



**SP ENERGY
NETWORKS**

Glen Fruin | CL-CK1

**Changing the VIEW : Landscape Enhancement
Proposals Workbook**

Project Title: Changing the View : Glen Fruin Landscape Enhancement Proposals
Client: Scottish Power Energy Networks

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1 Introduction

Project Background

1.1
LUC has been commissioned by ScottishPower Energy Networks (SPEN) to assess the visual impact of existing transmission infrastructure in the Loch Lomond and The Trossachs National Park, and identify areas suitable for potential mitigation in order to reduce identified visual impacts.

‘Changing the VIEW’ (Visual Impact of Existing Wirescape) is a project being driven by SPEN, to positively influence the visual impact of existing transmission infrastructure in some of Scotland’s most sensitive and highly valued landscapes. The project presents a rare opportunity to reduce the landscape and visual impacts of infrastructure in specific areas within or near to National Parks and National Scenic Areas (NSAs). SPEN are keen to work collaboratively and in partnership with a range of stakeholders, to access a share of a £500 OFGEM fund, to deliver the best possible outcome for the areas in which they operate.

1.2
SPEN greatly value the local expertise and knowledge of stakeholders in understanding the nature of landscape and visual impacts, the potential for mitigation, and importantly, the range of different interests which will influence the deliverability of any given project.

1.3
This stage builds on the work of our initial stakeholder consultation, overall review of existing landscape and visual impacts, and identification of potential projects to take forward.

1.4
Stage 3 now builds on the work of our stakeholder consultation, overall review of existing landscape and visual impacts, and identification of potential projects to take forward. Each mitigation project will be developed in further detail, in conjunction with landowners and other stakeholders, to submit to OFGEM for consideration.

1.5 Stage 1 and 2 Findings

A landscape and visual impact assessment, undertaken by LUC, identified the key landscape and visual issues associated with the overhead line in this section. In landscape terms the lines form a notable linear feature in the glen, although the pylons are in scale with other

landscape features such as forestry. The lines are widely visible in the broad and straight glen, including to local farmsteads, walkers on the Three Lochs Way and users of the minor road and A817. The line is better integrated in the west, with some skylining and stacking occurring in the east.

Introduction

1.6
Glen Fruin, in the southwest of the National Park, has been identified as an area which may benefit from mitigation. Through a process of stakeholder consultation and technical review, landscape enhancement was identified as the most appropriate form of mitigation.

1.7
The purpose of this workbook is to set out the reasons why Glen Fruin would benefit from visual mitigation, and to present the options and ideas for landscape enhancement.

The Site

1.8
Site Description
Two parallel overhead lines pass through Glen Fruin, which lies to the north of Helensburgh. Glen Fruin is a broad valley with a flat floodplain rising to low hills. On lower ground, the simple landcover comprises open pasture, small woodland plantations and occasional tree groups. On higher ground, rough grazing and moorland cover the relatively smooth and sweeping upper slopes, with some larger areas of coniferous plantation. A minor road providing access to local farmsteads runs along the valley floor, parallel to the meandering Fruin Water. The A817 also runs through the glen, on the upper valley sides. Traditional farm buildings and groups of mature broadleaved trees are scattered across the farmland.

The Three Lochs Way long distance footpath follows the northern side of the glen, below the A817. This section of the route passes along a minor road between Helensburgh and Garelochhead, and connects with the John Muir Way.

1.9 Other Projects and Initiatives

The **Three Lochs Way** is a long distance walking trail first publicised by Helensburgh and District Access Trust in 2010. The path extends from Balloch to Inveruglas and is named for Gare Loch, Loch Long and Loch Lomond, which are key features along the route. The Trust is undertaking works to improve the route, and has an active and successful partnership with Luss Estates, the landowner for much of the area through which this section of the overhead line passes.

1.10
The **Mountains and People Project** is specifically aimed at enhancing and protecting the wild and special qualities of the mountains within both of Scotland’s National Parks. The project is focused on getting people involved in conservation work and learning about the mountains, and works include repairing damage to upland landscapes, and improving and maintaining paths. The project is led by Cairngorms Outdoor Access Trust, in partnership with both Cairngorms and Loch Lomond and the Trossachs National Parks Authorities, Forestry Commission Scotland and Scottish Natural Heritage.

1.11
The Community Partnership is a group that works closely with The Loch Lomond and the Trossachs National Park Authority to deliver a range of projects that help address specific community needs, including training and guidance, energy saving and carbon reduction, and help to develop local path networks.

Opportunities for Mitigation

1.12
Although this section of line was not identified as being of the highest priority for mitigation within the National Park stakeholders were generally supportive of the need to mitigate the visual impacts of the infrastructure through the glen. Undergrounding and re-routeing of the lines were not supported by the majority of stakeholders, mainly due to likely high costs and the lack of Special Qualities of the National Park on display in this area. Although landscape enhancement would not completely remove the visual impacts of the lines, it was stakeholders’ preferred mitigation option. When considered in the context of improved visitor experience along the Three Lochs Way, the proposals were judged to make the greatest contribution to the objectives of the National Park, and complement the tourism and visitor

interests of the nearby community of Helensburgh. This proposal also had major landowner buy-in from Luss Estates who are a key stakeholder involved in the Three Lochs Way and wish to see the route of the long distance footpath extended or diverted away from the existing transmission infrastructure into the Luss Hills.

1.13 Visual

The long term aim of landscape enhancement would be to improve the visual experience of users on the Three Lochs Way long distance footpath. This could be achieved through a combination of re-routeing the footpath away from the overhead lines and tree planting to screen views and improve the character of the glen. The proposal has landowner support from Luss Estates, and would take users away from the pylons and other visual distractions such as Faslane submarine base, into a currently underused part of the park, with opportunities for interpretation along its course. There are opportunities for community engagement in the implementation of landscape mitigation.

2 Site Appraisal

Context

2.1

This section of Parallel 132KV transmission lines run through Glen Fruin - a broad valley with a flat floodplain rising to low hills, to the south and the Luss Hill to the north. A minor road providing access to local farmsteads runs along the valley floor, on the north side of and parallel to the meandering Fruin Water. The A817 also runs through the glen, on the upper valley side to the north. The lines cross pastoral fields enclosed by dry stone walls, with traditional farm buildings and scattered mature broadleaved trees. The overhead lines skirt the edge of two straight edged conifer plantations at its north western end.

Character/ landscape pattern

2.2

Glen Fruin is part of the Strath and Glen Floor landscape character type, which can be sub-divided according to the contributions of farmland, forestry and woodland. The landscape is characterised by its U-shaped valley with a wide, flat flood plain enclosed by low moorland hills. Improved pasture occupies the flat valley floor, with some small, regular shaped plantations and occasional groups of mature broadleaf trees. Field boundaries are defined by a mix of dry stone walls, remnant hedgerows and post and wire fence. Road corridors follow the strath, and there are scattered farmsteads throughout. The A817 also runs through the glen, on the upper valley sides.

Visual amenity and Views

2.3

This parallel section of lines are highly visible from the majority of the glen, which is broad, straight and open. The lines are better integrated in the west, with some skylining and stacking occurring in the east. Visual receptors include residential receptors at local farmsteads, users of the minor road and A817, and walkers on core paths and the Three Lochs Way long distance footpath. The Three Lochs Way follows the northern side of the glen, below the A817 along the existing minor road. The route enters the glen at the

eastern end over an elevated plateau of open moorland where views of the lines are unobstructed. This section of the Three Lochs Way passes along a minor road between Helensburgh and Garelochhead, and connects with the John Muir Way.

Special qualities and Landscape Features

2.4

Glen Fruin is an intact farmed upland glen, but does not display many of the Special Qualities of the wider National Park. There are some features of interest, such as mature broadleaf trees and vernacular buildings and walls. Current hard-edged patterns of commercial forestry can create sharp transitions between lower and upper slopes, and overgrazing by sheep and deer is also perceived as a problem affecting habitat quality.

Current Management

2.5

TBC.

P1. Site Photographs



Views from Three Lochs Way over open plateau moorland section



Views from Three Lochs Way over glen floor



Views from Three Lochs Way over southern valley side and glen floor



F2.1 Local Landscape Character Areas



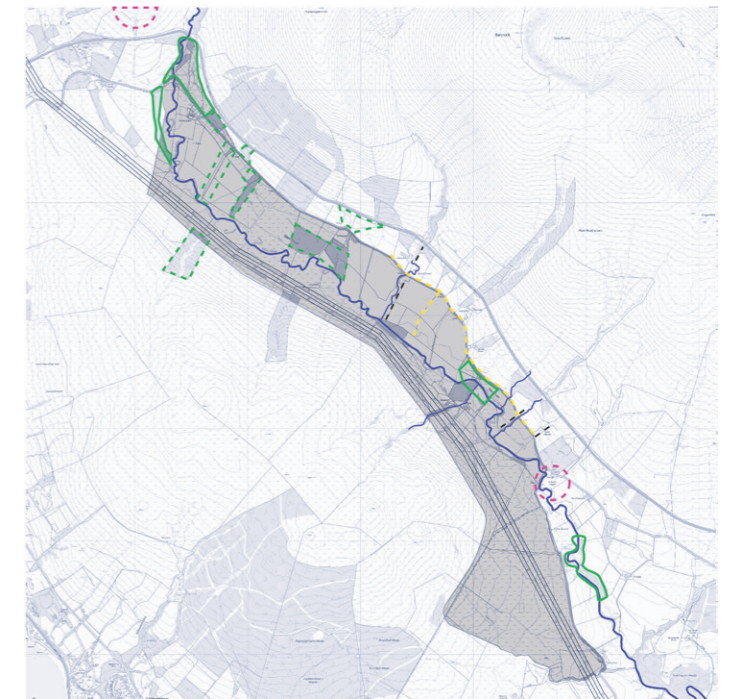
F2.2 Existing Vegetation



F2.3 Visibility from Three Lochs Way and Views



F2.4 Special Qualities and Landscape Features



Key

- A** Strath & glen floor (farmed)
- B** Strath & glen floor with forestry
- C** Strath & glen floor (wooded)
- D** Glen side
- E** Moorland

Key

- A** Occasional specimen trees around Auchengaich native mixed woodland to North on raised landform
- B** Remnant of hedgerow. Coniferous forestry areas & shelterbelts with few trees along Fruin water tributaries
- C** Fragmented hedgerows to roadside. Occasional trees along Fruin water & fragmented hedgerow to field boundaries
- D** Moorland grasses with blocks of coniferous forestry on slopes. Areas of native woodland to base of slopes
- E** Native tree planting along streams; occasional hedgerow tree. Hedgerows to roadsides. Areas of deciduous woodland
- F** Low lying moorland grasses. Gorse along burn with occasional windblown trees. Coniferous shelterbelt

Key

- Very high visibility
- High visibility with some screening & intervening tree planting
- Medium visibility at a distance with no skylining
- Some visibility intermittent screened tree planting
- No Visibility
- Long ranging views
- Medium ranging views

Key

- Landform
- Native mixed deciduous woodland
- Coniferous forestry shelterbelts
- Fruin water & tributaries
- Hedgerow
- Drystone walling

3 Precedent Projects and Guiding Principles

General

3.1

This first section of this chapter sets out precedent projects, the principles of which, inform the development of concept design for Glen Fruin.

This section is followed by the setting of guiding principles which have been developed to inform the design process for landscape enhancements for the mitigation of visual impacts of lines on the experience of Glen Fruin.

The guiding principles have been set out as a workthrough to demonstrate the following design elements which are to be taken into consideration during design development:

- Great Trossachs Forest and Scottish Natural Heritage Woodland Typologies;
- Materials;
- Woodland edge treatments;
- Woodland glade/ ride creation;
- Feathered woodland upland edge creation;
- Woodland establishment;
- Footpath creation; and
- Woodland planting structure.

Precedent Projects

3.2

The following projects have been identified as examples of the proposal that could be developed in Glen Fruin.

Strathfillan Community Woodland

The Strathfillan Community Development Trust (SCDT) have developed, planted and bought the 100 hectare Tyndrum Community Woodland, and co-manage the Crianlarich Community Woodland with the Forestry Commission. Tyndrum Community Woodland was set up with the long term aim of establishing new native woodland with community involvement as part of the Millennium Forest for Scotland. The site was previously a young conifer plantation; the SCDT replanted with Scot's Pine and Downy Birch, and the woodland has a promoted 'figure of eight' walking route, which includes part of the West Highland Way.

Glenlude, Scottish Borders

The John Muir Trust is working on a 20-year plan to 'rewild' a former sheep farm and conifer plantation into a mosaic of native habitats, at Glenlude, near Selkirk in the Scottish Borders. The conifer plantation is gradually being replaced with native broadleaf trees, which are also being planted on some of the open grassland. The trees are grown from seed collected locally and grown in Glenlude's tree nursery. Volunteers include schools, John Muir Trust members and a drug and alcohol rehabilitation charity.

Carrifran Wildwood, Scottish Borders

The Carrifran Wildwood project is an ecological restoration initiative set up by members of the Borders Forest Trust, in Carrifran glen near Moffat in the Scottish Borders. The aim is to recreate an extensive tract of wild and largely wooded land, which will eventually becoming a self-functioning natural ecosystem. The plan is to create a natural looking woodland mosaic with open ground, over 1500 acres. Over 600,000 trees and shrubs have been planted in the glen since 2000, all from local provenance stock. Increases in species such as woodland feeding birds have been noted. The project was initially funded by members of the public and charitable trusts, and is now supported by public and private sector organisations such as the Millennium Forest for Scotland Trust, SNH and the Forestry Commission.

P2. Precedent Project Photographs



Strathfillan Community Woodland: Images showing native woodland planting and regeneration



Glenlude: Images showing gradual removal of conifer plantation for creation of mosaic of native habitats through native woodland planting



Carrifran Wildwood: Images showing ecological restoration of Carrifran glen through native woodland planting

P3. Indicative Planting Palette Photographs

Planting

3.3
The following images display the proposed planting species and style, and materials palette which are proposed to be used in Glen Fruin.

3.4
The following is a list of native species which can be drawn on for woodland mixes. Many of these species are common to the National Park. **The Biodiversity Action Plan for the National Park** (Wild Park 2020) notes that expanding and restoring native woodland is one of the major goals for Forestry Commission land in the National Park.

