Forestry and Land Scotland
Coilltearachd agus Fearann Alba

Central Region

Polkemmet

Land Management Plan

Approval date: *

Plan Reference No: **

Plan Approval Date: ***

Plan Expiry Date: ****

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Forestry and Land Scotland
Coilltearachd agus Fearann Alba

Land Management Plan Details

LMP Name:	Polkemmet		
Grid Reference:	NS 7419 2976	Nearest town or locality:	Fauldhouse
Local Authority:		West Lothian	
Land Management Plan area (hectares):		242.85 ha	

Owner's Details

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Approval - to be completed by Scottish Forestry staff:

LMP Reference Number:			
Plan Period: (ten years) (day/month/year)	From:	To:	
Operations Manager Signature:		Approval Date: (dd/mm/yyyy)	

Contents

Version History

Version	Date	Comments
0.0		Initial Draft layout
1.0	25/05/2023	First draft of LMP
1.1	06/07/2023	Update by T. Roberts after FLS regional comment
1.2	15/09/2023	Update by S. Towers following FLS public consultation
1.3	27/10/2023	Update by S. Towers following site meeting with SF CS Conservancy

1 Summary of proposals

This land management plan (LMP) sets out proposals to create a new productive and resilient mixed woodland on a former opencast coal mine site. The new woodland will be multipurpose, simultaneously providing an enhanced setting for recreational use, diversifying habitat provision for wildlife, improving the local landscape, whilst also contributing a long-term sustainable supply of timber.

Polkemmet is within the Central Scotland Green Network (CSGN) project area. Regeneration of former industrial land including opencast mines, to provide a high quality environment for the benefit of people and wildlife is a key theme of the project. Proposals in this land management plan will deliver such transformation. The plan will also contribute towards Scottish Government woodland expansion targets.

This land management plan covers woodland creation and forestry operations to be undertaken by Forestry and Land Scotland (FLS). Land forming operations have already been delivered and were thus covered by a separate planning process.

The Current Land Use map illustrates the starting condition at which FLS acquired the site and the inception of this plan. The Concept and Future Habitat and Species maps illustrate the long-term vision for the site's transformation.

Table 1: Woodland changes.

Species Breakdown	2023	2033	2043
Primary species: Sitka spruce	15.9 ha	20.1 ha	20.1 ha
Secondary species: other conifers	0.6 ha	22.9 ha	22.9 ha
Broadleaves	2.1 ha	71.2 ha	71.2 ha
Open space, Natural regeneration, Priority habitat, Water, Other	224 ha	128.4 ha	128.4 ha
Total Plan Area	242.6 ha	242.6 ha	242.6 ha

LMP Objectives

- Establish a new productive, diverse and resilient woodland, which contributes to the long-term recovery of former mining ground for the sustainable supply of timber.
- Improve the condition and connectivity of peatland areas within Polkemmet and the adjacent Fauldhouse forest block.
- Increase biodiversity provision through well-connected habitat networks, and improved structural and species diversity.
- Provide an interesting and diverse setting for recreational use for the surrounding rural communities and other site visitors.

2 SF regulatory requirements

2.1 Summary of planned operations

Table 2: Summary of planned operations.

Planned Operations	2023 - 2033
Felling	12.12 ha
Thinning	0 ha
Restock	1.64 ha
Woodland Creation (afforestation)	104.63 ha
Habitat Restoration (deforestation)	10.48 ha
Road Construction	0.54 km
Quarry expansion	0 ha

2.2 Proposed felling in years 2023 - 2033

12.12 ha of felling is proposed within the 10 year period of this plan.

2.3 Proposed restocking in years 2023 - 2033

1.64 ha of restocking is proposed in the 10 year period of this plan.

2.4 Woodland creation 2023 - 2033

104.63 ha of woodland creation is proposed in this plan. This is predominantly on recently remediated former mine ground. Species prescriptions are described in section 7.1 and the spatial layout is illustrated in the Planting map.

Table 3: Area and percentage breakdown by tree type.

Stand type	Area (ha)	Area (%)
Broadleaf	53.75	51
Conifer	50.88	49
Total	**104.63**	**100**

2.5 Access and roading 2023 - 2033

0.54 km of new roads are proposed for construction within the 10 year period of this plan.

2.6 Departure from UKFS Guidelines

The UKFS standards will be met through the delivery of this plan.

2.7 Standards and guidance on which this LMP is based

This land management plan has been produced in accordance with a range of government and industry standards and guidance as well as recent research outputs. A full list of these standards and guidance can be found here: https://forestryandland.gov.scot/what-we-do/planning/links

2.8 Tolerance table

Table 4: Scottish Forestry tolerance table.

	Map Required (Y/N)	Adjustment to felling period	Adjustment to felling coupe boundaries	Timing of restocking	Change to species	Wind throw response	Adjustment to road lines	Designed open ground
SF Approval not normally required (record and notify SF)	N	Fell date can be moved within 5 year period where separation or other constraints are met	<10% of coupe size.	Up to 5 planting seasons after felling (allowing fallow periods for hylobius).	Change within species group E.g. Scots pine to birch, Non-native conifers e.g. Sitka spruce to Douglas fir, Non-native to native species (allowing for changes to facilitate Ancient Woodland policy).	N/A	N/A	Location of temporary open ground e.g. deer glades if still within overall open ground design Increase by 0.5 ha or 5% of area - whichever is less
Approval by exchange of letters and map	Y	N/A	10-15% of coupe size.	5 years +	Change of coupe objective that is likely to be consistent with current policy (e.g. from productive to open, open to native species).	Up to 5 Ha	Departures of greater than 60 m from the centre of the road line	Increase of 0.5 ha to 2 ha or 10% - whichever is less Any reduction in open ground
Approval by formal plan amendment	Y	Felling delayed into second or later 5 year period Advance felling into current or 2nd 5 year period	>15% of coupe size.	N/A	Major change of objective likely to be contrary to policy, E.g. native to non-native species, open to non-native,	More than 5 Ha	As above, depending on sensitivity	More than 2 ha or 10% Any reduction in open ground in sensitive areas Colonisation of open Areas agreed as critical

3 EIA Screening Determination for forestry projects

Any operations requiring an EIA determination are shown in Table 5. If required, the screening opinion request form is located in Appendix IV.

Table 5: EIA projects within the plan area.

Type of project	Yes/No	Notes
Afforestation	Yes	104.63 ha of new woodland creation is proposed in this plan, as detailed in section 7.2.1.
Deforestation	Yes	10.48 ha of mature conifer plantation will be felled and not restocked to facilitate peatland restoration.
Forest road construction	No	0.54 km of new forest road construction is proposed in this plan which falls below the EIA threshold.
Forest quarry development	No	

4 Introduction

Polkemmet is a ~ 242.6 Ha former opencast coal mining site situated between the settlements of Whitburn, Fauldhouse and Longridge in West Lothian. Mineral extraction was undertaken on site for over 60 years up until 1985 when the mine was closed. Since then, Ecosse Regeneration have returned the ground to a more naturalistic form with restoration commencing in 2004. FLS acquired the site in 2020 and are planning to further remediate the former mining ground to create soils fit for establishment and long-term growth of a new woodland.

