 24.7 | |
| W19 | 6.0 | 4.5 | |
| Shrubs | 7.8 | 3.9 | |
| TBD – Community Project | 2.5 | 1.8 | The intention is to involve the local community in the design of the area south of the A82 |
| | 413.4 | 305.9 | |

Total area for afforestation = 413.4 ha

Of which:

%age **broadleaf** woodland = **90%**

%age **conifer** woodland = **10%**

Kilpatrick Hills FDP – Summary of Proposals

Deforestation

As detailed in the previously approved FDP for the area (2006), Knockupple is scheduled to be felled and not replanted due to the surviving blanket bog vegetation within the block and the potential for bog habitat restoration, forming a contiguous habitat with the neighbouring blanket bog to the west. Within Merkins, poor access and the extensive areas of deep peat resulted in the identification of large areas to be felled and converted to either Upland Heathland or Upland Birchwood (largely by natural regeneration).

Although there may be potential for some small scale restocking or successional regeneration with native wet woodland within Knockupple, it is difficult to determine at this stage to what extent this is feasible, and so it is assumed that ~110 ha of timber will be felled and not restocked.

The planned road upgrading access into Merkins, in combination with a re-assessment of the site potential following a production survey in 2009, means that the extent of deforestation is likely to be less than envisaged in the previous plan. However, the central plateau on the west still contains areas which will benefit from reversion to an upland heath habitat, with sporadic pockets of woodland continuing outwith the areas of deep peat. Accordingly, there is likely to be a maximum of ~125 ha of timber which will be felled and not restocked.

As the design plan process progresses, some of the areas outlined above for deforestation may instead be identified as suitable for restocking, designed as open ground or designated as successional areas for natural regeneration. However it is expected that the ***maximum area which may be deforested is ~235 ha (7% of overall area)***.

See Map 3 Potential Deforestation for extent of proposed deforestation.

The areas for deforestation outlined are informed in part by the need to maintain a suitable buffer around the SSSI designated area at Dumbarton Muir. The current status of this upland raised bog is 'favourable' and in order to mitigate against any negative impacts on the SSSI, areas within the buffer zone will not be restocked with non-native conifers or birch.

Kilpatrick Hills FDP – Summary of Proposals

Roads

Existing FC roads within the Kilpatrick Hills total approx. 17,500m

In 2011, approval was granted (via an FDP amendment) for an additional 2,900m of roading within Auchentorlie, which preparatory works have begun on. A further 2,000m of road within Auchentorlie has been constructed by Scottish Power during 2013 (along the wayleave under the main power lines).

Nearly 300,000 m³ of timber is forecasted to be harvested over the next 10 years across the various blocks. Operational requirements for harvesting such large volumes, and subsequent restocking, necessitates the construction of an additional **9,950m of new internal roads** during the lifetime of the FDP. All roads will be standard Forest Enterprise timber haulage specification (i.e. 3.4m wide (+/- 200mm), construction depth of 150-850mm depending on terrain, max gradient of 10%).

The proposed additions to the internal road network are predominantly confined to the existing woodland areas, and as such are unlikely to have a significant visual impact. Issues to be aware of, which can be addressed during the restocking design are the potential for distinct, parallel sided roadlines within the forest, and the potential on steeper ground for embankments and cut faces to create more intrusive lines within the landscape for a period of time.

The quality of bog and other UK BAP habitats was found to vary considerably across the site, but there are substantial areas in good condition which would be better left unplanted – these have been taken into account when assessing for new roading (in combination with the peat depth survey). As a result of this, and of extensive surveys carried out by FC Civil Engineers, there are no plans to install any road infrastructure across the central plateau.

See Map 4 Roads & Quarries for details of the road routes.

Best practice will be demonstrated through the use of the FC Civil Standard which is the civil engineering quality and specification standard and Forest Landscape Design Guidelines.

Kilpatrick Hills FDP – Summary of Proposals

Quarries

There are currently six quarries within the Kilpatrick Hills block: one each in Merkins, Auchentorlie and Gavinburn and three in Auchineden.

At present, it is anticipated that material requirements for the planned new roads outlined above will be met partially by working the existing quarries, and also through the use of up to **four additional new small scale quarry sites**: one in Merkins and three in Auchineden. The proposed sites are all located within the existing forest blocks, and as such are unlikely to be visible from the wider landscape.