Woodland mixes

Pinus sylvestris	Scots pine
Betula pendula	Silver birch
Betula pubescens	Downy birch
Alnus glutinosa	Alder
Populus tremulus	Aspen
Fraxinus excelsior	Ash
Fagus sylvatica	Beech
Carpinus betulus	Hornbeam
Quercus robur /	
Quercus petraea	Oak (Common / Sessile)
Sorbus aucuparia	Rowan
Sorbus intermedia	Whitebeam
Prunus avium	Wild cherry / Gean
Salix fragilis / alba /	Willow (Crack / White / Goat /
caprea / cinerea / aurita	Grey / Eared)
Ulmus glabra	Wych elm
Acer campestre	Field maple
Ilex Aquifolium	Holly
Juniperus communis	Common Juniper

Native Hedgerow / Shrubs / Understorey

Crataegus monogyna	Hawthorn
Prunus spinosa	Blackthorn
Acer campestre	Field maple
Corylus avellana	Hazel
Fagus sylvatica	Beech
Ilex Aquifolium	Holly
Lonicera periclymenum	Honeysuckle
Sambucus nigra	Elder
Rosa canina	Dog rose
Rosa rubiginosa	Sweet briar
Viburnum Opulus	Guelder rose
Ligustrum vulgare	Wild privet



Silver birch (Betula pendula)



Rowan (Sorbus aucuparia)



Alder (Alnus glutinosa)



Hazel (Corylus avellana)



Beech (Fagus sylvatica)



Scot's pine (Pinus sylvestris)



Holly (Ilex aquifolium)



Dog rose (Rosa canina)



Birch and Willow (Betula spp. and Salix spp.)



Goat willow (Salix caprea)



Blackthorn (Prunus spinosa)



Hawthorn (Crataegus monogyna)



Juniper (Juniperus communis)



Common Oak (Quercus robur)



Downy birch (Betula pubescens)

Planting/ Woodland Typologies



A. Native pine woodland

Altitudinal range from sea level to over 600m on steeply sloping ground with dry to damp acidic soils. Occurs with upland oakwood, upland birchwood and wet woodland habitats and also in patches within non-native conifer plantations.

Woodland Layer (Primary)

85%

Pinus sylvestris (Scot's pine)

Woodland Layer (Secondary)

15%

Betula pendula (Silver birch)
Betula pubescens (Downy birch)
Sorbus acuparia (Rowan)
Alnus glutinosa (Alder)
Salix cinera (Grey willow)
Ilex aquifolium (Holly)
Corylus avellana (Hazel)

Shrub/ Understorey Layer

Salix aurita (Eared willow)
Juniperus communis (Juniper)



B. Upland birchwoods

Moderate/ steep slopes generally below 400m, with well drained soils, but can extend well above this, can also occur in mosaics with Upland oakwoods, upland mixed ashwoods and wet woodland habitats.

Woodland Layer Primary 85%

Betula pendula/ pubescens (Birch spp.)

Woodland Layer (Secondary)

15%

Pinus sylvestris (Scot's pine)
Shrub/ Understorey Layer
Juniper (Juniperus communis)
Eared willow (Salix aurita)
Aspen (Populus tremula)
Grey willow (Salix cinera)



C. Upland mixed ashwoods

Moderate/ steep slopes with moist soils below 300m, in association with upland oakwood, upland birchwood and wet woodland habitats. Is also found in scattered patches on steep crags up to about 500m.

Woodland Layer (Primary)

85%

Fraxinus excelsior (Common ash)
Ulmus glabra (Wych elm)

Woodland Layer (Secondary)

15%

Grey willow (Salix cinera)
Hazel (Corylus avellana)
Downy birch (Betula pubescens)
Elder (Sambucus nigra)
Sorbus acuparia (Rowan)
Shrub/ Understorey Layer
Blackthorn (Prunus spinosa)
Dog rose (Rosa canina)
Eared willow (Salix aurita)
Gorse (Ulex europaeus)



D. Atlantic oakwoods

Moderate/ steep slopes below 300m in with well drained soils. Can occur in mosaics with upland birchwoods, upland mixed ashwoods and wet woodland habitats. Oak forms >30% of the canopy cover.

Woodland Layer (Primary)

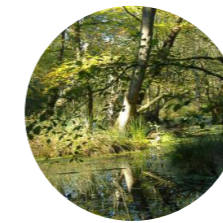
80%

Sessile Oak (Quercus patraea)
Common Oak (Quercus robur)

Woodland Layer (Secondary)

20%

Silver birch (Betula pendula)
Rowan (Sorbus acuparia)
Hazel (Corylus avellana)
Holly (Ilex aquifolium)
Shrub/ Understorey Layer
Juniperus communis (Juniper)
Bramble (Rubus fruticosus)
Dog rose (Rosa canina)
Gorse (Ulex europaeus)
Broom (Cytisus scoparius)



E. Wet woodland

Flushed slopes, wet hollows, valley floors and edges of wetlands, rivers streams and lochs in upland and lowland situations.

Woodland Layer (Primary)

100%

Grey willow (Salix cinera)
Goat willow (Salix caprea)
Downy Birch (Betula pubescens)
Alder (Alnus glutinosa)

Shrub/ Understorey Layer

Eared willow (Salix aurita)
Osier (Salix viminalis)
Hawthorn (Crataegus monogyna)



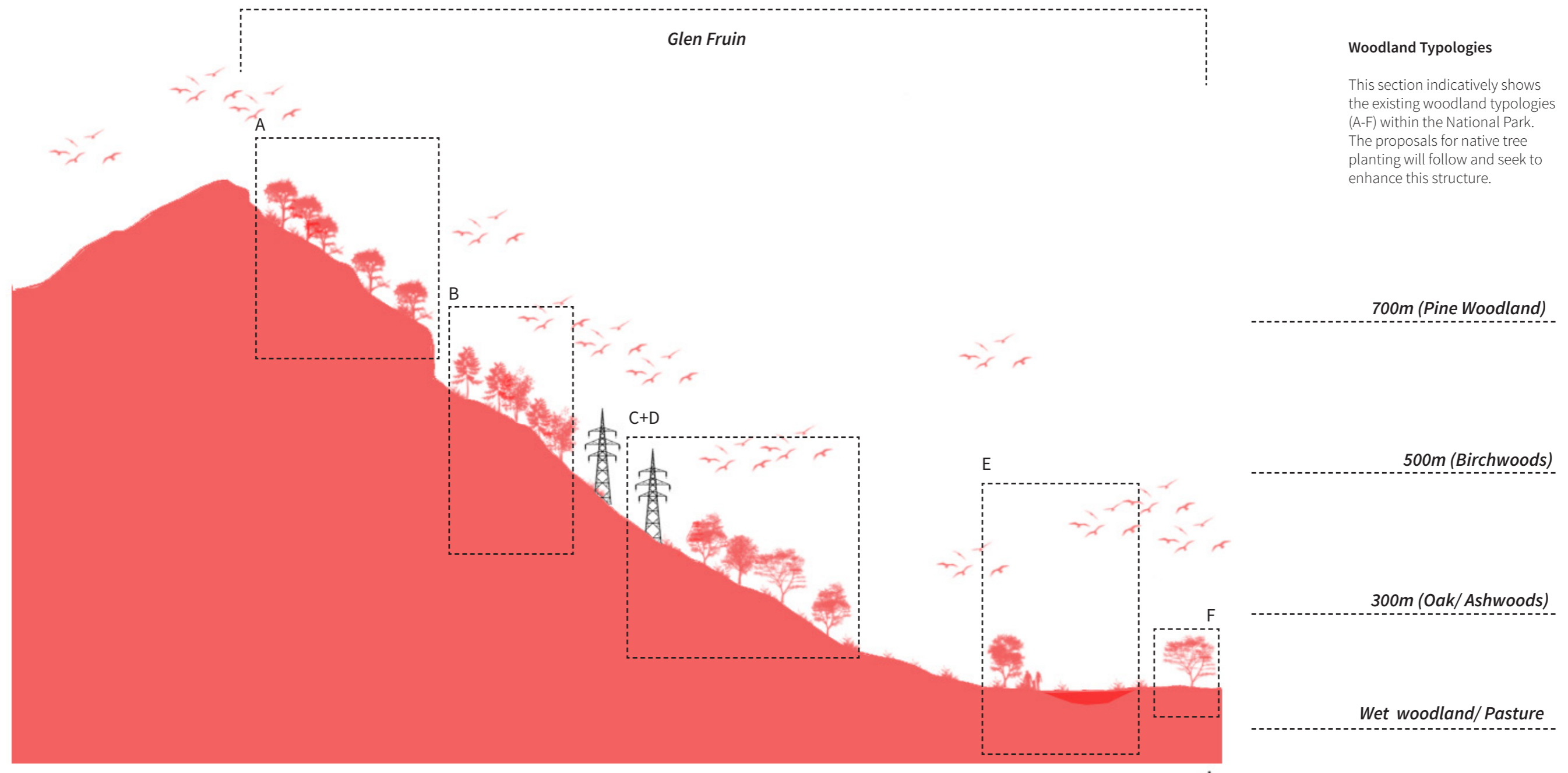
F. Wood-pasture and Parkland

Mostly below 300m in altitude in areas of native or plantation woodland or enclosed farmland. In upland areas most commonly associated with native woodland.

Tree Planting

Sessile Oak (Quercus patraea)
Common Oak (Quercus robur)
Ash (Fraxinus excelsior)
Alder (Alnus glutinosa)
Birch (Betula pendula/ pubescens)
Scot's pine (Pinus sylvestris)
Hazel (Corylus avellana)
Hawthorn (Crataegus monogyna)

F3.1 Indicative Section Woodland Typologies



Materials



G. Fencing

To ensure successful establishment of the proposed native woodland planting area will require to be deer/ sheep fenced for protection from grazing animals. All new woodland will be fenced in accordance with Forestry Commission/ National Park technical guidance and specification.

Fence lines will be designed to be sympathetic to natural contours and integrate forest edges into the landscape, creating natural forest edges as detailed over the following pages.

All fencing shall be treated softwood timber with a durability of 40 years plus with combination of rectangular wire mesh and hexagonal wire mesh galvanised to BS EN 10244-2 to prevent deer and wild mammal species. Fencing shall be min. 1.8m in height, 300mm x 220mm max. mesh size with 1050mm wide rabbit/ hare proof hexagonal 31mm mesh netting to base to be turned back by 150mm and pinned.

Treated softwood timber stiles and gates will also be required to facilitate access for woodland management activities. There will also be a requirement to cross streams in some locations which will require appropriate design to prevent access.

All areas shall be assessed by a qualified ecologist to identify species requirements i.e. badgers etc. to ensure appropriate gates are installed.



H. New Footpaths

All new footpaths shall be designed in accordance with SNH/ National Park/ Upland Path Advisory Group technical guidance i.e. Upland Pathwork Construction Standards for Scotland/ Constructed tracks in the Scottish Uplands.

In general paths should be constructed using locally won aggregate where possible to a width varying between 600-1200mm and a minimum depth of 250mm. Minimum depths for path construction are as follows:

- 50mm of compacted surface material;
- 100mm of compacted base material; and
- 150mm of sub-base material.

Excavated material with turfs and boulders shall be used to define and contain the path edge, with the path surface sitting slightly higher than the ground at the path edge to avoid water collecting.

Localised site conditions will require independent assessment of suitable construction methods and materials i.e. in situations of peat/ waterlogged ground which may require matting/ geotextile use.

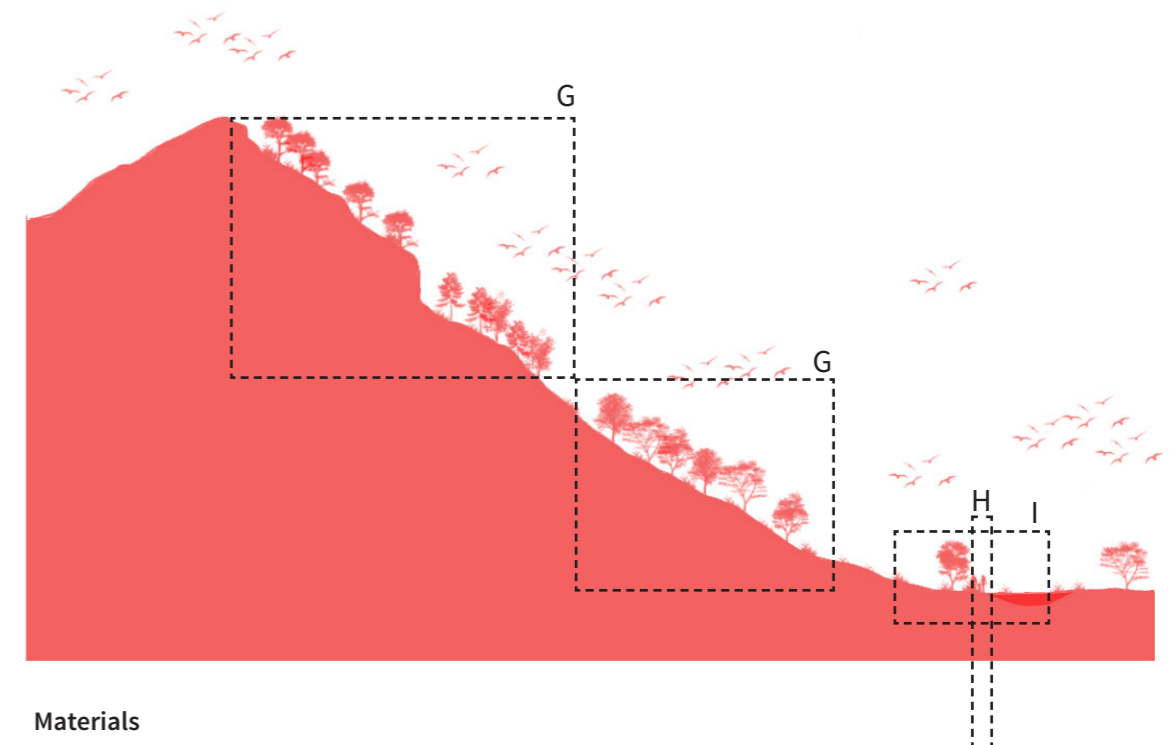


I. Wayfinding

The proposals involve the provision of alternative routes through the site area resulting in the requirement for creation new pathways which deviate from the existing routes. There is therefore a requirement to ensure these are adequately sign posted to ensure that these routes are adopted by users. To assist with this it is proposed that a wayfinding strategy is created to include implementation of the following:

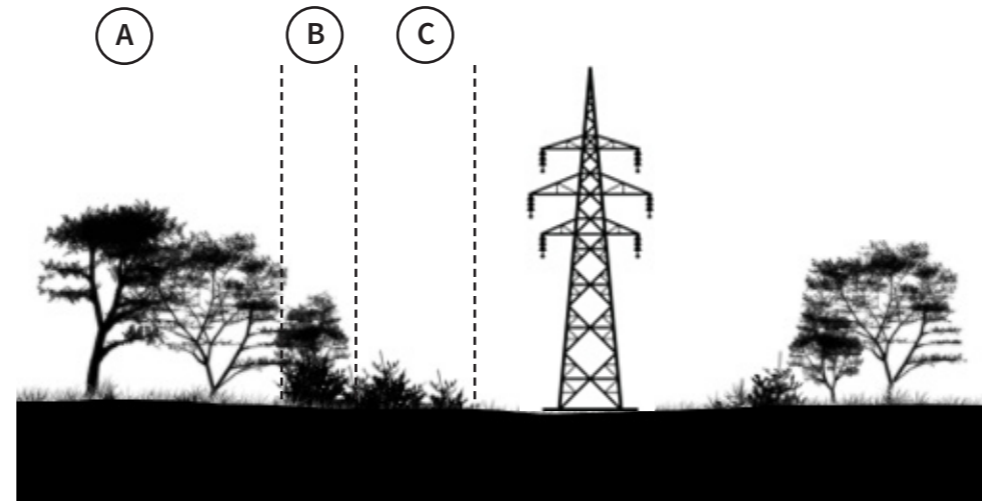
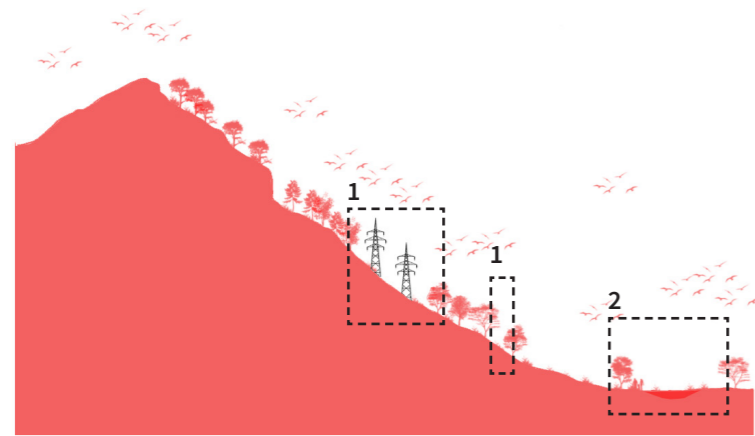
- Fingerpost directional signage;
- Waymarking posts; and
- Orientation panels.