4.1 The existing land holding

As illustrated in the chart below, the current land at Polkemmet is largely open (88%), with some existing woodland (9%) and open water (3%). Finer detail and breakdown of the current land use composition is detailed in Figure 1 and Table 6.

The existing coniferous woodland on site consists mainly of Sitka spruce, Lodgepole pine and Japanese larch established in 1973. This woodland is consolidated in two blocks along the southern site boundary. Existing broadleaf woodland is somewhat fragmented with small pockets of naturally regenerated mixed broadleaves in the north-west of the site, some mixed broadleaf planting adjacent to the large waterbody in the north of the site and a more recently established mixed broadleaf woodland along the south-eastern boundary of the site. Natural regeneration, mainly of Sitka spruce, is present in pockets spread across the site where some natural, partially disturbed soils are present.

Two priority habitats are present on site which include Polkemmet Moor, a lowland raised bog (LRB) and immediately to the north of this, an Open Mosaic Habitats on Previously Developed Land.

The spatial distribution of each land use is illustrated in the Current Land Use map.

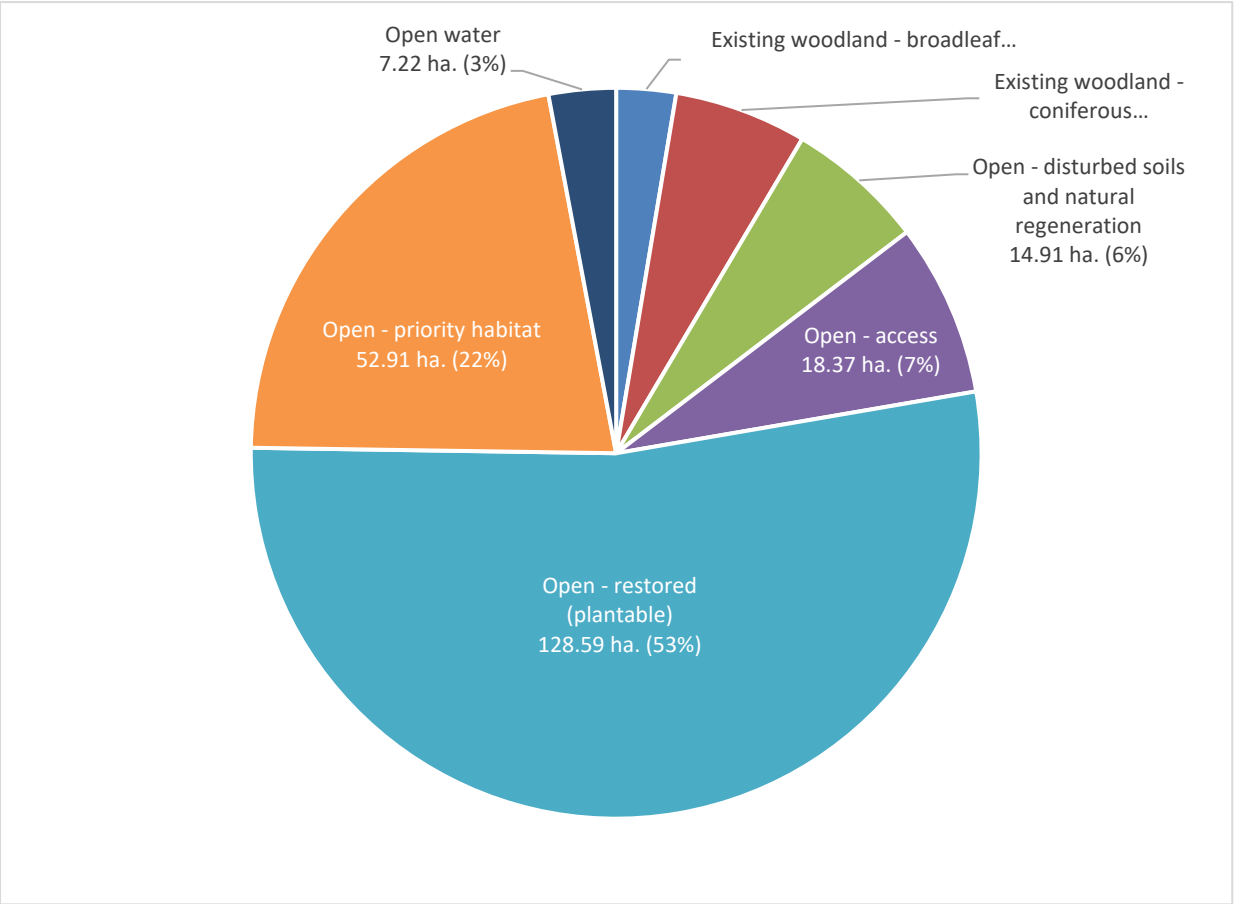

Figure 1: Land use breakdown by area (hectare) and percentage cover at Polkemmet, at starting point of LMP planning period (Year 0, 2023).

Table 6: Land use breakdown by area (hectare) and percentage cover at Polkemmet, at starting point of LMP planning period (Year 0, 2023).

Current Land Use	Area (ha)	Cover (%)
Open - restored mining ground (plantable)	128.59	53
Open - disturbed natural soils, natural regeneration	14.91	6
Open - priority habitat	52.91	22
Open - unplantable (Infrastructure)	18.37	7
Open Ground Total	**214.78**	**88**
Existing woodland - Broadleaf	6.41	3
Existing woodland - Coniferous	14.19	6
Existing Woodland Total	**20.6**	**9**
Open water (ponds)	7.22	3
Grand Total	**242.6**	**100**

4.2 Setting and context

Consistent with its Lothians Lowland Plateaux Landscape Character Type (detailed in Appendix II/3.1), Polkemmet is a smoothly undulating lowland plateau. The wider plateau is relatively flat with a central west-east ridge of moorland and coniferous plantation. The site's moderate elevation offers extensive views of the Campsie Fells, Southern Highlands and Ochil Hills to the north and the Pentland Hills to the south-east.

The northern and southern extremities of Polkemmet fall within the Woodlands In and Around Towns (WIAT) zones associated with Whitburn and Fauldhouse respectively.

4.3 LMP presentation

Given the relatively small scale of the site, there is no requirement for zoning.

5 Plan objectives

The Land Management Plan Brief (Appendix III) illustrates objectives derived from the Forestry and Land Scotland Corporate Plan 2022-2025 and how these relate to Polkemmet. Management Objectives listed in section 5.3 will deliver the LMP objectives, with the following site specific issues and key challenges considered.

5.1 Issues

The key features and management considerations for Polkemmet are illustrated in the Current Land Use and Concept maps. They are summarised in the following list:

- Proximity to local communities and proposed housing developments immediately adjacent to the site's northern boundary.
- Maintenance of views of the wider surrounding landscape including the Campsie Fells, Ochil Hills and Southern Highlands to the north and the Pentland Hills to the south-east.
- Landscape impacts of woodland creation and former industrial brown field sites in the local landscape.
- Forestry and Land Scotland's contribution to Scottish Government woodland expansion targets, the Central Scotland Green Network (CSGN).