The estimated tonnage to be quarried from each location is:

| Area | Existing Quarry | Potential Quarry | Estimated tonnage |
|--------------|-----------------|------------------|-------------------|
| Auchineden | 1 | | 0 |
| | 2 | | 3,000 |
| | 3 | | 20,000 |
| Gavinburn | 4 | | 15,000 |
| Auchentorlie | 5 | | 1,000 |
| | | 8 | 50,000 |
| | | 9 | 20,000 |
| | | 10 | 20,000 |
| Merkins | 6 | | 5,000 |
| | | 7 | 5,000 |
| Total | | | 139,000 |

In addition to the roading requirements, there may also be a need for a quarry to supply material for construction of the John Muir Trail (location 11), with an estimated capacity of 2,000 tons.

See Map 4 Roads & Quarries for quarry locations.

Kilpatrick Hills FDP – Summary of Proposals

Other Sensitivities

See Map 6 – Key Sensitivities and Mitigation for overview

SSSI

There are existing SNH-approved management plans in place for all four SSSI sites within or adjacent to the site. The design proposals will take into account all relevant restrictions/mitigation measures as detailed in the management plans, and where appropriate suitable buffers will be observed for neighbouring areas of woodland creation.

Hydrology

In addition to numerous burns, a number of reservoirs lie adjacent to or within the site (some of which are still used for water supply, whilst others are maintained but do not supply normally). The design proposals will adhere to all relevant UK Forestry Standard guidelines relating to Forests & Water in order to mitigate against any potentially adverse impacts on watercourses, water bodies or priority open habitats reliant on hydrology to maintain their condition (e.g. blanket bog).

Open Habitats

In the short term the intention will be to operate a minimal management regime on areas of open ground in order to allow the vegetation to recover from the previous intensive grazing (this may also help reduce the need for protective measures such as fencing or tubes during woodland establishment). In the longer term it is likely that a low level grazing regime may be implemented to help manage the open habitat. On areas of blanket bog, a programme of tree removal, drain blocking and control of natural regeneration may also be implemented if required.

Protected Species

A variety of breeding birds of conservation interest have been observed on site, including skylark, meadow pipit, osprey, merlin, goshawk, greenshank and black grouse. The proposed increase in native woodland areas, particularly by expanding forest habitat networks and riparian habitats, will help to diversify the available habitat range in order to benefit a wide range of bird species.

Although evidence of otters was found on Loch Humphrey, Greenside Reservoir, Kilmannan Reservoir and Burncrooks Reservoir, none of the locations found should be impacted by the proposals outlined.

Kilpatrick Hills FDP – Summary of Proposals

Archaeology

In addition to the Antonine Wall, a number of other sites of archaeological interest were identified from surveys – the location of these has been taken into account when considering all the operations outlined above, and all relevant UK Forestry Standard guidelines relating to Forestry and the Historic Environment will be adhered to.

Kilpatrick Hills FDP – Summary of Proposals

Consultation to Date

The majority of the consultation with external stakeholders carried out so far has largely focused on the recreation potential within the Kilpatrick Hills.

Nine focus groups covering a wide variety of users (Mountain Bikers, Hill Runners, Community Council Forums, Hill Walkers, Disabled Access Forum, Horse Riders, Youth Groups, Local Interest Groups, Anglers) were held in Dec. 2012 / Jan. 2013. The purpose of these was to determine for each group: the key attractions of the area, what could be done to enhance the appeal of the area, current or potential issues.

The Enhancing the Woodland User Experience Toolkit (EWUET) was implemented for the Kilpatrick Hills during summer/autumn 2012, and involved asking visitors to complete questionnaires and a series of accompanied walks. The feedback from these has been used to develop a potential action plan identifying potential recreation opportunities over the site.

In parallel to the Forest Design Plan, a Master Planning exercise for the wider Kilpatrick Hills area has been undertaken by FCS in conjunction with Barton Wilmore Consultancy. As part of this process, workshops were undertaken involving an extremely broad range of stakeholders (including a range of representatives from all three Councils covering the area, ScotRail, Police, Loch Lomond National Park, SNH, SEPA, RSPB, Woodland Trust, CSGN Support Unit, Clydebelt Local Historical Society, Bearsden & Milngavie Ramblers)

In addition, District staff have held initial meetings with West Dunbartonshire Access Forum, Clydebelt and the Kilpatrick Hills Management Group, and brief informal discussions with SNH and FC Conservancy have also been undertaken.