All signage and wayfinding elements are to be design sensitively to suit the surrounding setting and be appropriate in scale and location in accordance with National Park/ Signage Guidance for Outdoor Access guidance. Materials to be utilised shall be durable treated where appropriate to provide a long lifespan.



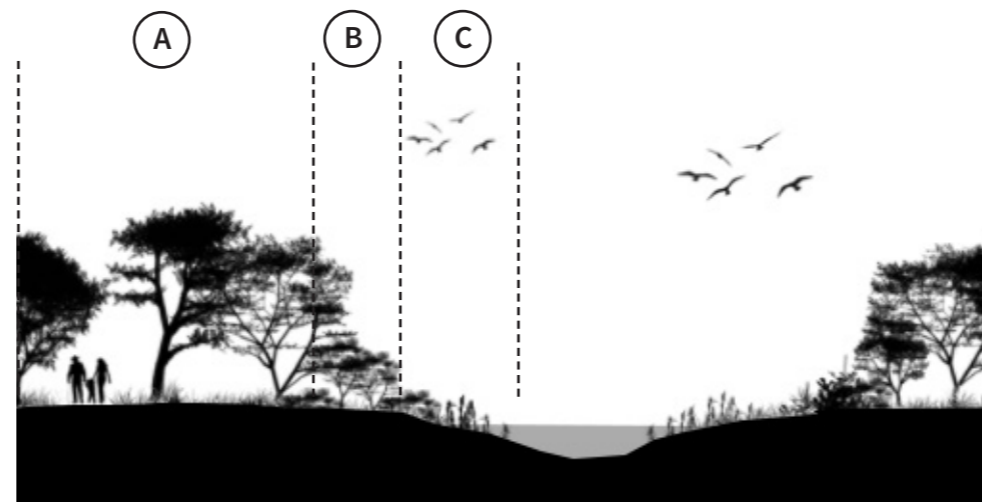
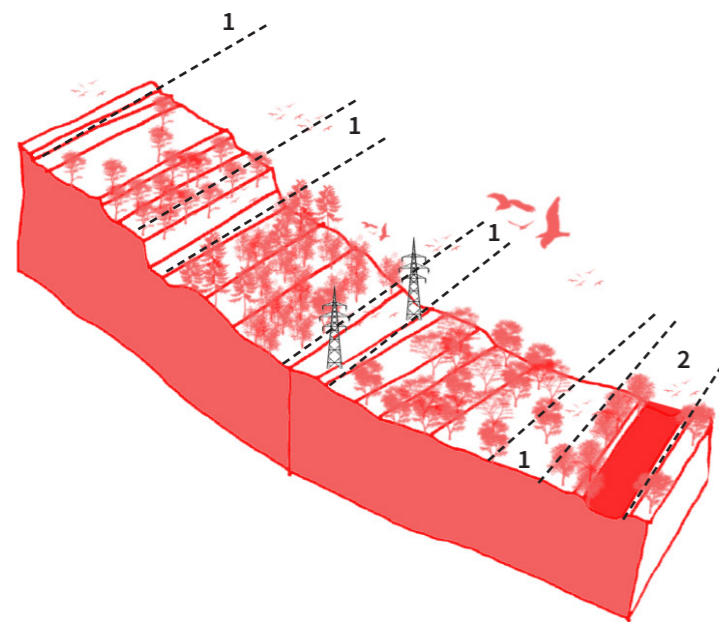
Materials

This section indicatively shows where proposed materials for fencing, footpaths and wayfinding will be deployed.



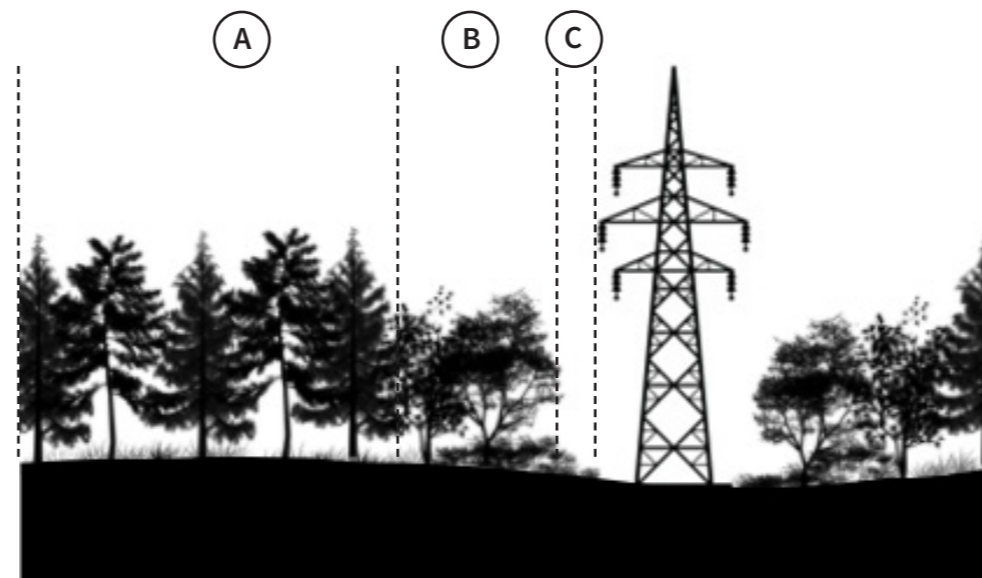
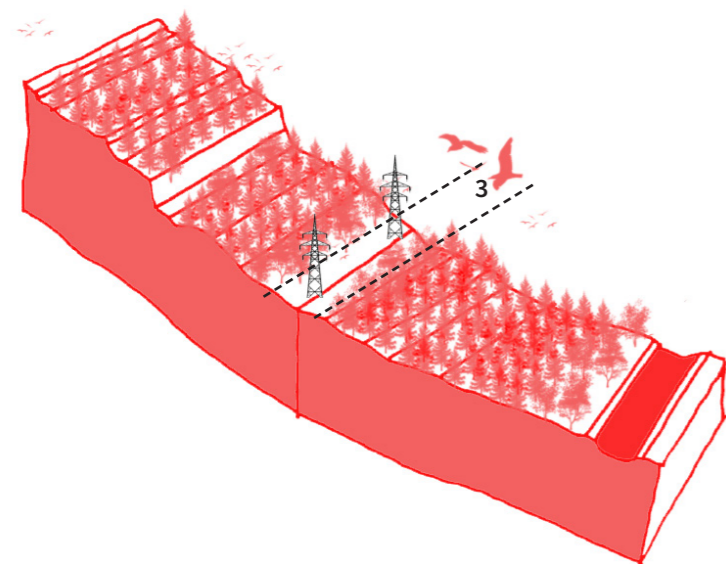
F3.2
Woodland Edge Treatment 1
indicative Section

This treatment will be deployed in areas where new woodland is to be created along the wayleave and to all new woodland edges and glades.



F3.3
Woodland Edge Treatment 2
Indicative Section

This treatment will be deployed in areas where new woodland is to be created along water edge/ riparian woodland.



F3.4
Woodland Edge Treatment 3
Indicative Section

This treatment will be deployed in areas where new woodland is to be created to existing plantation wayleave.

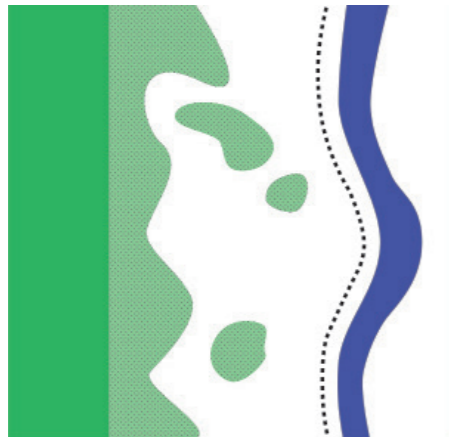
- A. Woodland zone
- B. Shrub zone
- This is the transition zone between trees and the open area of the wayleave/ open space.
- C. Herb zone
- This is the transition zone between trees and the open area of the wayleave/ open space.

F3.5
Woodland Edge Treatments
indicative Plan Diagrams

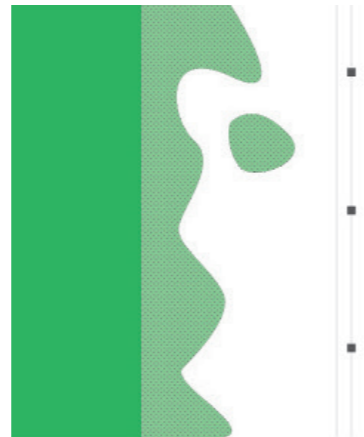
The following plan diagrams illustrate the proposed edge treatment in situations likely to arise during the design development and implementation of native woodland planting. These are intended to act as a guide for edge treatments in the scenarios likely to be encountered.

Treatments all propose naturalistic design of the permanent woodland and woodland edge through creation of glades, rides, scalloped edges, habitat islands and feathered edges to upland slope sides through sensitive following of natural hollows and depressions within the existing landform.

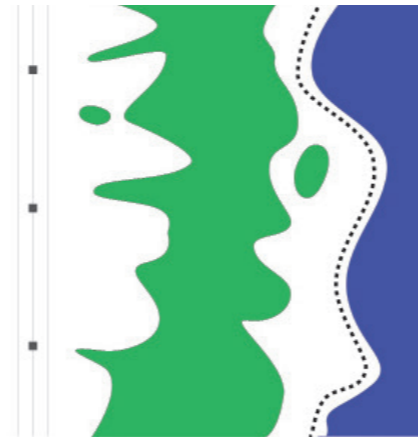
Native woodland edge to existing forestry and open space



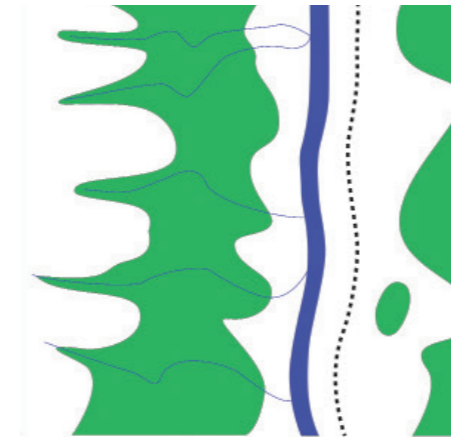
Native woodland edge to wayleave



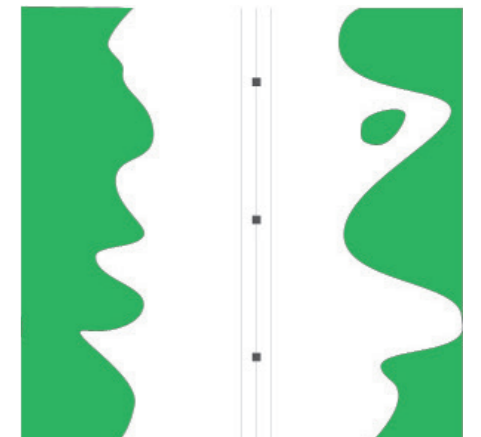
Native woodland on lower slopes between waters edge and wayleave



Native woodland on steep slopes with tributaries



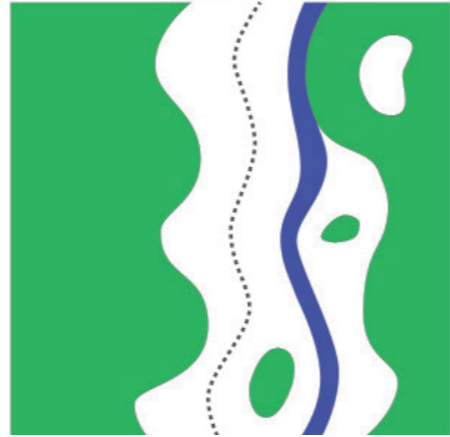
New native woodland edge to wayleave



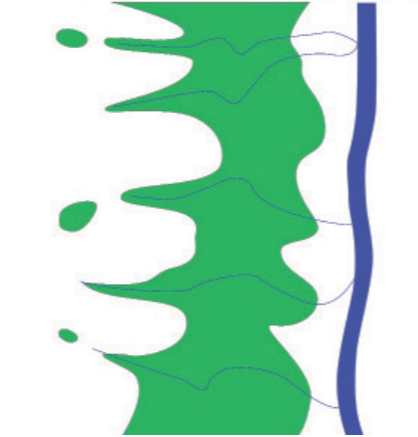
Riparian/ wet woodland corridor along rivers/ streams



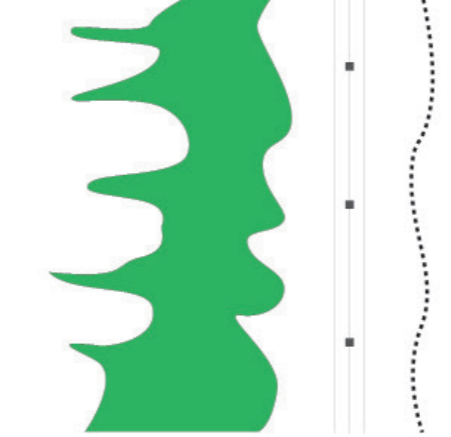
Native woodland edge to river/ stream and footpath