5.2 Key challenges

Key challenges associated with this site and the LMP Objectives as detailed in the LMP Brief (Appendix III) and below, revolve around the legacy of opencast mining. These include:

- Further remedial work required in some areas where soils are too compacted or shallow to allow for adequate root development and soil drainage.
- Appropriate species selection with tolerance to recovering soils, including compromised soil functionality and localised variability, as described in section 7.2.1.

5.3 Management objectives

- Establish a new productive, diverse and resilient woodland, which contributes to the long-term recovery of former mining ground for the sustainable supply of timber.
- Improve the condition and connectivity of peatland areas within Polkemmet and the adjacent Fauldhouse forest block.
- Increase biodiversity provision through well-connected habitat networks, and improved structural and species diversity.
- Provide an interesting and diverse setting for recreational use for the surrounding rural communities and other site visitors.

6 Analysis and concept

6.1 Analysis

Table 7: Illustration of how the analysis of the opportunities and constraints of an objective leads to the plan concept.

Objective	Opportunities	Constraints	Concept
Establish a new productive, diverse and resilient woodland, which contributes to the long-term recovery of former mining ground for the sustainable supply of timber.	Soils have been previously restored using organic amendments which has greatly improved the soil nutrient regime. New woodland creation on previous industrial sites will contribute to Scottish Government woodland expansion targets without sacrificing productive agricultural area. Bringing Polkemmet into a formal deer management programme will protect new woodland from browsing damage and improve opportunities for natural regeneration of both herbaceous and woody species.	Compaction is still an issue in certain areas of the site so further remedial work will be required to create soils fit for successful woodland establishment. Restored soils generally suffer from impeded functionality and altered nutrient availability, due to destruction of natural soil structure. The range of site suitable tree species and the initial productivity potential of the soil is subsequently altered. Tree planting area must be balanced with open space and to contribute toward other habitat, water and recreation objectives to fulfil UKFS and UKWAS requirements.	Productive conifer areas on restored ground will be established with a nurse species to improve soil nutrient regime, structure and microbiology. Mixed broadleaf areas will be established in riparian zones, in a buffer zone associated with the extensive peatland priority habitat, and along the site's northern boundary, where associated landscape and biodiversity benefits are most impactful. Alternative conifer species will be established where exposure levels and soils types are more favourable, and where they can best contribute to visual and species diversity. Polkemmet will be subject to a formal and strategic deer management programme, guided by population surveys and a Herbivore Impact Assessment.
Improve the condition and connectivity of peatland areas within Polkemmet and the adjacent Fauldhouse forest block.	Polkemmet Moor is an extensive area of lowland raised bog which has been undisturbed by historic opencast mining activity and as such still appears to function as a larger hydrological unit. Owner of Fauldhouse Moor (a privately owned area of peatland landlocked within Forestry and Land Scotland's Fauldhouse block) is looking to restore the area. This connects with peatland areas proposed for restoration within Fauldhouse and Polkemmet blocks respectively.	Natural regeneration, mainly of Sitka spruce, is present across Polkemmet Moor. This is leading to localised compaction and drying of the peat which will reduce the functionality and habitat value of the bog. Existing mature coniferous woodland is present at Crane Hillock on the western site boundary. This will have degraded the deep peat on which it was planted and is also likely to be impeding the connectivity between the open peatland habitats	Remove existing mature coniferous woodland growing on deep peat and restore areas to open peatland. Retain buffer of open ground adjacent to peatland restoration areas to reduce the likelihood of natural regeneration from new planting areas. Native broadleaves to be used on woodland edges adjacent to these buffers to further reduce the likelihood of seed drift and colonisation of non-native tree species.

Objective	Opportunities	Constraints	Concept
	Crops growing on deep peat on the south-eastern boundary of Fauldhouse block are programmed for felling in 2024/25. Felling of the immediately adjacent existing coniferous woodland in Polkemmet could be included in the same operation, creating a larger peatland restoration area.	in Polkemmet Moor to the north and Fauldhouse Moor to the south.	Programme of natural regeneration management to be implemented to particularly target the removal of non-native tree species.
Increase biodiversity provision through well-connected habitat networks, and improved structural and species diversity.	Cultrig and Bickerton Burns, run west to east across the site. Bickerton Burn has open sides and would benefit from establishment of new riparian woodland, for improved habitat provision and water quality. There are currently 11 mapped ponds on site. Some of these are square edged, built settlement ponds, associated with the former mine. Others are more naturally shaped, but created during post mining, land forming operations, or water filled mining voids. Some wetland bird species have already colonised some of these ponds, but most would benefit from establishment of suitable trees and shrubs locally, for the benefit of amphibians and other aquatic species. Approximately 100 ha of Polkemmet is former mining ground, which will be suitable for establishment and sustainable woodland growth following further remedial groundworks.	The breadth of tree species and silvicultural systems that are suited to the site is largely limited by high levels of exposure and poor nutrient availability associated with recently restored former mining ground. Habitat provision must be balanced with productivity and access objectives across the site, to ensure financial and social sustainability.	Bickerton Burn bisects the site and will act as a focal area for establishing new riparian native broadleaf woodland. Ponds onsite will be enhanced and protected by the establishment of native broadleaf wet woodland buffers, where these areas can be safely accessed. Smaller scrapes will be made where appropriate during ground preparation to create smaller pools which are a wetland habitat currently lacking at Polkemmet. Remediated former mining ground will be established as productive and amenity woodland, transforming what was depleted open ground into new woodland.
Provide an interesting and diverse setting for recreational use for the surrounding communities and other site visitors.	An extensive path network is already present on site and provides off road recreational routes that connect the settlements of Whitburn, Fauldhouse and Longridge. The elevated nature of the site offers views of the Campsie Fells, Southern Highlands and Ochil Hills to the north as well as the Pentland Hills to the south.	Local FLS woodlands are subject to high rates of anti-social behaviour, including fly tipping and illegal motor vehicle use. Provision of access routes is limited by installation and maintenance costs, and must be balanced with future forest operations access requirements.	Species selection and stand boundaries will be designed with particular attention to maintaining visual links with the wider landscape. The established path network on site will be maintained in line with operational use and public pedestrian access.

Objective	Opportunities	Constraints	Concept
	FLS have a Community Ranger working in the area, with established relations with local schools and community groups.		New woodland creation will complement and enhance the diversity and aesthetics experienced from the existing path network. Native broadleaves and alternative conifers will be used adjacent to the main path network to enhance visual diversity and interest for pedestrians. Opportunities and permissions for community lead projects and site use for learning and community groups will be enabled where appropriate, through existing FLS channels.

6.2 Concept

The accompanying Concept map spatially illustrates the strategies to deliver the plan objectives with the site specific opportunities and constraints detailed above taken into account.

7 Long-term LMP proposals

This section provides detail on land management proposals for the site. Activities scheduled for the current planning period and long-term management prescriptions are both covered.

The accompanying Future Habitat and Species map illustrates the vision towards which the prescriptions below are working. The Management map illustrates the proposed timing of management interventions and delivery.