Given that the proposed new quarries are located within the existing mature forest blocks, and are largely located in the more remote areas of the site, their potential impact on people's use and experience of the site should be minimal. Similarly, the proposed new forest roads are largely confined to the existed blocks and so are unlikely to have a detrimental impact on people's enjoyment of the landscape. (Conversely, the provision of new roads provide a positive contribution to users experience of the site, given it will improve access to some areas which are currently hard to reach, and will increase the potential number and variety of circular walks).

The overall repositioning of woodland cover on the site through the outlined afforestation and deforestation proposals should also make a positive contribution to people's enjoyment of the landscape, by providing increased visual and ecological diversity, and through the softening of the current hard forest edges.

Kilpatrick Hills FDP – Summary of Proposals

Contact

Any comments or questions regarding the proposals can be directed in the first instance to:

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Proviso

Although every effort has been made to ensure that the information provided is accurate, it should be emphasised that the design process is still at an early stage. To mitigate against this from an EIA screening perspective, all proposals have been based on the likely maximum (i.e. *greatest* environmental impact).

Kilpatrick Hills FDP – Summary of Proposals

Appendix I – Survey Summary

Peat depth

Following the acquisition of the central area of the site (covering Gavinburn and Dumbarton Muir), a peat depth survey was commissioned covering all the open ground north of Loch Humphrey. (The remaining areas were deemed unlikely to have significant areas of deep peat based on an assessment of the topography and vegetation on the southern slopes, in combination with a desktop analysis of soil and geology data).

Peat depth samples were taken at all points on a 100m grid, with GIS-based analysis used to interpolate peat depth across the site.

See Map 5a Peat Depth Survey for survey results.

Breeding birds

In 2012 a Breeding Bird survey was commissioned covering the newly acquired central area in order to obtain baseline information on the existing ornithological interest of the site.

See Map 5b Breeding Bird Survey for survey area.

A total of 52 species were recorded on site, of these two were Annex 1 (osprey & merlin), four were Schedule 1 (osprey, merlin, goshawk & greenshank), seven were Red listed, 24 were Amber listed, 20 were Green listed and one was a feral or introduced species. Green-listed species accounted for 39% of the total species count whilst Amber and Red-listed species accounted for 47% and 11% of the species count respectively.

Open Habitats

Prior to the acquisition of the central area, an assessment was made of the open ground to the north of Lily Loch by the FC Open Habitats Ecologist. Subsequently, a UK BAP Habitat Survey was conducted over the entire newly acquired area.

See Map 5c Open Habitat Survey for survey results.

Otter survey

All water bodies and watercourses within and immediately adjacent to the boundary of the newly acquired central area were surveyed in 2012.

Kilpatrick Hills FDP – Summary of Proposals

Archaeological survey

A walkover survey and desk based assessment of the newly acquired central area was undertaken in 2012. A follow up report in 2013 tied in this survey with other archaeological surveys undertaken over the wider site to assess the local and regional context of the findings.

Soil survey of the southern slopes of Gavinburn.

An assessment of the soil conditions on the south slopes of Gavinburn was undertaken in 2013. Sample locations were selected based on existing FC and James Hutton Institute data, in conjunction with an assessment of local topography and vegetation.

See Map 5d Gavinburn Soil Survey for soil pit locations.

Native woodland advisory report

In 2012 the FC Native Woodland Ecologist produced an assessment of the existing mature woodland on the south facing slopes at Gavinburn, considering the history of the woodland and assessing a variety of management options.

Landscape impact

In 2013 a strategic assessment by the Head Landscape Architect of the key landscape and visual considerations which need to be taken into account in relation to the design proposals.

Appendix II Supporting Documents

The following documents referenced in this summary can be consulted for further detail:

- Kilpatrick Hills FDP - Brief & Objectives
- Glasgow and Clyde Valley Forestry and Woodland Strategy
- Gavinburn Breeding Bird Report
- Auchineden potential acquisition Site visit report 16th June 2010
- Auchineden & Gavinburn Report 2012
- Gavinburn Otter Survey Report Draft Issue 1 23-11-12
- Gavinburn Arch Survey DSR
- Arch Survey CochnoKilpatrick
- Gavin Burn Native Woodland report
- EWUE Kilpatrick Hills