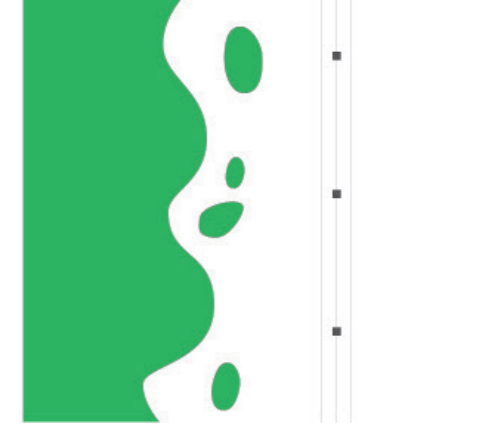
Native woodland planting edge to upland glen



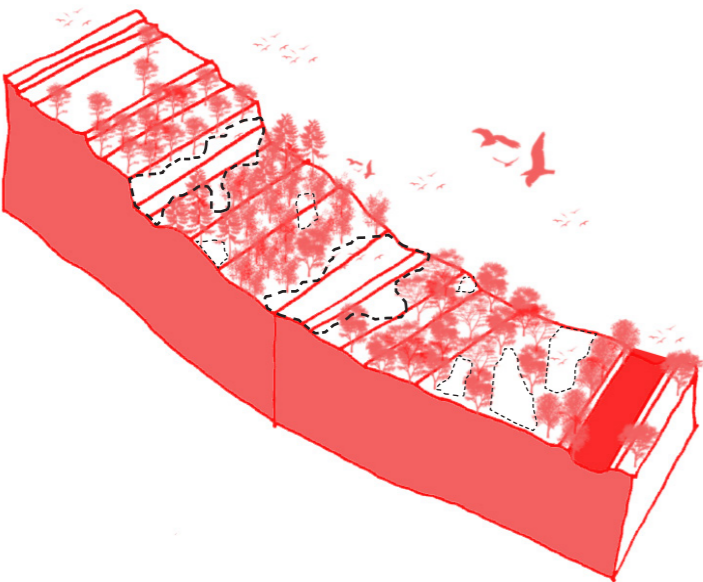
Native woodland planting to lower slopes and wayleave edge



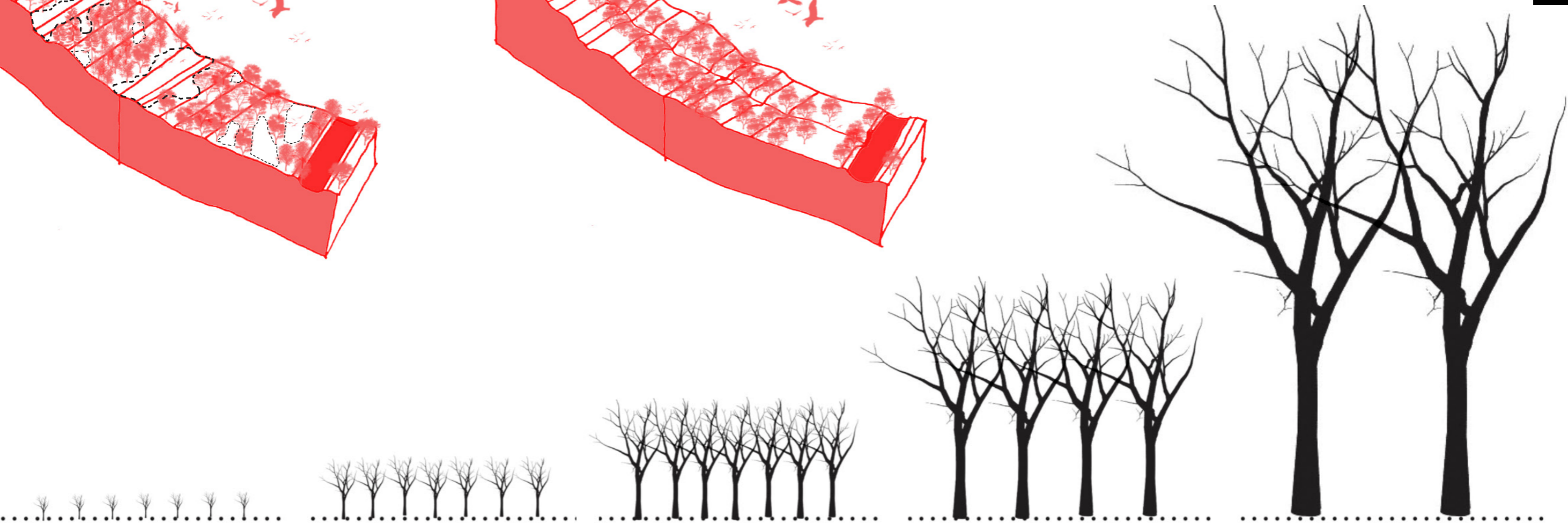
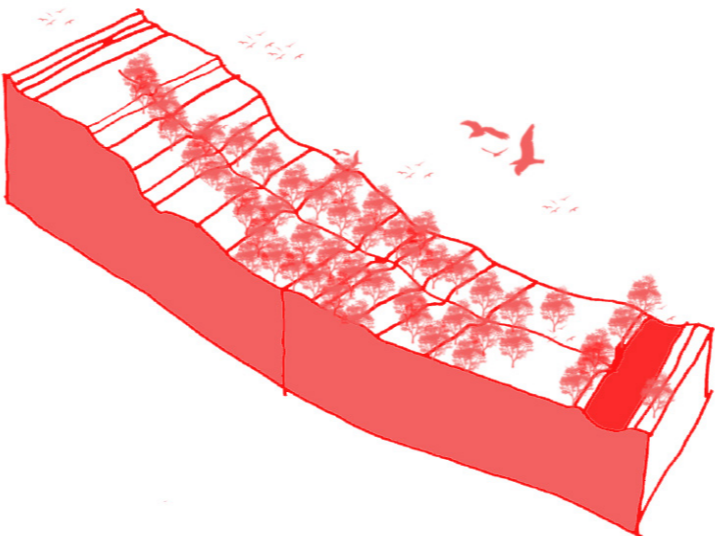
Native woodland edge to wayleave



F3.6 Woodland Glade/ Ride Creation



F3.7 Feathered Woodland Upland Edge Creation



F3.8
Woodland Establishment
Diagrams

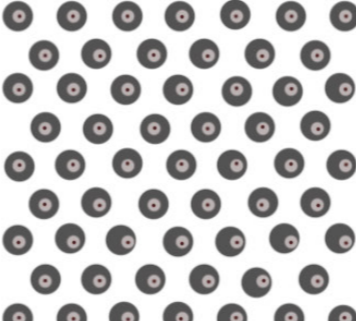
1 year old
Whips at 0.5m-1.0m height and
15cm wide; trunk 2cm wide

Age: 1 year
Canopy: 15cm
Height: 0.5m-1.0m
Girth: 2cm



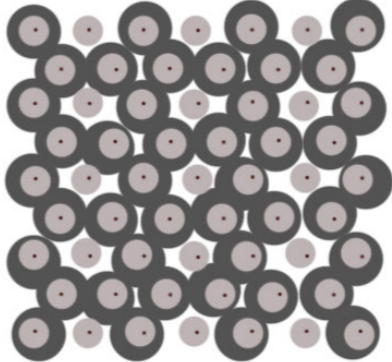
5 years old
Growth 2.0m-3.5m height and
0.6m wide; trunk 8-10cm wide

Age: 5 years
Canopy: 0.6m
Height: 2.0-3.5m
Girth: 8-10cm



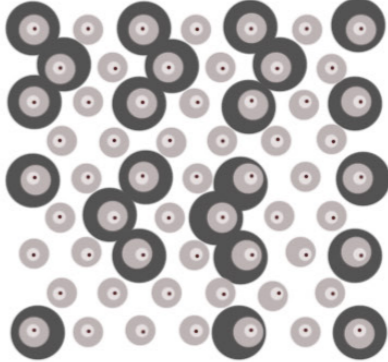
10 years old
6.0-7.5m height and 1.2m wide;
trunk 15-20cm wide

Age: 10 years
Canopy: 1.2m
Height: 6.0-7.5m
Girth: 15-20cm
Thinning: every 5-10 years



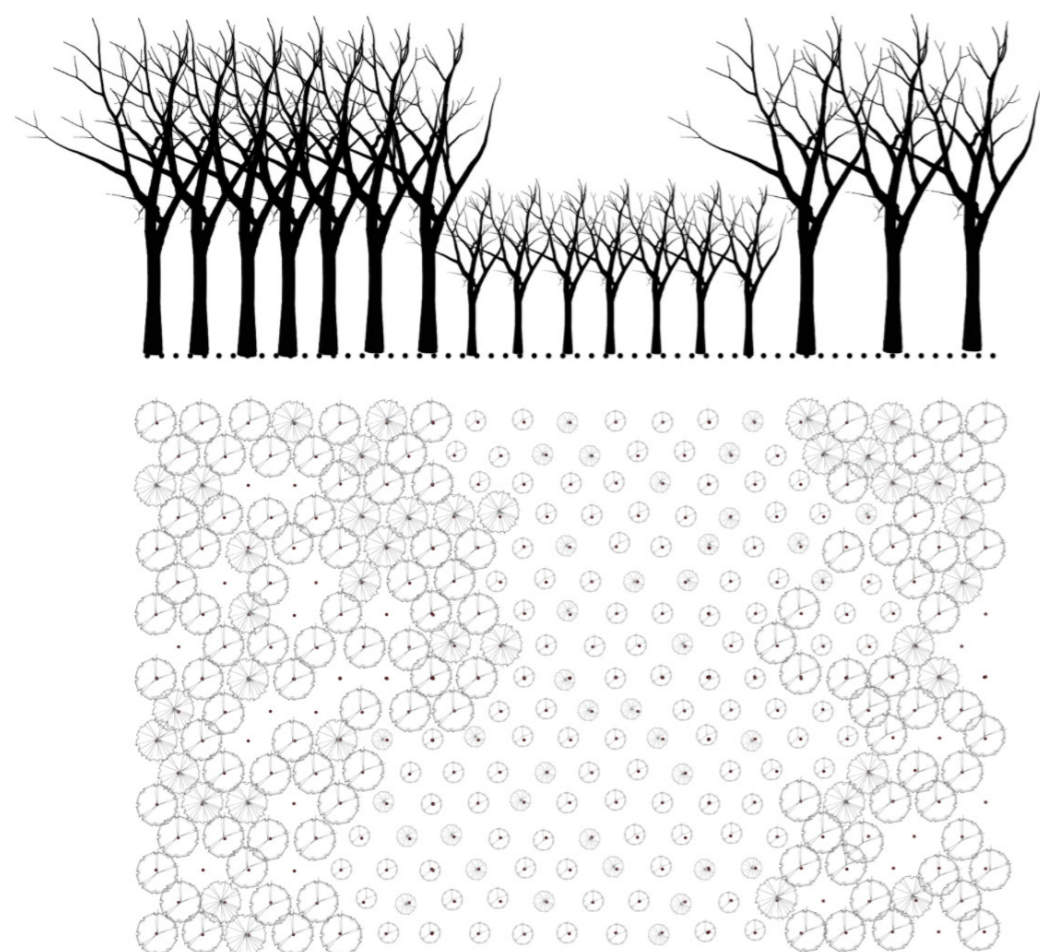
25 years old
10-15m height and 7m wide;
trunk 25cm wide

Age: 25 years
Canopy: 7m
Height: 10-15m
Girth: 25cm
Thinning: every 5-10 years



40 years old
20-30m height and 10-15m
wide; trunk 30-40cm wide

Age: 40 years
Canopy: 10-15m
Height: 20-30m
Girth: 30-40cm
Thinning: every 5-10 years



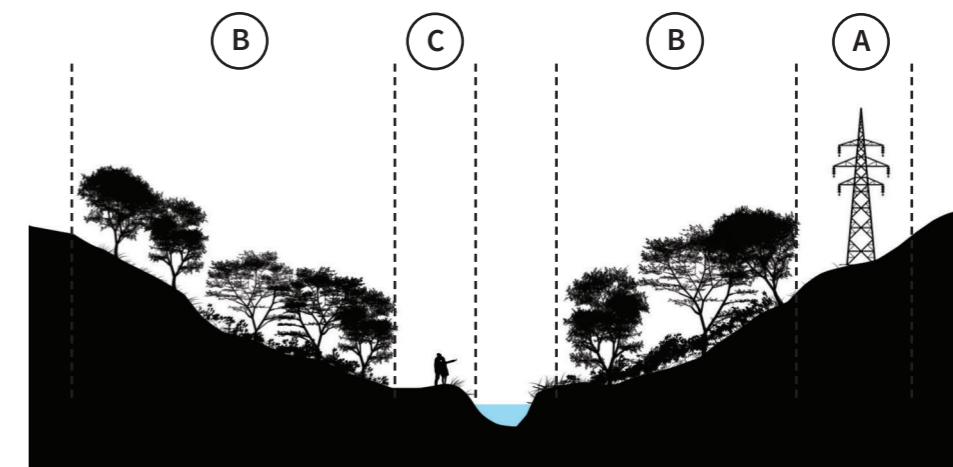
F3.9
Mixed Age Woodland
Establishment Diagram

25 and 10 year old
Planting carried out at 15 year intervals to ensure diversity of age of woodland for ecological benefits.
Above shows indicative woodland at 25 and 10 years of age.

F3.10
Footpath Creation Treatment 1
Indicative Section

A. Wayleave
B. Wet Woodland/ Riparian zone
This is the transition zone between trees and the open area of the wayleave/ open space.
C. Footpath on water's edge on valley/ glen floor

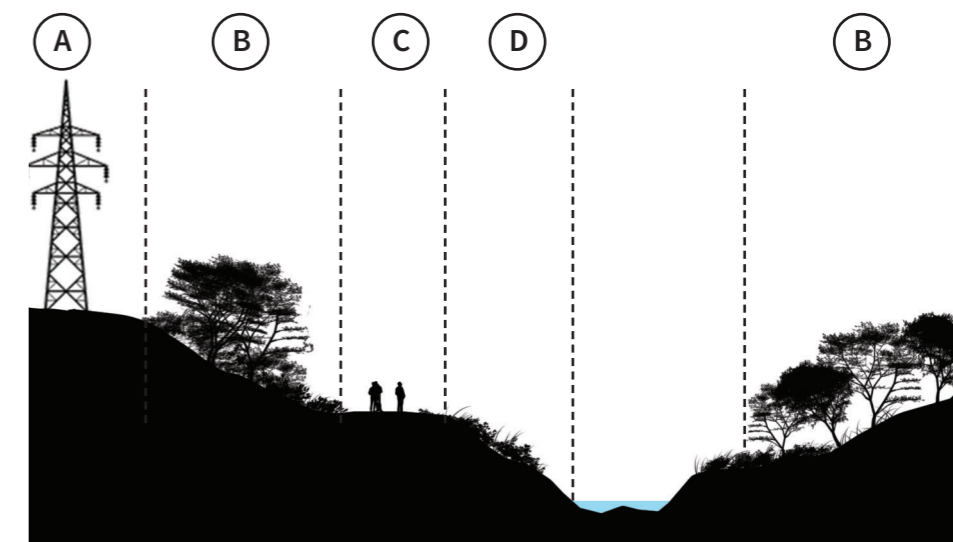
This treatment will be deployed in areas where footpaths are proposed directly adjacent to the water's edge.