7.1 Management of existing woodland

Existing woodland at Polkemmet is formed of 11.8 ha of mature coniferous woodland consisting of Sitka spruce, Lodgepole pine and Japanese larch, 2.6 ha of young coniferous woodland mainly consisting of Sitka spruce and 6.4 ha of young broadleaf woodland. Smaller pockets of mixed natural regeneration are scattered across the site, in areas where natural soils were relatively undisturbed by previous mining activity.

The mature coniferous plantations will be clearfelled during the plan period with the presumption being to restore all deep peat soils back to open bog habitat. This will consolidate wider scale peatland restoration proposed within Polkemmet and the adjacent peatland in the Fauldhouse block to the west. No interventions are proposed for the areas of younger coniferous woodland within the plan period. The presence of Japanese larch in one area may mean that intervention is required in the event of an outbreak of *Phytopthora ramorum* which is known to be present in the neighbouring Fauldhouse forest block.

The areas of young broadleaf woodland present across the site will be managed with minimum intervention as their main purpose is to provide amenity and conservation value. Enrichment planting of naturally regenerated areas will be carried out where necessary to create mixed woodlands for long-term retention.

Prescriptions for the restocking of the felled area is detailed below in section 7.2.2.

7.1.1 Clear felling

All mature coniferous woodland at Polkemmet will be felled in a single phase to facilitate wider scale peatland restoration. Clear felling operations are detailed in the table below:

Table 8: Felling proposals.

Species	Felling Phase	Area (ha)
Sitka spruce	1	8.68
Lodgepole pine	1	2.46
Japanese larch	1	0.98
	Total	**12.12**

7.1.2 Thinning

No thinning operations are proposed for the duration of the land management plan period.

7.1.3 Tree felling in exceptional circumstances

FLS will normally seek to map and identify all planned tree felling in advance through the LMP process. However, there are some circumstances requiring small scale tree felling where this may not be possible and where it may be impractical to apply for a separate felling permission due to the risks or impacts of delaying the felling.

Felling permission is therefore sought for the LMP approval period to cover the following circumstances:

- Individual trees, rows of trees or small groups of trees that are impacting on important infrastructure (as defined below*), either because they are now encroaching on or have been destabilised or made unsafe by wind, physical damage, or impeded drainage.

*Infrastructure includes forest roads, footpaths, access (vehicle, cycle, horse walking) routes, buildings, utilities and services, and drains.

The maximum volume of felling in exceptional circumstances covered by this approval is 75 cubic metres per Land Management Plan per calendar year. A record of the volume felled in this way will be maintained and will be considered during the five year Land Management Plan review.

7.2 Woodland creation and restocking

The accompanying Planting map illustrates the special distribution of the planting mix prescriptions below.

7.2.1 Woodland creation planting proposals

Selection of the below species and mixtures have been made with consideration of local climate data (via the Ecological Site Classification Decision Support Tool) and the continued recovery processes of disturbed soils associated with the site's coalmining past. The latter is a particularly strong driver and accounts for the proliferation of pioneer species on restored areas, such as common alder, birch, pine and Sitka spruce. These pioneer species will serve a critical role in tolerance and improvement of the depleted soil nutrients and structure. This will benefit accompanying species in the current species mix prescriptions and future rotations.

The species mixtures as described below may be subject to further enrichment during beat-up phases, with species that fulfil the objectives and prescriptions of each area and are suitable to

changing site conditions, such as increasing local shelter from establishing surrounding crop. It is important to design such an element of species flexibility into new planting on restored soils as localised variations in texture and nutrient availability (as described further in Appendix II) may become more apparent as the site settles. Such flexibility falls within the parameters detailed in the LMP Tolerance Table (section 2.8).

7.2.2 Woodland creation ground preparation

Due to impeded drainage and compaction issues in the areas of former mining ground, it is purposed that further remediation works will be required. The remediation works will de-compact and fracture the soils to a depth of 1 m, sewage cake will then be incorporated and mixed into the soils and then backfilled. Any large stones or boulders (exceeding 600 mm) will be buried below 300 mm or removed and used elsewhere on site. The remediation work will be carried out systematically, in a way which will ensure that machinery does not track over the soils that are being, or have been placed - therefore mitigating against any re-compaction issues. A drainage plan will be developed in advance of remediation works starting. Where required this will include the installation of contour berms to reduce soil erosion and encourage water retention in sloping areas. A seed mix will also be sown following remediation works, to help quickly establish vegetation cover.

Prior to planting, further ground preparation works will be carried out to aid tree establishment. This will be achieved through Patch scarification - a shallow scraping of the ground that removes ground vegetation and exposes weed free planting positions. This will be done using light weight tracked vehicles with low ground pressure, to avoid the compaction of soils. This will be further aided by good planning and methodical work sequencing, resulting in vehicles only being required to make a single pass over the remediated ground.

There will be no remediation or ground preparation works in the low density upland mix in the north west of the site or within the wet woodland mixes in the riparian corridor in the north east of the site. Instead, if required, hand screefing or 100% biodegradable mulch mats will be used to help aid establishment.

Table 9: Polkemmet planting prescriptions.

Planting Prescription	Local site type	Indicative Species	Target Density (Stems/ha)	Design	Area (ha)	Species Areas (ha)
Productive conifer	Restored ground, exposed.	Mix 1: Sitka spruce 67%, common alder 33%	2500	Intimate mix at 2.0 x 2.0 m tree spacing	21.81	SS 14.61 CAR 7.2
Productive conifer	Restored ground, locally sheltered.	Mix 2: Pacific silver fir 67%, downy birch 33%	2500	Blocky mix, minimum group size of 49 trees (7 x 7). 2.0 x 2.0 m tree spacing	5.07	RF 3.4 DBI 1.67
Productive conifer	Restored ground, exposed.	Mix 3: Macedonian pine 67%, downy birch 33%	2500	Blocky mix, minimum group size of 49 trees (7 x 7). 2.0 x 2.0 m tree spacing	17.61	MCP 11.8 DBI 5.81
Productive conifer	Restored ground, locally sheltered.	Mix 4: Norway spruce 67%, downy birch 33%	2500	Blocky mix, minimum group size of 49 trees (7 x 7). 2.0 x 2.0 m tree spacing	6.39	NS 4.28 DBI 2.11
Native mixed broadleaf (NVC – W17)	Restored ground, exposed.	Downy birch 40%, rowan 20%, hawthorn 10%, common alder 10%, hazel 10%. (Occasional Scots pine, sessile oak, holly 10%).	1600	Blocky mix, directed by micro-site suitability. 2.5 x 2.5 m tree spacing.	23.25	DBI 9.3 ROW 4.65 HAW 2.33 CAR 2.33 HAZ 2.33 Other 2.33
Native upland mix (NVC – W11, W17)	Restored ground, elevated and exposed.	Sessile oak 30%, downy birch 30%, (rowan and hazel 20%). (Occasional clump of Scots pine on drier knolls. Alder and willow in wetter hollows 20%).	800	Intimate mix planted in dense clumps directed by micro-site suitability.	9.84	SOK 2.95 DBI 2.95 Other 3.94
Native wet woodland (NVC – W4, W7)	Riparian and wet ground.	Common alder 40%, downy birch 30%, willow (grey, goat) 20%. (Occasional hawthorn, rowan, hazel in drier areas 10%)	800	2.5 x 2.5 m tree spacing. 50% open	7.29	CAR 1.46 DBI 1.09 Willow 0.73 Other 0.36 Open 3.65
Native shrubs	Restored ground, adjacent to peatland priority habitat.	Hazel, rowan, willow, guelder rose, elder, holly, crab apple, hawthorn, blackthorn	800	2.5 x 2.5 m tree spacing. 50% open	13.37	Native shrubs 6.69 Open 6.69
Natural regeneration and existing	Natural regeneration areas on natural	Natural regeneration: Sitka spruce, Lodgepole pine, willow, birch.	1600	Planting to be focused on open space within existing woodland areas. Current	12.84	DBI/ROW/ Willow 12.84