F3.11
Footpath Creation Treatment 2
Indicative Section

A. Wayleave
B. Wet Woodland/ Riparian zone
This is the transition zone between trees and the open area of the wayleave/ open space.
C. Footpath away from water's edge on lower slope sides
D. Herb/ Wetland zone

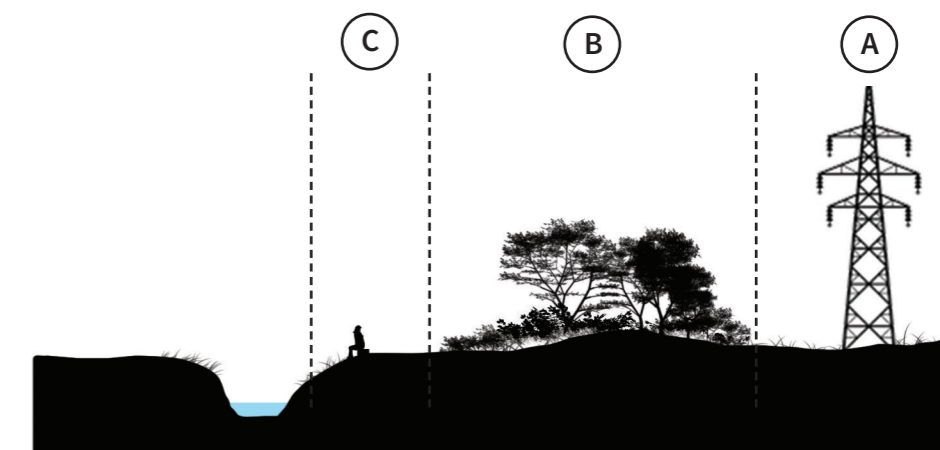
This treatment will be deployed in areas where footpaths are proposed to lower slope sides in close proximity to water's edge.



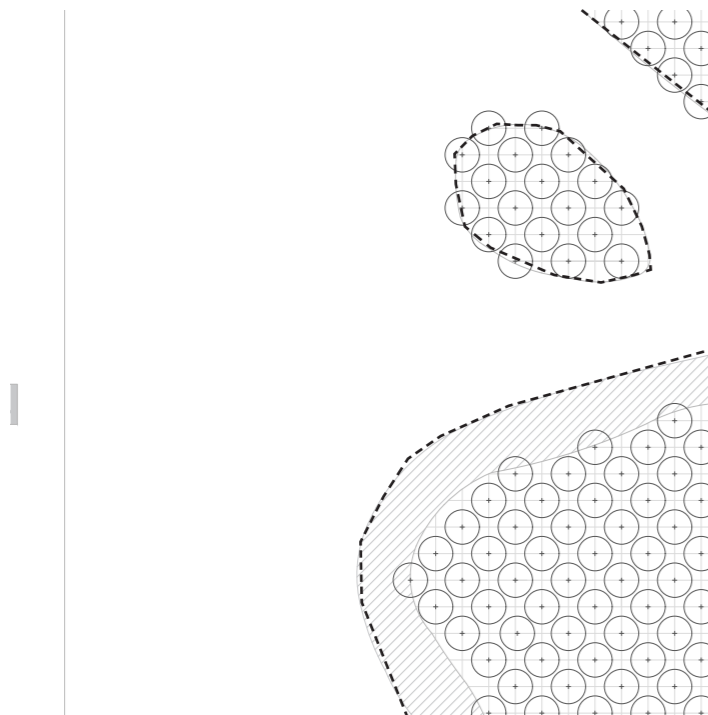
F3.12
Footpath Creation Treatment 3
Indicative Section

A. Wayleave
B. Wet Woodland/ Riparian zone
This is the transition zone between trees and the open area of the wayleave/ open space.
C. Footpath away from water's edge on lower slope sides

This treatment will be deployed in areas where footpaths and viewpoints are proposed to open space/ open water.

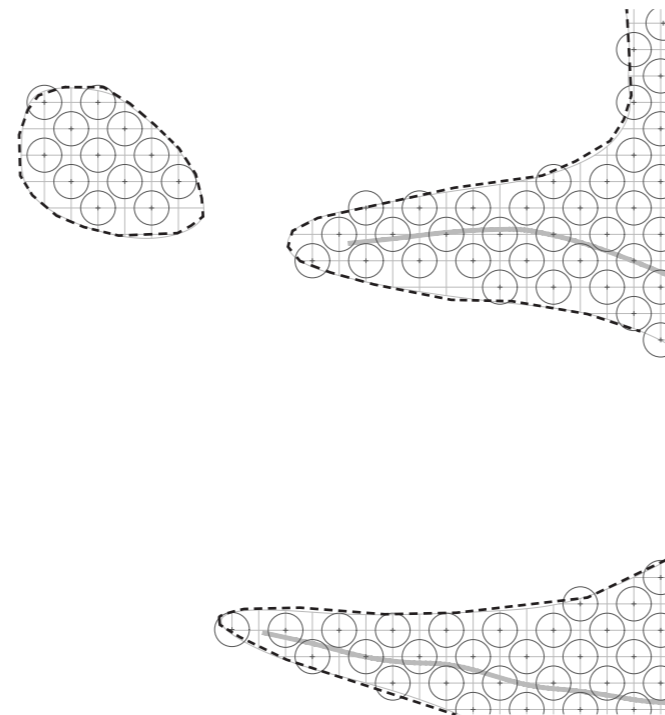


F3.13
Woodland Edge Indicative Planting Structure



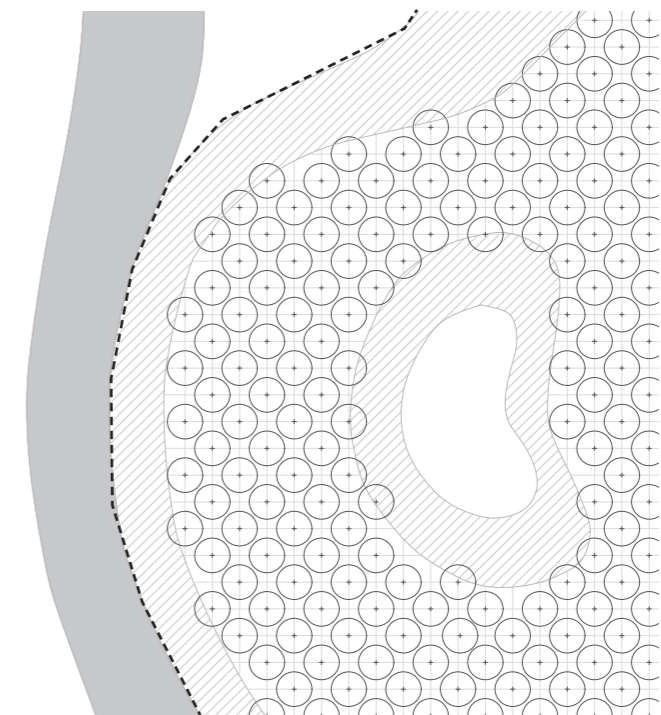
A. Wayleave with habitat island

Woodland planting to interior. Dashed black line indicates extents of area to be fenced during establishment. The hatched area illustrates area not to be planted but to allow for natural regeneration to form shrub zone.



B. Upland slope with tributaries and habitat island

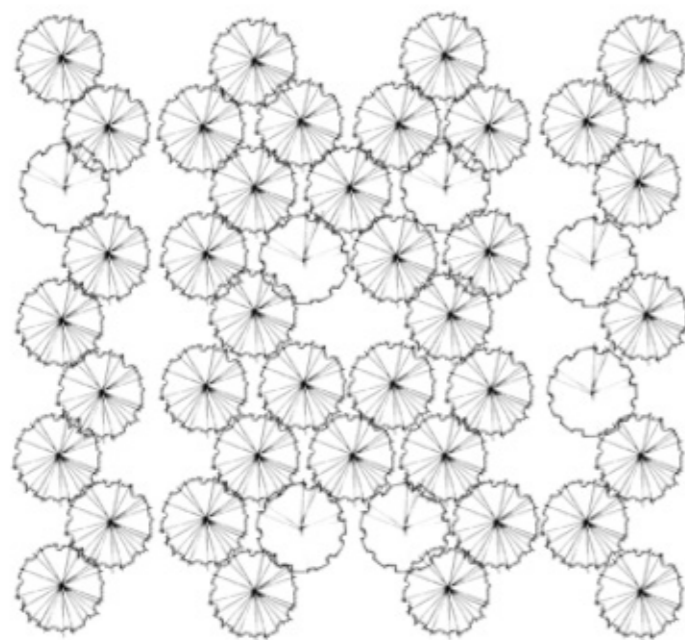
Woodland planting to upland edge to follow natural hollows and depressions. Dashed black line indicates extents of area to be fenced during establishment.



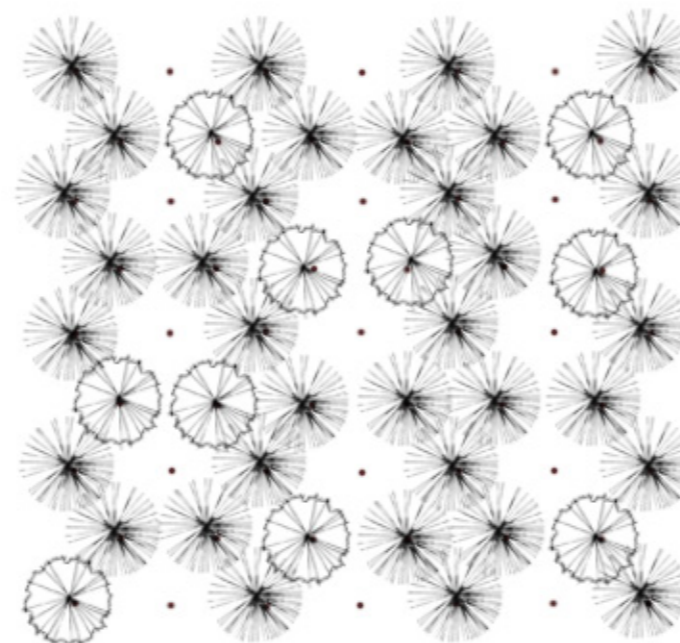
C. Water edge with woodland glade

Woodland planting to interior with areas left unplanted to form glades within the woodland mosaic. Dashed black line indicates extents of area to be fenced during establishment. The hatched area illustrates area not to be planted but to allow for natural regeneration to form shrub zone.

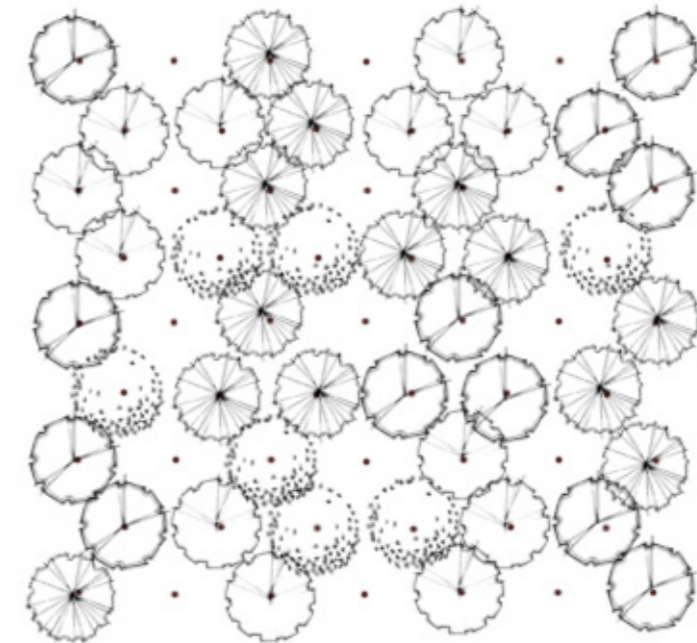
F3.14
Indicative Woodland Structure (25 years old)



A. Native Birch/ Ash/ Oakwoods



B. Native Pinewood



C. Wet Woodland

4 Concept Development/ Optioneering

General

4.1 Findings from the site appraisal have been taken forward to inform the development of the overall concept for landscape enhancement proposals. Due to the scope provided by the size of the study area and the complexities of the landscape a series of options were developed which provide different solutions for mitigation of the visual impact of the CL-CK1 lines on Glen Fruin and the Three Lochs Way.

4.2 Three options have been developed and are set out in this chapter. Analysis of each option has also been carried out, to ascertain strengths and weaknesses, and assist in determining the most suitable option to take forward and develop further to outline design stage.

Luss Glens and Hills: Three Lochs Way Alternative Route

4.3 In addition to the landscape enhancement proposals within Glen Fruin, SPEN has developed a proposal for an alternative route for the Three Lochs Way long distance footpath. The 55.5km Three Lochs Way is promoted as one of Scotland's Great Trails and runs between Balloch to Inveruglas, with a large proportion of the route located within the Loch Lomond and The Trossachs National Park. Stage 2 of the route runs from Helensburgh to Gareloch, via Glen Fruin passing beneath the 132kV transmission lines near Black Bridge before running parallel with the transmission lines north-westwards along the glen.

North-west of Glen Fruin the route exits the National Park, but continues to follow the transmission lines northwards parallel with Loch Long. South-west of Arrochar the route re-enters the National Park and parallels the existing 132kV transmission lines within the SSEN licence area (SSEN line section SHET10/11).

Stakeholder consultation and correspondence with the Luss Estates Company, a major landowner in this area, The Friends of Loch Lomond & The Trossachs and the Helensburgh and District Access Trust highlighted the significant adverse visual impact of the existing high voltage transmission infrastructure experienced by

walkers along a substantial proportion of the route from Glen Fruin to Inveruglas.

A proposal has been developed which offers an alternative route for a proportion of the Three Lochs Way between Glen Fruin and Arrochar, taking users of the trail (receptors) away from the existing transmission lines which run parallel with the eastern shore of Loch Long. This alternative route will offer access to the Luss Glens and Hills, utilising existing and historic rights of way through Auchengaich Glen, Glens na Caorainn, Mollochach and Glen Douglas. The route would then pass over An t-Sreang ('The String') which forms a high pass between Glen Douglas and Arrochar. The alternative route would also provide a link between the existing route and the small settlements of Luss and Inverbeg, not currently served by the Three Lochs Way.

The proposed alternative route will involve the construction of approximately 17.5km of new hill paths, passing through the upland glens of the Luss Hills between Loch Long and Loch Lomond. Outline costs for the implementation of these works are provided.