Planting Prescription	Local site type	Indicative Species	Target Density (Stems/ha)	Design	Area (ha)	Species Areas (ha)
broadleaf planting. Enrichment planting.	soils and broadleaf planting on man-made soils.	Existing broadleaf planting: beech, willow, oak, mixed broadleaves. Enrichment planting: downy birch, rowan and willow.		stocking density of natural regeneration is sporadic.		

7.2.3 Restock planting proposals

Below are the planting prescriptions for the restock of 1.64 ha of Sitka spruce plantation. This will be felled as part of a wider coupe, facilitating the large scale restoration of a contiguous area of peatland which is located along the western boundary of Polkemmet. Species and habitat selections have been made with consideration of local climate data, soils and impacts on the adjacent peatland habitat.

Table 10: Polkemmet restock prescriptions.

Planting Prescription	Local site type	Indicative Species	Target Density (Stems/ha)	Design	Area (ha)
Native shrubs	Mineral soils adjacent to peatland priority habitat.	Hazel, rowan, willow, guelder rose, elder, holly, crab apple, hawthorn, blackthorn	800	2.5 x 2.5 m tree spacing. 50% open	1.64

7.2.4 Crop protection

As with all FLS deer management programmes, deer management at Polkemmet is guided by our Regional Deer Management Strategy, which is underpinned by a national code of practice and industry best practice guidelines.

The operational strategy for protection of new planting and restock at Polkemmet will informed by on-site deer population monitoring and Herbivore Impact Assessment. Additional considerations such as tree species palatability, local topography and other operational constraints will be taken into account. In practice a combination of tactics will be implemented, including deer management, tree tubes and fencing across the site.

To assist safe, efficient and humane deer management operations, linear open space radiating away from strategic locations with sufficient backdrops and access for extraction have been incorporated into the planting design.

The proposed method of protection is through the erection and maintenance of new deer, stock, and rabbit/hare proof fencing. This will not be one large perimeter fence, but instead groups of smaller fences. These fences will follow the edges of the network of access tracks, but will not cross them. This will provide free flowing, easy access throughout the site. It is hoped that this will reduce the risk of the fence being vandalised / cut open. All deer fences will have vehicle gates for maintenance works and self-closing pedestrian gates for recreational access.

Vole guards and canes will be placed around all trees within the enclosed areas, excluding Sitka spruce.

There will be no deer fence enclosing the low-density upland mix in the northwest of the site or the wet woodland mix in the riparian corridor in the northeast of the site; instead, these will be protected by tree shelters.

Fences, gates, shelters and guards will be maintained in an effective condition and enclosed areas will be monitored for the presence of deer.

7.3 Long-term silvicultural prescriptions

7.3.1 Future Silviculture

Given the high exposure of the site the future management of the productive areas of the site are likely to be clear fell and restock. The proposed productive areas have been stratified based on topographic and productivity variables, and demarked with open rides. These will allow windfirm edges to develop for timely felling of future coupes. Where conifers have been planted in intimate mix with broadleaves the intention is for that species to act as a nurse and the crop to self thin.

Areas within the site which benefit from localised topographic shelter, and more coarse, free draining soils, will be established with blocky species mixtures that respond well to thinning. Although the site exposure is such that thinning may pose a risk to overall stand stability these mixtures have been selected to encompass species that have complimentary silvicultural characteristics, such as rooting structures , growth rates and shade tolerances. This will improve the potential for application of thinning in the long-term, which may lead to gradual felling and restock at the end of rotation or Low Impact Silvicultural Systems.

7.3.2 Minimum intervention

Once established, native wet woodland, mixed broadleaf and native shrubs will be managed under a minimum intervention prescription. The primary long-term intention of these areas is to provide ecological benefits associated with this habitat type. These include deadwood

accumulation, protection of water quality and provision of habitat niches for associated species.

7.4 Biodiversity and environment

7.4.1 Flood management

Polkemmet is within the Whitburn Candidate Potentially Vulnerable Area (10/29c) as defined in Scottish Environment Protection Agency's (SEPA) Flood Risk Management Strategy. The highest risk of river flooding is from Cultrig Burn which flows west to east across the north-west of Polkemmet.

Forestry and Land Scotland are keen to collaborate with Flood Risk Management partners and others to understand flooding and consider opportunities on the estate. At Polkemmet, soil restoration and establishment of woodland across the former mining elements of the site will improve the site's water regulation capabilities, including interception, slowing and filtration of surface water flows through increased layers of vegetation and stabilised soils.

7.4.2 Water bodies and riparian zones

The margins of all waterbodies and riparian corridors within this LMP area will be sensitively managed to maintain and improve habitat quality for a range of species and improve water quality.

Riparian margins will consist of a mosaic of low density broadleaved planting areas designed to provide dappled shade lowering water temperatures and providing stability to streamside margins. Areas of open grassland will be retained in wet inundated margins to support water vole populations and provide room for species expansion along the riparian corridors as the habitats mature.

All operations will follow UK Forestry Standard operational practice guidance 'Managing forest operations to protect the water environment'. Hydrological protection measures relating to specific forest operations in Polkemmet are provided below.

A key factor in protecting the water environment is the use of riparian buffer zones within which forestry activities are restricted. Legally specified buffer zones around watercourses and water supplies are relatively narrow (2 metres for water courses and 5 metres for water supplies), however in order to comply with the UK Forestry Standard in conducting forestry activities these zones will be extended to the following:

- **10 metre buffer around watercourses with channel width up to 2 metres width.**
- **20 metre buffer around watercourses with channel width over 2 metres width.**

- **50 metre buffer around drinking water supplies.**

The table below summarises the limited activities that are permitted within these buffer zones. This guidance also applies to restocking, although low density native riparian woodland linked to open space is permitted and can provide significant benefits in relation to siltation control and riparian/wetland habitat diversity.

Table 11: Activities permitted within specified riparian buffer zones.

Forest Operations	Watercourse		Water supply[2]
	<2 metres wide	>2 metres wide[1]	
Buffer Width	**5 to 10 metres**	**20 metres[1]**	**50 metres**
Cultivation	No mechanical cultivation within these buffers.		
Drainage	No permitted.		
Fertilisers	Only hand applications of inorganic fertiliser. Organic fertiliser not permitted.		
Pesticides	Only dry planting of pretreated trees, unless the product is approved for use in or near water[3].		
Roads/Quarries	No quarrying. Roads should be kept out of buffer areas unless there is a need for a crossing.		
Harvesting	No trafficking (except for watercourse crossings). Brash should be minimised.		
Vehicle/machine maintenance	Not permitted (including the storage and handling of fuel oils, lubricants and chemicals).		

Table notes:

- [1]*The 20 m buffer width also applies to lakes, reservoirs, large ponds and wetlands, and should be measured from the edge of the standing water.*
- [2]*Concentric buffers for wells and boreholes but focus on the upslope or upstream area of springs and intakes.*
- [3]*Note that the use of such products may require consent from the relevant water authority and users must adhere to the specific guidance on their use.*

7.4.3 Peatland restoration and carbon sequestration

Polkemmet Moor is a former cutover lowland raised bog surrounded by smaller blocks of afforested conifer crops. The hydrology links Polkemmet Moor, the neighbouring FLS Fauldhouse block and privately owned Fauldhouse Moor. Due to Polkemmet being largely a former mining site, no detailed soil survey has been undertaken for the plan area. However, habitat surveys were conducted to establish baseline habitat condition for both the open and afforested peatlands. The peatland consists of two separate hydrological units, namely the larger Polkemmet/Fauldhouse Moor, and a smaller unit to the south of the former opencast mine.

The afforested peatland blocks were historically ploughed and drained in order to establish a productive conifer crop utilising a deeply ploughed ridge/furrow system, and will likely have been heavily fertilised. Taking into account this historical input, as well as the ground conditions of a

consistently high water table, it would be difficult to achieve sufficient crop performance over the second rotation in line with UKFS, without causing significant soil disturbance and the subsequent release of greenhouse gases.

The restoration potential of the lowland raised bog UKBAP priority habitat within Polkemmet is considered to be high due to the very wet ground conditions and abundant remnant bog vegetation that persists in rides and open areas. Rewetting will benefit the wider peatland unit as it will stop further oxidisation and erosion. The aim is to create a hydrologically functioning lowland raised bog complex similar to NVC M18 *Erica tetralix – Sphagnum papillosum* raised and blanket mire.

Objectives within the LMP unit are to:

- Apply restoration treatments that encourage travel in the desired direction towards priority habitat, restoring these to function as near-natural peatland within 30 years
- Protect the storage of carbon in the soils
- Maximise the sequestration of carbon by peatlands in the future

Preliminary walkovers across site were conducted to establish the condition of the peatlands, water table level, presence and abundance of vegetation indicator species, in addition to the connectivity and extent of the bog. The walkover identified the main afforestation modifications and feasibility of restoration, confirming that full restoration will be possible.

The main findings of the walkover were as follows:

- The site is predominantly deep peat which indicates that the intermediate bog and unflushed blanket bog are hydrologically connected. The water table is at the surface across the bog, which is a positive indicator for restoration given the level of forestry modifications. There is abundant *Sphagnum* cover throughout the coupes from which to reseed the site.
- The site will be monitored to ensure any negative indicators will be appropriately managed. Ultimately the goal is to ensure the peatland will be self-sustaining with regards to the level of the water table.
- FLS have been involved in preliminary discussions with NatureScot Peatland Action officers regarding the privately owned Fauldhouse Moor. The restoration efforts proposed within this LMP will complement the neighbouring re-wetting plan, forming one contiguous peatland unit.

Coupes 19020 and 19023 have been assessed as suitable for restoration and the afforested area proposed for restoration covers 10.48 ha (see Management map). Coupe 19009 will also require restoration work despite being open and relatively undisturbed by mining or commercial forestry activities. Historic drains and eroding gullies will require remedial work to reduce further erosion and help to re-wet drained areas. Natural regeneration, predominantly of Sitka spruce, will also require removal which will form part of the long-term peatland restoration programme. Peatland restoration projects meet the requirements of the Scottish Government's Control of Woodland Removal Policy as the deforestation and subsequent restoration will enhance a priority habitat and its hydrological connectivity.

Felling and re-wetting of the proposed restoration areas will be undertaken using low ground pressure machines and techniques. The site is currently retaining water despite forestry drainage with key bog indicator vegetation across the site. Re-wetting is essential to return the peatlands to a functional bog habitat which will allow the hydrology, and eventually the vegetation, to be restored to an intermediate-blanket bog habitat. There is sufficient existing seed source for *Sphagnum* and other bog species on site to make this successful.

After clear-felling the first rotation crop, the next stage of the restoration will be to re-wet the site. A combination of standard re-wetting techniques, as per the Peatland Action Technical Compendium, will be used to re-instate the natural water table across the site to ensure it is optimal for appropriate bog vegetation recovery. A combination of drain blocking, ground smoothing, and potentially backfill trenches, will be used following standard techniques as developed by NatureScot (Peatland Action Fund) and FLS. FLS have a long-term commitment to the Scottish Government to reduce GHGs across the National Estate and re-wetting will be funded through the Scottish Government Climate Crisis Fund.

The following restoration methods will be used:

- Block all drains and, where necessary, plough furrows using peat dams or composite dams to disperse water across the peatland.
- Undertake stump flipping and ground smoothing across the previously afforested area to un-modify the pattern of ploughed ridges and furrows. If left in situ, the plough/furrow pattern will suppress the water table and development of peatland vegetation, and will promote regeneration of native or non-native tree species (negative indicators).
- Where there is suspected peat cracking, install backfill trenches to retain water on site. Backfill trenches counteract the excessive lateral flow of water within the peat, which can result from the ploughing and draining carried out during afforestation, and the subsequent drying and suppressing effect of the mature trees on the peat and water table.
- Re-profile hags to repair excessive erosion of peatlands and stop the development of artificial drains caused by surface water run-off.
- Monitoring and removal of tree regeneration (a negative indicator) and undesirable vegetation on the bog.

Re-wetting operations will be delivered within the LMP period and in line with the UKFS and UKWAS. Monitoring of the site will take place at year five following re-wetting. An evaluation of the restoration works will be completed and submitted to Scottish Forestry as part of the LMP mid-term review.

7.4.4 Priority habitat and species

As well as the lowland raised bog priority habitat, an independent environmental survey was commissioned by Forestry and Land Scotland to determine whether certain habitats on site met the criteria of UKBAP Priority Habitat 'Open Mosaic Habitats on Previously Developed Land'. It was concluded that all five habitat criteria were met and as such this area will be excluded from afforestation.

As illustrated in the Planting map, afforestation planting is focused on restored mining ground. This will require further mechanical disturbance to alleviate soil compaction, which at present, is impeding drainage and the potential for successful tree root development.

7.5 Operational access

The site is currently only accessible on foot however planning approval has already been granted for the construction of a bell mouth and connecting road, linking the current forest road network with the B7010 which runs along the southern boundary of Polkemmet.

Within the site there is an existing network of forest roads which are a legacy from the previous mining and subsequent restoration activity. Construction of new internal roads and upgrade of existing roads will be required to access felling coupes planned during this land management plan period (see Management map). These roads collectively total 0.54 km which with a base width of 10 metres equates to 0.54 ha and therefore falls below the threshold for an EIA screening determination.