Option 1

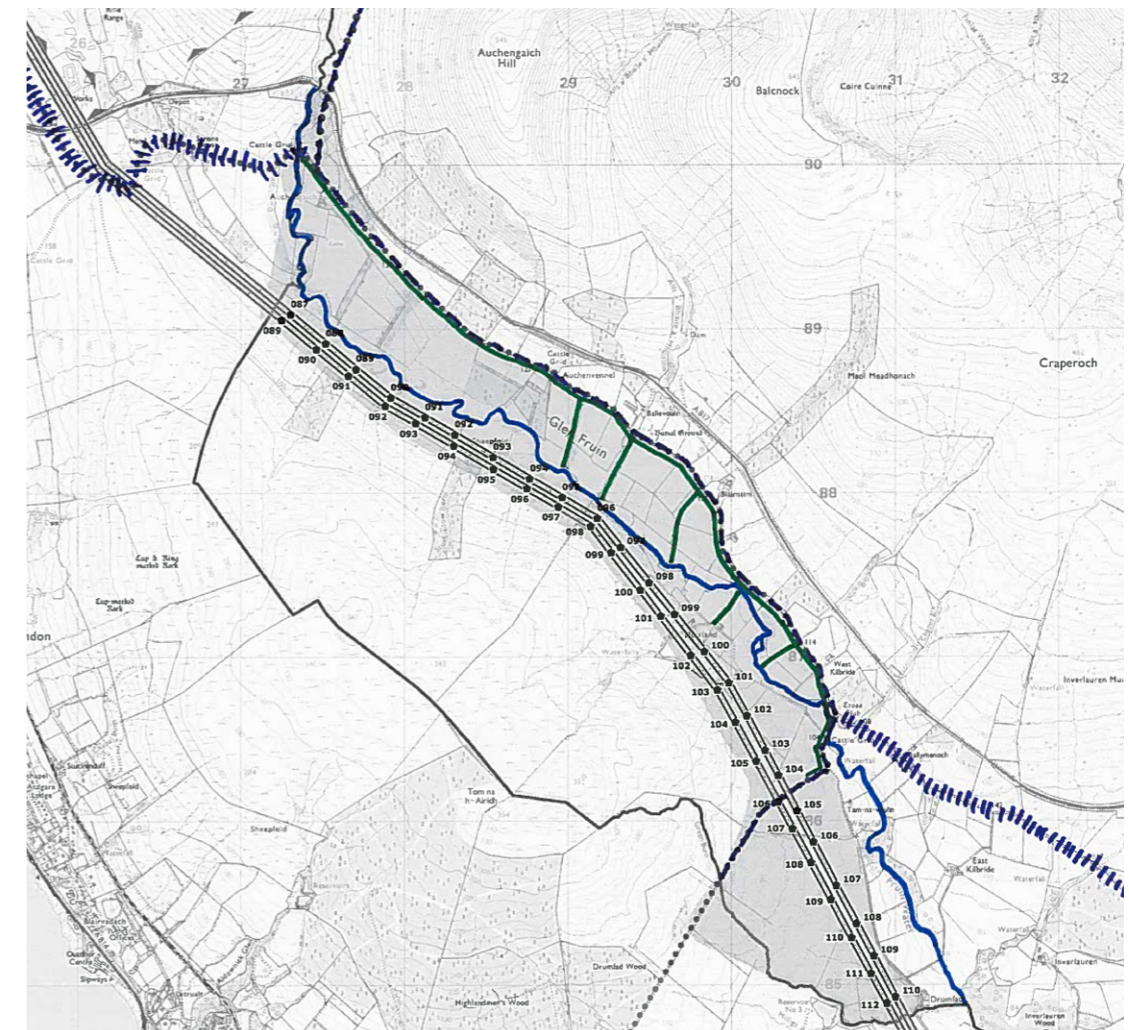
4.3 This option explores retaining the Three Lochs Way along the existing route and providing landscape enhancement measures to the southern edge, along the minor road. Picking up on the existing vegetation pattern of hedge-rows and hedgerow trees, and tree lined streams the proposal include for the following:

- Reinstatement of eroded hedgerows along the road/ Three Lochs Way;
- Planting of hedgerow trees; and
- Additional supplementary native planting to existing streams which run perpendicular to the Fruin Water.

The above will all assist in providing intermittent screening of the transmission lines from the Three Lochs Way.

Option 1

Plan



Section



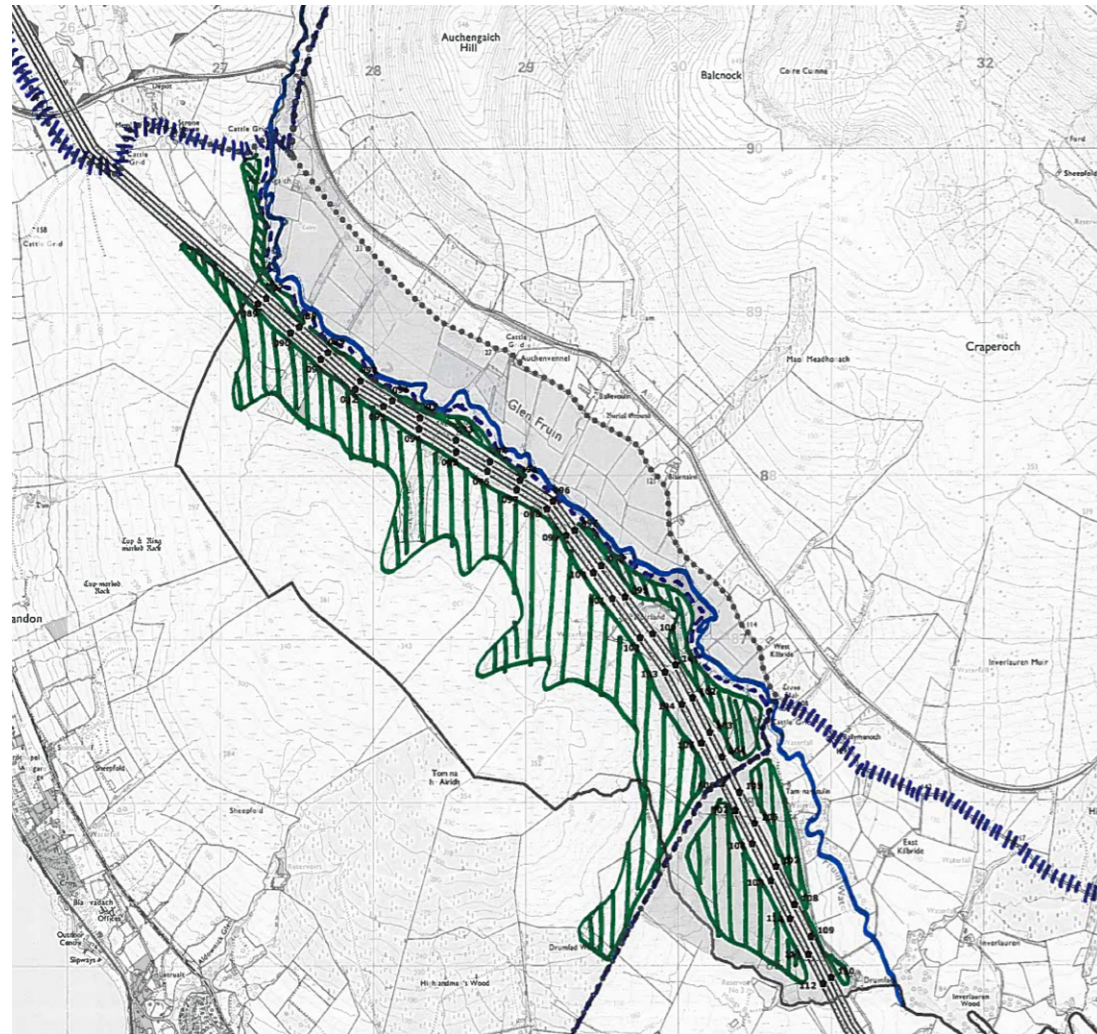
Section showing retention of the Three Lochs Way along the existing road route with new hedgerow, hedgerow tree and stream edge tree planting.

It is anticipated this option will afford partial screening with intermittent views of the transmission lines still possible between the planting.

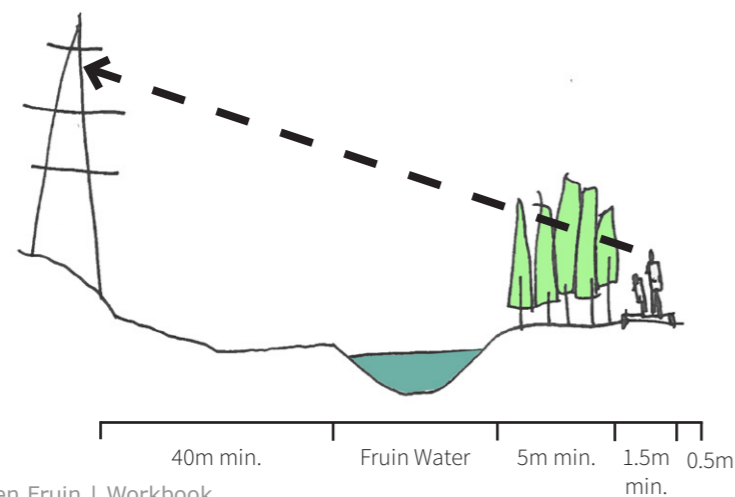
Glen Floor and Fruin Water Stream edge planting 1.5m TLW

Option 2

Plan



Section



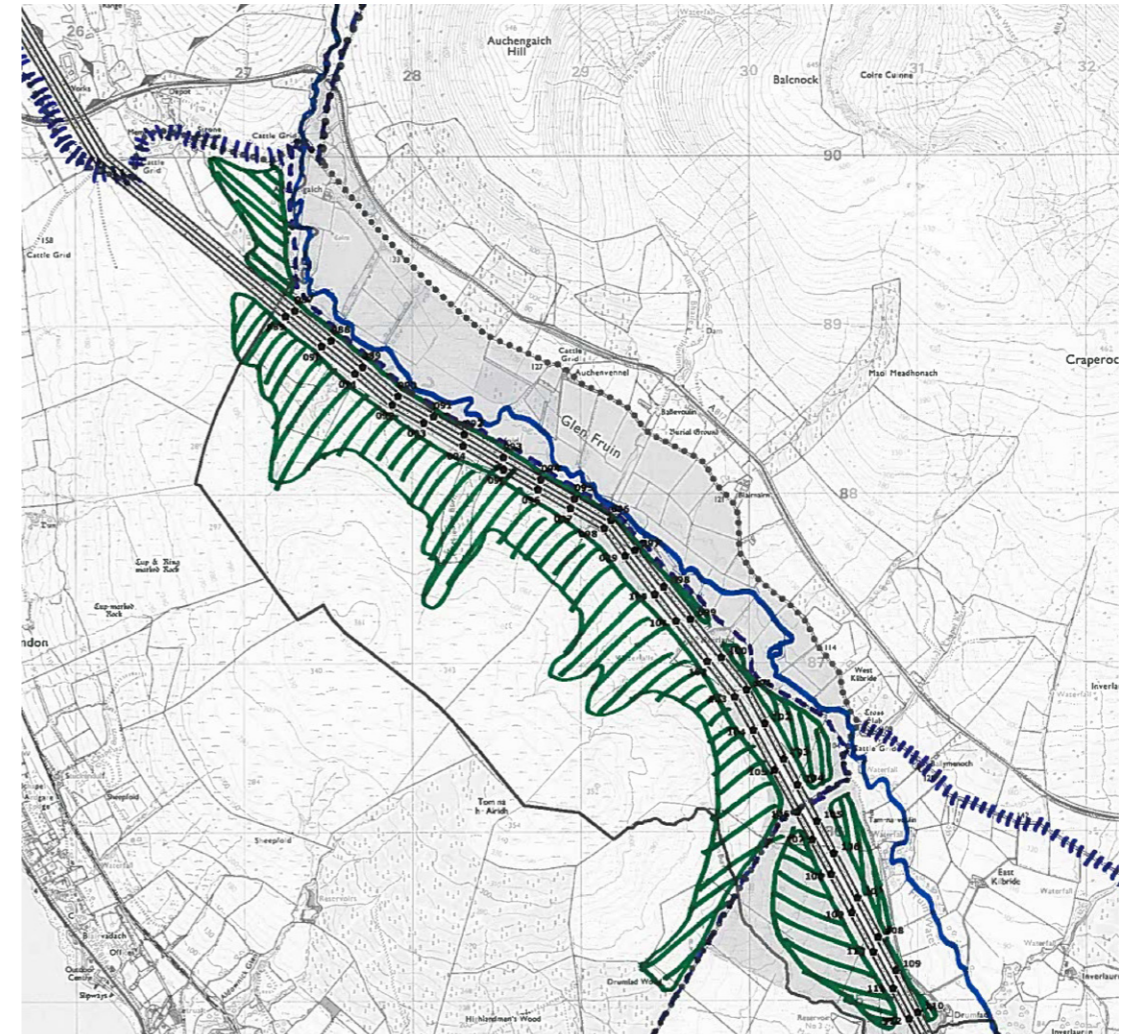
Section showing alternative route for the Three Lochs Way from existing route along the minor road to the northern side of the Fruin Water. Landscape enhancement tree planting is proposed to the southern side of the Fruin Water to screen views from the path.

It is anticipated that there will largely be full screening afforded, dependent on how this treatment is applied along the Fruin Water corridor.

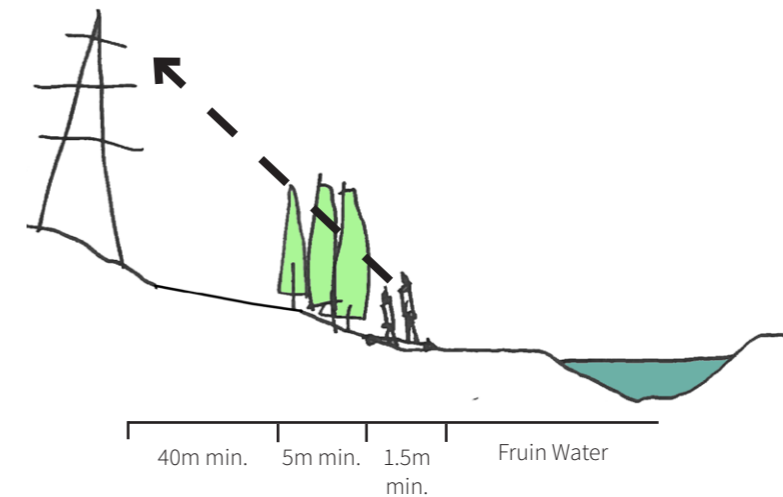
This method of treatment could be applied to either the northern or southern Fruin Water edge.

Option 3

Plan



Section



Section showing alternative route for the Three Lochs Way from existing route along the minor road to the base of the slope to the southern side of the Fruin Water. The route would run largely in parallel to the transmission corridor.