7.6 Recreational access

As illustrated in the Access map, Polkemmet benefits from an established network of forest roads and tracks totalling over 10 km. These are currently the main focus for recreation on site and can be accessed at numerous points along the site's northern and eastern boundaries. Following the construction of a bell mouth and connecting road on the southern boundary, the site will become more accessible from the foot and cycle path which runs adjacent to the B7010. It is anticipated that recreational activity within Polkemmet will gradually increase as the new woodland becomes established. Development within this land management plan is therefore primarily focused on encouraging use by local communities, rather than attracting forest users from afar.

Care has been taken throughout the development of this plan to design an interesting blend of tree species and open space to link landscape features and viewpoints throughout, particularly in higher elevation areas where long distant views are abundant. This is illustrated in the Access and Planting maps.

As with all FLS woodlands, Polkemmet will be open to public access in accordance with the Scottish Outdoor Access Code, 2005. Occasional area closures or diversions may be put in place to manage public safety around forest operations, such as soil remediation. The affected areas and duration of such closures will be kept to a minimum.

7.7 Management of heritage features

Due to the history of opencast coal mining on site, there are not known to be any remaining heritage features on site. Any heritage features identified at Polkemmet will be protected through our standard operational procedures described in Appendix II/4. This will entail assessment and flagging of operational buffers around heritage features during establishment operations to avoid disturbance, particularly by ground preparation machinery.

8 Critical success factors

The critical success factors listed below relate to delivery against the management objectives listed in section 5.3. They are:

- Successful establishment of the new woodland areas to the target stocking densities listed in section 7.2.1 and illustrated in associated LMP maps.
- Successful restock of felled areas to the target stocking densities listed in section 7.2.2 and illustrated in associated LMP maps.
- Successful restoration of all peatland priority habitat areas currently under mature coniferous plantation.
- Improved habitat networks and foraging opportunities via establishment of new woodland, forest edge and open space as designed and illustrated in the Future Habitat and Species map.
- Proposed recreational routes and connections delivered and maintained in a condition suitable for intended use.

Appendices

Appendix I: LMP consultation record

Table 12: Polkemmet Land Management Plan consultation record.

Consultee	Date received	Points raised	Forestry and Land Scotland response
Anonymous responses gathered from online form and community engagement at Fauldhouse and Breich Valley Community Development Trust Annual Fair Day (8 responses received)	Online form between: 11/08/2022 And : 09/09/2022 Annual fair 03/09/2022	**Question 1: What is your connection to the area?** • 87.5% Local Resident – 4 Fauldhouse 3 Longridge • 12.5 % 1 Former FC SLFD Staff Member **Question 2: Do you have a vision of what this forest and landscape should look like?** 6 consultees responded: • *'Deep peats across this plateau require a re-evaluation. This is a valuable peatland landscape, capable of far more than growing low quality timber and being a fire risk. Integrate and connect all the hydrological units, buffer appropriately from high risk species likely to dominate the peatlands, enhance the peatlands where required and provide high quality, biodiverse, beautiful environments for locals. Native woodland would be very welcome in this setting as it is very lacking.'* • *'A diverse woodland with wider landscape views retained.'* • *'A diverse woodland that provides habitat and protects existing species as well as encourage new species.'* • *'Secure area for dogs. Site security to keep out quad bikes and dirt bikes.'* • *'More walking areas. Extend current path network.'*	This will be a woodland creation scheme on a predominantly former opencast coal site and therefore not deep peat soils but made up ground. Where natural soils are found any deep peat soils would not be planted and their hydrological connectivity be considered and factored in to any surrounding woodland design. It is our intention to provide such a planting scheme " Secure dog areas would not be compatible with our Scottish Outdoor Access Code (SOAC) undertakings, commercial land owners can provide dog exercise areas to dog owners, we are currently working with Police Scotland and the local authorities to address the ongoing issue of unauthorised bikes and quads The current network of forest roads will provide the base routes to allow people to access the area then explore further under the Scottish Outdoor Access Code (SOAC). Development or formalisation of routes that evolve during development of the site can be considered in the future if resources become available, working with partners to explore active travel options.

		• *'The new woodland should be accessible for all. Access into Fauldhouse Forest should also be improved as well.'*	The installation and maintenance of accessible routes across our forest network is unsustainable due to the level of resource required. FLS promotes accessible routes where the greatest benefit can be achieved with the resources available, eg terrain, nearby facilities. FLS is happy to work with partners to explore how new facilities could be funded and resourced in local areas as partners may be able to access local/national funding for such projects. We are currently working with partners in the Fauldhouse area.
		Question 3: Do you have any specific concerns about woodland creation on site? 7 consultees responded: • *'It's bad enough at the weekends, with idiots on Quad bikes and scrambler motor bikes. It's only going to get worse. Unless you do something to stop them, from gaining access to the area.'* • *'The Concept Plan outline looks good in principal. I agree that this parcel of land must enhance connected peatlands and other important habitats.'* • *'Views of the Ochil Hills, Campsie Fells and Southern Highlands being obscured.'* • *'None.'* • *'No it's a great idea.'* • *'None.'* • *'None.'*	FLS are currently working with Police Scotland and the local authorities to address the ongoing issue of unauthorised bikes and quads on our sites It is our intention to provide such a planting scheme
		Question 4: As part of the Land Management Plan, FLS will identify a series of objectives for the site. What would your top priorities for this area be? 7 Consultees responded • 62.5% Biodiversity • 37.5% Recreation	
		Question 5: Please add any other comments here. 3 consultees responded: • *'Think it's a very good idea, being able to use waste land.'* • *'The new woodland should be mobility scooter friendly and accessible for all.'*	FLS The installation and maintenance of accessible routes across our forest network is unsustainable due to the level of resource required. FLS promotes accessible routes where the greatest benefit can be achieved with the resources available, e.g. terrain, nearby facilities. FLS is happy to work with partners to explore how new facilities

		• *'The new woodland will enhance the area and hopefully help to retain younger people within the local community.'*	could be funded and resourced in local areas as partners may be able to access local/national funding for such projects. Noted
Consultation advertised via posters placed within the communities of Whitburn, Fauldhouse and Longridge Anonymous responses from online form (14 responses received)	August 2023	**What do you like most about the plan, and why?** **Access/Recreation** • *"Preserving open natural areas with access for leisure activities"* • *"It certainly seems as if you are looking to the future of Polkemmet Park with these plans"* • *"New opportunities to walk, cycle and run"* • *"Will be able to enjoy the area as a local resident"* • *"Trees are good, public access with proper pathways are vital, linking up with Polkemmet country park"* • *"The mix of recreation access/wildlife and planned works to improve the surface area"* **Biodiversity** • *"Regeneration the area to allow species to prosper, also the improvements in access, drainage and peatlands very encouraging"* • *"These is a good range of species selected and careful consideration to existing habitats"* **Landscape** • *"Good use or currently unused area"* • *"Positive use of former industrial site"* • *"That the views over Campsie fells and lower highlands will be maintained"* **Management practices** • *"Improved woodland"* • *"Potential to improve and return the area back to a manageable natural resource"*	Noted Noted Noted Noted
"	"	**Is there a part of the plan that you would like to see improved, if so how?**	