Landscape enhancement tree planting is proposed to the southern side of the path to screen views of the towers and overhead lines.

4 Concept Development/ Optioneering

Options Analysis

4.6 Option 1

Strengths:

- Limited landtake required;
- Supplements existing landscape pattern;
- Relatively inexpensive treatment; and
- Utilises existing route/ road.

Weaknesses:

- Provides limited screening with intermittent views still possible; and
- Utilises trafficked road.

Opportunities:

- Reinstatement of eroded and fragmented hedgerows; and
- Strengthening of riparian habitats along tributary streams, Fruin Water;
- Interpretation and creation of seating/ rest areas along route;
- Views of transmission lines may be possible due to parallel nature of route;
- Creation of sensitively designed widescale native woodland habitat in Glen Fruin; and
- Interpretation and creation of seating/ rest areas along route.

4.7

Option 2

Strengths:

- Provides screening of transmission lines from new route;
- Provides traffic free route along Fruin Water;
- Supplements existing landscape pattern;
- Improved user experience;
- Increased relationship with Fruin Water edge; and
- Flexible width of screening planting to strike balance between screening and landtake requirements.

Weaknesses:

- Landtake swathe along productive glen floor;
- Construction of new path required;
- Potential safety issues due to waterside route;
- Situated in flood plain/ area in part prone to flooding.

Opportunities:

- Strengthening of riparian habitats along Fruin Water; and
- Interpretation and creation of seating/ rest areas along route.

4.8

Option 3

Strengths:

- Provides oblique screening of transmission lines from new route;
- Provides traffic free route;
- Utilises, in part, existing haul road, minimising new path construction requirements;
- Minimises landtake of productive glen floor; and
- Flexible width of screening planting to strike balance between screening and landtake requirements.

Weaknesses:

- Views of transmission lines may be possible due to parallel nature of route;
- Landtake swathe along productive grazing land of glen side; and
- Construction of new path required, in part.

Opportunities

- Creation of sensitively designed widescale native woodland habitat in Glen Fruin; and
- Interpretation and creation of seating/ rest areas along route.

4.9

Following on from the options analysis the option taken forward for development to outline design stage is option 3.

Option 3 is to be taken forward as it affords the most beneficial levels of screening from receptors on the proposed alternate Three Lochs Way path, which are deemed to be of **High** visual sensitivity to the lines.

5 Outline Proposals

General

5.1

The outline proposal has been developed taking into consideration the key landscape and visual factors building upon the fundamental elements of the guiding principles and concept design set out in the workbook to fulfil the objective of reducing the perceptibility and visibility of the transmission lines within Glen Fruin, whilst providing an enhanced traffic free alternative route for the Three Lochs Way long distance footpath through the glen.

The proposal also includes an alternative route for the Three Lochs Way which passes through the Luss Hills to the north of Glen Fruin via Glen Douglas, avoiding the presence of the transmission lines along the route of the Threes Lochs Way east of Loch Long and south-west of Arrochar.

The enhanced route through Glen Fruin, which provides reduced visibility of the transmission lines for users of Glen Fruin and the Three Lochs Way path, developing upon the concept of providing an alternative route, explored in options 2 and 3 presented during the optioneering stage and set out in the accompanying workbook.

The outline proposal includes the following mitigation measures for reducing the visual impact of the parallel transmission lines on receptors within Glen Fruin and the surrounding area:

- Creation of new route for the Three Lochs Way along the existing track to the base of the southern glen side slopes providing an alternative route for people, with enhanced visual experience along Fruin Water and reduced visibility of the lines;
- Localised woodland planting to the glen floor and river corridor to screen and filter views of the transmission lines and minimise visibility from the proposed new path, whilst improving the receptor experience and setting, whilst supplementing the existing riparian habitat along Fruin Water;
- Wide scale mixed native woodland planting to the southern glen slopes of Glen Fruin to create screening and minimise visibility of the transmission lines, whilst reducing the prominence of the infrastructure within the glen through sympathetic woodland design which responds to existing topography and landscape pattern, and tie into existing woodland on upland slopes;
- Habitat and biodiversity benefits through the creation and enhancement of existing mixed native woodland and riparian planting along Fruin Water; and
- Linking paths between road and new path via existing tree lined stream corridors for enhanced connections between the existing route of the Three Lochs Way and proposed alternative route.

Key Benefits

5.2

- Provides oblique screening of transmission lines from alternative route of Three Lochs Way;
- Provides traffic free route for walkers, and potentially mountain bikers/cyclists, with improved visual experience along Fruin Water for receptors;
- Utilises, in part, existing access road along Glen Fruin, minimising the extents of new path construction required;
- Minimises land take of productive agricultural land within the glen floor;
- Flexible width of new native woodland and riparian planting to strike a balance between screening and land take requirements;
- Creation of sensitively designed wide scale native woodland habitat in Glen Fruin; and
- Creation of interpretation and seating/rest areas along alternative route, with potential to promote longer distance views towards the Luss Hills north of Glen Fruin.

Key Challenges

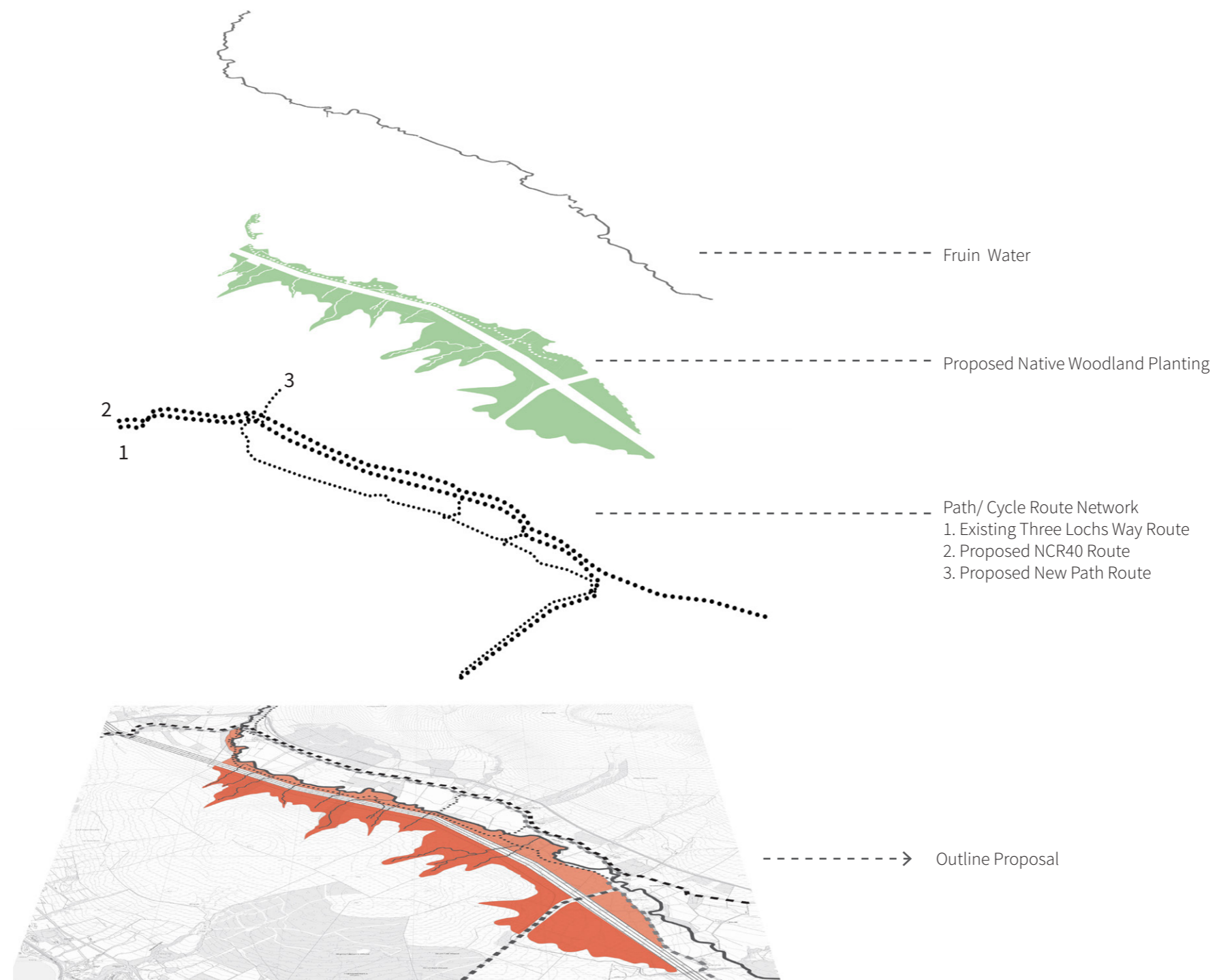
5.3

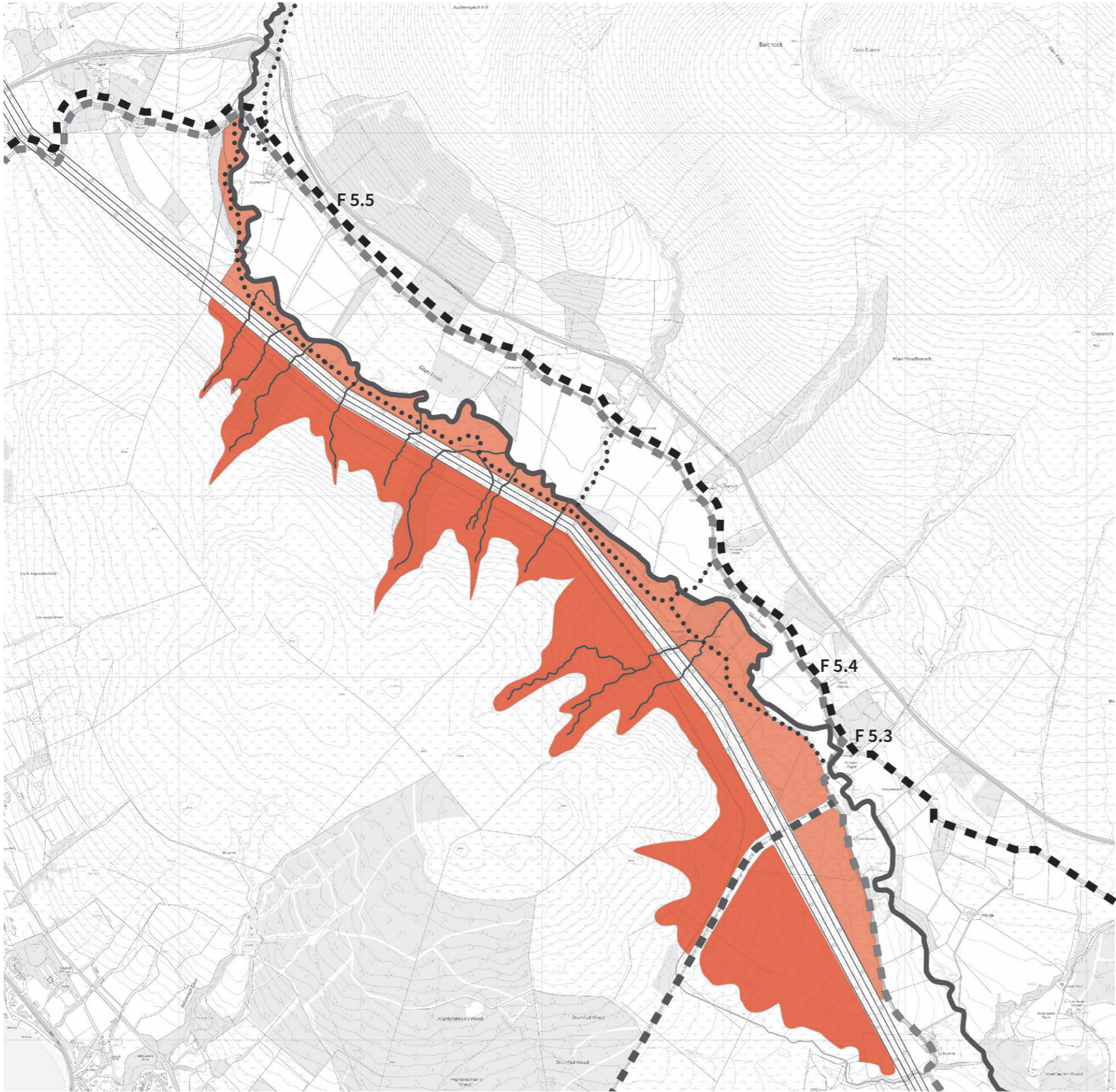
- Extensive land take required to deliver substantial areas of native woodland planting on the southern glen slopes;
- Long-term establishment of woodland before visual impact mitigation is effective; and
- Changes in land management practices – including removal, reduction or management of grazing to establish woodland planting from existing grassland and moorland vegetation.

5.4









The introduction of extensive native woodland will be implemented in line the **Biodiversity Action Plan for the National Park (Wild Park 2020)**. Appropriate woodland mixes of native species of trees and lower growing vegetation will be developed sympathetically, with reference to the geographical location, elevation, topography, soil type, hydrology and biodiversity of the specific area.

F5.1 Proposal Component Diagram

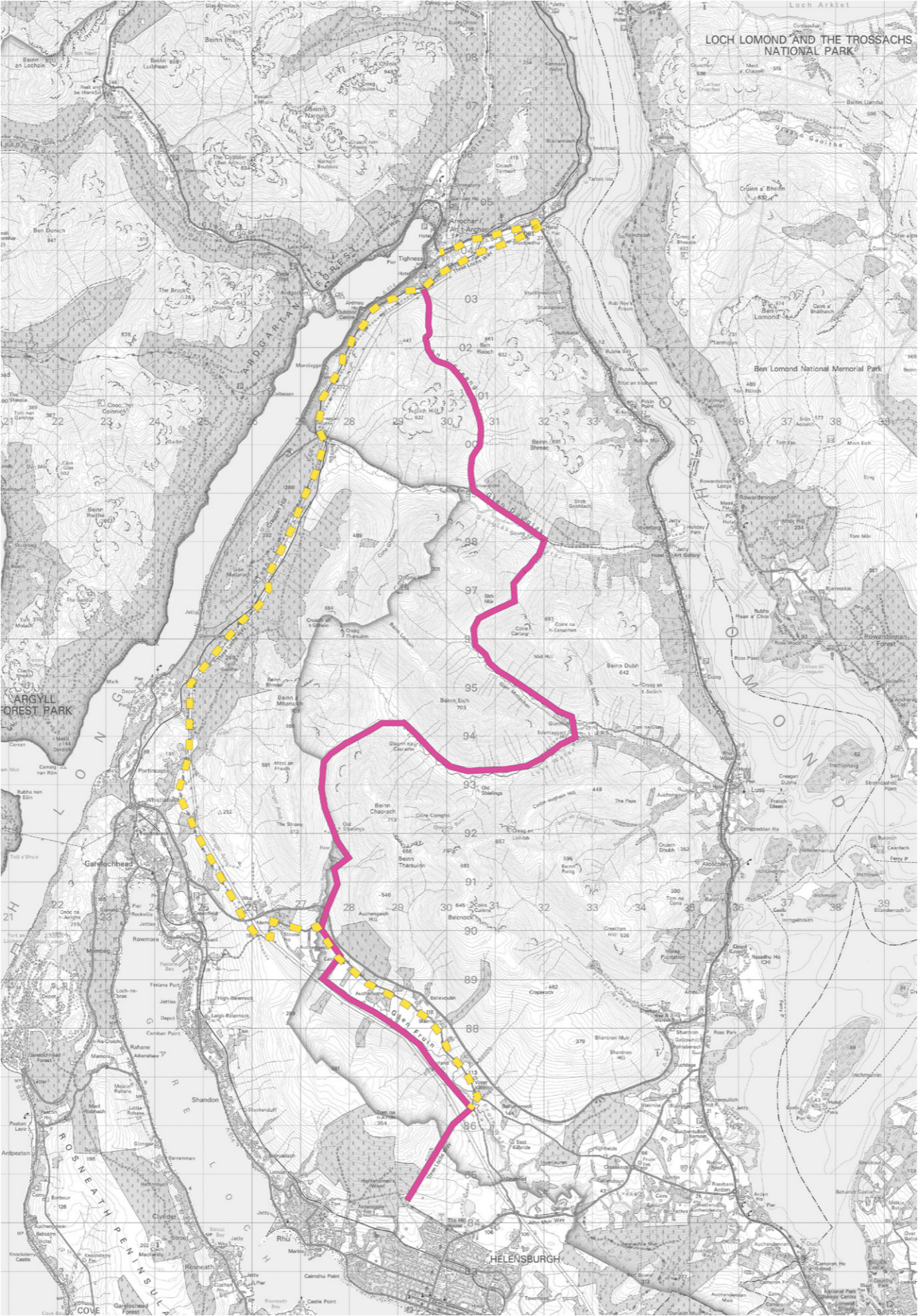




Key

-  Fruin Water
-  Existing Forestry/ Woodland
-  OHL's
-  Proposed New Cycle Route (NCR40)
-  Existing Three Lochs Way
-  Proposed alternative route for Three Lochs Way
-  Proposed native woodland planting (pine)
-  Proposed native woodland planting (broadleaf)
- F 5.3

Consult Following Figure as Numbered



Key

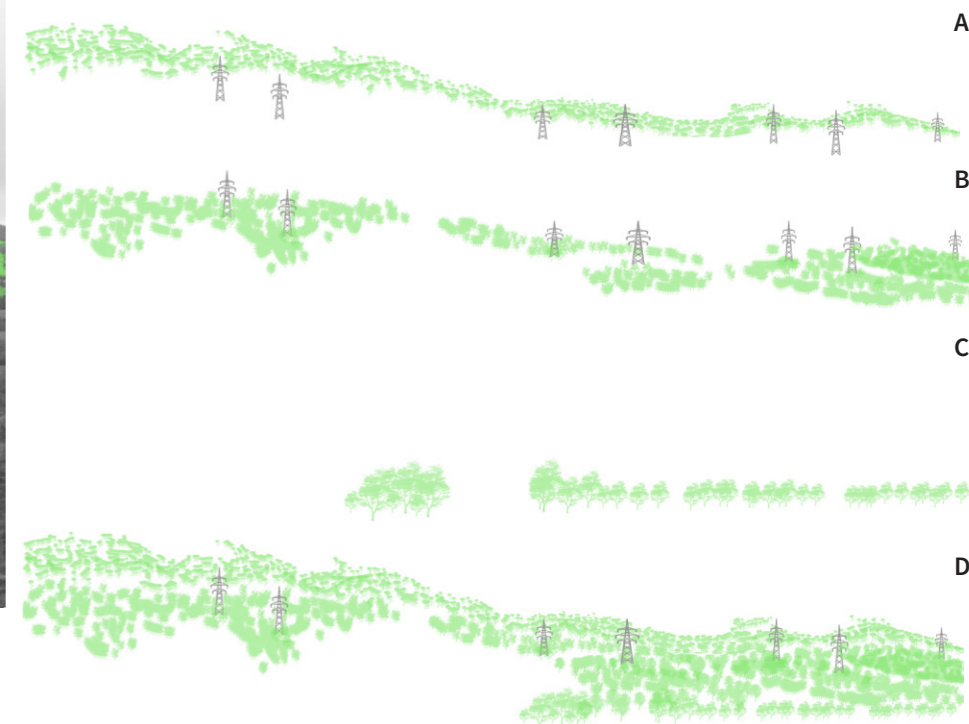


Proposed Alternative Route

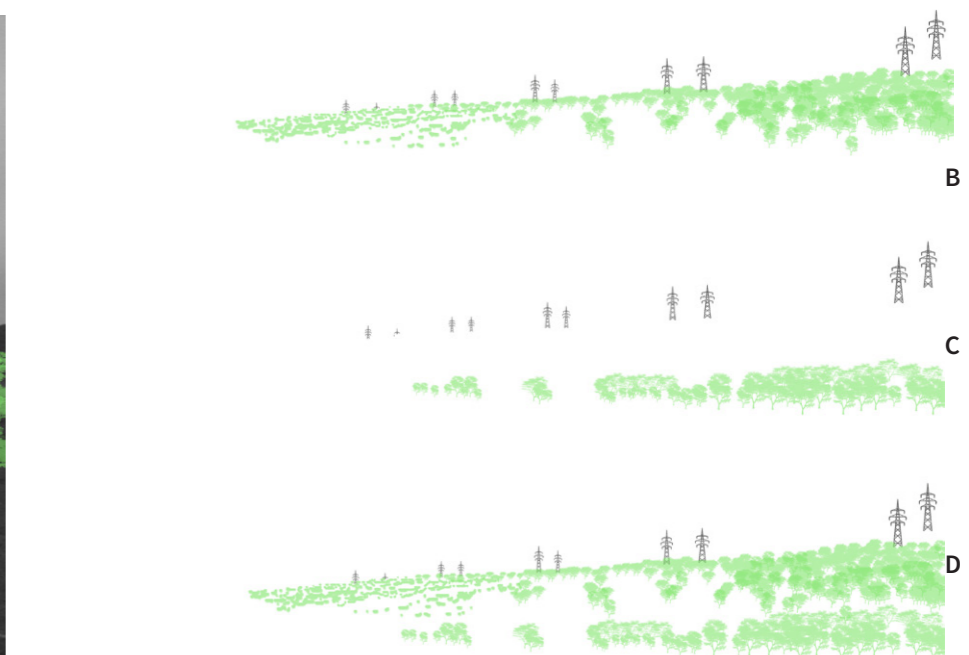


Existing Route

F5.4 Indicative Sketch Situation 1
Glen Slopes Woodland



F5.5 Indicative Sketch Situation 2
Glen Floor Wet Woodland/ Riparian



Analysis

Highlighting ridge lines, depressions, hollows and features within the existing landform. Indicative hollows and ridges are highlighted in white dashed line. Fruin Water is highlighted in dashed blue line.

Proposed

Native woodland planting to the glenside which responds to the natural topography. Pine woodland planting to the upper slopes with feathered edge. Birch/ ash/ oakwoods to the mid-slope and wet woodland to the lower slopes and valley floor.

Visibility

Sketch showing native woodland creation along Fruin Water and impact on visibility of the lines. Whilst the line is still visible on the horizon, planting to the slopes and in the mid-ground detracts the eye and lessens the visual effects of the line.

Woodland Composition by Typology

- A. Native pinewood
- B. Birch/ ash/ oakwoods
- C. Wet woodland
- D. Combined Mosaic

F5.6 Indicative Sketch Situation 3
Glen Slopes Woodland with Existing Forestry



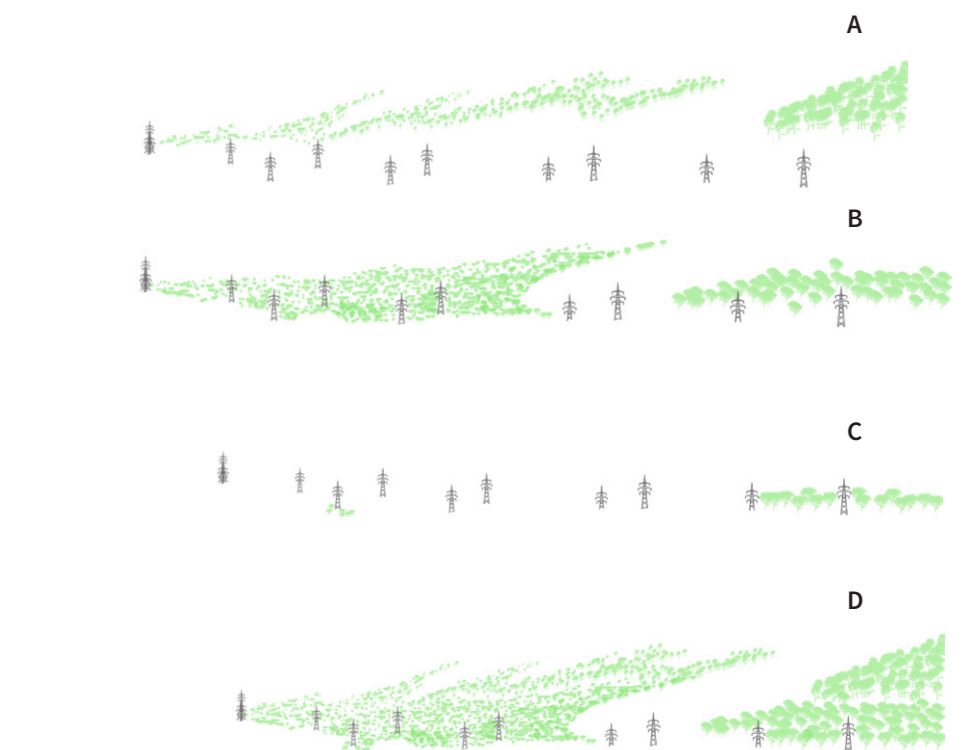
Analysis

Highlighting ridge lines, depressions, hollows and features within the existing landform. Indicative hollows and ridges are highlighted in white dashed line.



Proposed

Native woodland planting to the glenside which responds to the natural topography. Pine woodland planting to the upper slopes with feathered edge. Birchwoods to the mid slope and wet woodland to the lower slopes and valley floor.



Visibility

Sketch showing native woodland creation along Glen Fruin southern slopes and impact on visibility of the lines. Whilst the line is still visible, planting of the slopes detracts the eye and lessens the visual effects of the line.

Woodland Composition by Typology

- A. Native pinewood
- B. Birch/ ash/ oakwoods
- C. Wet woodland
- D. Combined Mosaic

6 Realisation Requirements

Implementation

6.1

The following is a brief summary of the key tasks that would be required to implement a project of the nature described.

- **Screening** - EIA 'unlikely' to be required;
- **Scoping and consultation** – identify key user groups, legal and good practice requirements, requirements for EIA / discussion with local authority, setting of management objectives;
- **Survey** – detailed site survey (e.g. legal, physical, biodiversity, historic environment, recreation, landscape, people, management of grazing animals; species selection);
- **Analysis** – identify site constraints and opportunities, landscape character and landform analysis, potential NVC woodland types, historic environment;
- **Synthesis** – development of a design concept, followed by sketch designs then detailed designs for new areas of woodland and new riverside path;
- **Implementation** –ground preparation, establishment of new planting (through seeding or planting) and path construction; and
- **Monitoring and review**– against management objectives, making changes if necessary.

It is anticipated that the works described above could be undertaken in a 5-10 year period, although woodland would take longer to mature.

Management and Maintenance

6.2

Detailed site survey will help to establish the maintenance requirements of the site. The following elements are likely to be a key consideration:

- Fencing of new areas of tree planting to protect from grazing;
- Management of regeneration of non-natives; and
- Maintenance of path including signage / way markers.

Benefits to Landowners

6.3

Converting farmland to native woodland

- Increase in nesting opportunities for birds and bats;
- Can provide habitat for rare plant and animal species;
- Can create links between scattered areas of woodland habitat, which may be important for the movement of some plant and animal species;
- Can be used to promote community involvement, from consultation to active management;
- Increase in soil water retention / reduced flooding and erosion;
- Can provide shelter for arable land or grazing animals.

New footpath

- Increased opportunities for recreation, likely to attract more visitors;
- Easier access across estate; and
- Opportunity to engage with Mountains and People Project for new footpath creation.

Costs of Creating and Managing Woodland

6.4

Forestry Commission Scotland provide extensive guidance and information about the creation, implementation and management of woodland, including the relative costs. The costs of creating and managing woodland varies, depending on the size of the proposed scheme, trees planted, and the purpose of woodland.

Factors to consider:

- Future access;
- Deer and rabbits;
- Environmental impact;
- Creation costs;
- Maintenance costs;
- Potential requirement for an Environmental Impact Assessment (EIA) for larger schemes;
- The character and views of the site will look like in the short-term and long-term; and
- Tree planting is usually carried out between October and March, avoiding frost and snow.

Things to consider when considering the cost of new woodland:

- Design costs: e.g. consultancy fees;
- Machinery costs;
- Site/ground preparation: ripping or mounding, establishment of low vigour grassy turf;
- Planting costs;
- Cost of material (seedlings etc.): trees from nurseries;
- Tree protection: spiral shelter, tube and stake and tie;
- Fencing: post and wire, post and rail, rabbit proof, deer proof;
- Labour; and
- Maintenance and upkeep: e.g. weed-free areas around the trees, replacements for failed trees, deer and rabbit control.

Planting and Materials Indicative Costings



Planting

ITEM	QUANTITY	UNIT	RATE	COST
Tree planting (including shelter)	4007638	m²	£3.50	£14,026,733
			Total	£14,026,733



Materials

ITEM	QUANTITY	UNIT	RATE	COST
Stock and rabbit fencing	26760	lin/m	£20.75	£555,270
Footpath	6202	lin/m	£30.00	£186,060
Footbridge	3	lin/m	£1500.00	£4,500
Stiles	15	each	£125.00	£1,875
Waymarker post	5	each	£30.00	£150
Fingerpost	2	each	£60.00	£120
Interpretation board	1	each	£1200.00	£1,200
			Total	£749,175
			Total Outline Project Cost	£14,775,908



Luss Glens and Hills: Alternative Three Lochs Way Route
– Materials Indicative Costings

ITEM	QUANTITY	UNIT	RATE	COST
Auchengaich to Gleann na Caorainn	4500	lin/m	£30.00	£135,000
Glen Luss to Glen Douglas	6000	lin/m	£30.00	£180,000
New trail over the String pass	7000	lin/m	£30.00	£210,000
Way marking and promotion, interpretation and the revision of the existing TLW website, apps and guidebook.	n/a	n/a	n/a	£10,000