		Access/Recreation • *"The addition of child friendly activity areas"* • *"Ensure paths, roads & tracks have signage for easy navigation"* • *"Children's train in the woodland paths with features of interest"* • *"I would like there to be woodland paths for walking"* • *"Recreational infrastructure for families/cyclists, proper pathways throughout the woodlands, i.e. Almondell Country park"*	The installation and maintenance of additional infrastructure across our forest network is not always possible due to the level of resource required. FLS is happy to work with partners to explore how new facilities could be funded and resourced in local areas as partners may be able to access local/national funding for such projects. The site will facilitate recreational access across the forest road network along with open areas and woodland planting all of which will be accessible under the Scottish Outdoor Access Code for people to explore
		Biodiversity • *"These could be less conifer crop and more broadleaf given the proximity to settlements this will lend itself nicely to the community as an area of recreation. Large swathes of dense conifer can become attractive to anti-social/problem behaviour and lead to certain negative effects for wider community."*	This proposal is for a predominantly broadleaved woodland but there will be a proportion of diverse productive conifer providing future timber resource and all year colour.
		Management practices • *"Cutting down old woodland to plant new one. Leave the existing trees alone. Current generation need forest just as much as future ones. There are not enough old woods around as it is. And the new forest could just be there for biodiversity and recreational activities rather than sustainability supply of timber"*	This is predominantly a woodland creation scheme on an open former opencast site and therefore there is minimal felling. Where we are proposing felling it is on an area of deep peat and we intent to restore this priority habitat for its important biodiversity benefit and it's ecological function in storing carbon.
		Presentation • *"Maps need updated to show houses built within Heartlands Development"* • *"I think I would have liked a clearer map showing where footpaths & cycle paths are going to be"* • *"Probably a bit more detail on the specifics of how the area is planning to look (i.e. artist drawings of the projected completed work) also keen to hear about public access and finally how this development impacts for more residential and retail space being utilised on the site of some of the activity"*	We are aware of the development and have made efforts to contact Heartlands Development to see how and where the woodland can connect with the new housing. Various maps show the 10 km of existing forest road network and other tracks which will serve as the base for visitor access with further informal routes evolving as the site develops. For each proposal we assess the likely visual impact and where there is a perception of enjoyed views being impacted we do produce visualisations however in the context of this site that was not deemed a significant consideration.

"	"	**further comments relating to the plan** **Access/Recreation**	
		• *"I would have a preference for separate cycle and footpaths and also a place where dogs could be exercised away from people. There are so many dog owners now and they are not all responsible. Being a little older, I can not jump out of the way of cyclists as quickly as I would like (or as they seem to expect you to do). I would like possible rules to be considered for cyclists and dog owners, so that everyone has the peace to enjoy our outdoor spaces"*	Segregated areas or routes are not within the spirit of Scottish Outdoor Access Code (SOAC) as this excludes people for certain areas. Where this has been considered, it has also proved difficult to get groups of users to agree what areas or routes they would give up to other user groups.
		• *"This will become through time a very welcome addition to the local area. More trees please"*	Noted
		• *"Really great plans and very encouraged. Would live to hear more about it and looking forward to seeing the completed works"*	Noted
		• *"The presentation focused on habitat, nothing re community recreational facilities"*	Recreation for the site has been addressed in Section 7.6 of the plan, the 10km of existing forest road network being the base for visitor access with further informal routes evolving as the site develops.
		• *"It would be good if you could add mountain bike trails to the plan"*	The installation and maintenance of additional infrastructure across our forest network is not always possible due to the level of resource required. FLS is happy to work with partners to explore how new facilities could be funded and resourced in local areas as partners may be able to access local/national funding for such projects. It is likely that informal trails may develop which FLS is content with as long as they are in line with current national guidance on what is acceptable (safety, construction/ drainage etc)
		• *"The plan does not include information on whether the current livestock will be retained on the land or not. We would like to see the livestock removed from the land to enable recreational access for walking and greater wildlife"*	We don't have an existing agreement for livestock grazing on the site so any currently onsite would be down to livestock trespass. When we come to plant the site we would make sure that any livestock on the site were removed and the crops appropriately protected.
		Biodiversity	
		• *"Additional measures should consider linking into wider networks for access and ecological function"*	The proposals will see improved biological and hydrological connectivity of lowland raised bog priority habitat as well as broadleaved forest habitat networks.
		Landscape	
			Noted

		• *"Maintaining views when thinking about planting forest not an issue. It's a forest it makes views 10 times better"* **Presentation** • *"Would be beneficial to see maps updates in 2 ways more accurately showing houses currently built in Heartlands Development;* *Currently approved planning applications for Heartands development and how close they are to the proposed new forest. Currently there is a road planning to run from existing development round towards a new housing development proposed works fit in with other planned developments"*	We are aware of the development and have made efforts to contact Heartlands Development to see how and where the woodland can connect with the new housing.
Calum McLaren – West Lothian Council Ecology & Biodiversity Officer comments	17/08/2023	**In general, we are supportive of the plan and its proposals for restoration. Given the adjacent already approved LMP are of "Benhar and Fauldhouse" in which a significant area is conifer plantation, we would welcome further broadleaf plantation within the Polkemmet LMP as in general, the west of West Lothian has limited areas of contiguous broadleaf cover. One area in the centre of the site would benefit from change in species choice or at the least an extension of the birch, rowan, common alder, mixed broadleaf (pink with orange dots) to encapsulate the sitka spruce, mixed broadleaf (blue with pink dots). This would further help secure the future bog restoration works by adding a non-coniferous buffer to this coupe.** **The LMP area sits in an identified important by WLC Ecology and Biodiversity officers as an area for future nature network works within West Lothian. Nature networks are a delivery mechanism put forward by Scottish Government on delivering the Scottish biodiversity strategy and contributing to wider environmental strategy. Future efforts will be focussed on creating and maintaining a network which connects nature rich sites through a series of habitats and steeping stones for species. Local Biodiversity sites and other designated features will help form this network.** **The Polkemmet LMP is placed between "Polkemmet and the River Almond to Greenrigg" and "Fauldhouse Moor" LBS. Polkemmet LMP open space habitat and potentially wider areas of the LMP area has potential to be included as part of the network of local biodiversity sites throughout West Lothian. It is expected to be included for assessment in 2024/2025.**	Thank you for your comments, the area of spruce referred to in the centre of the site is existing Sitka spruce natural regeneration which we proposed to enrich with more spruce and native broadleaves but we have amended our proposal so that in the area mentioned we don't plant anymore Sitka but increase the proportion of native broadleaves within the mixture so the spruce is only a minor component. This will further enhance to already good broadleaved habitat connectivity throughout the site. this plan will see ~ 53% of the site area remain open habitat with the remaining ~47% woodland area being predominantly being of native broadleaved species. Of the total conifer area (~22% of the site) less than half of that (<10% total site area) will be Sitka spruce. We have made significant efforts to enhance open habitats with proposals to restore priority habitat lowland raised bog and retain other open habitats. Noted

		Riparian works: Plans to improve water vole habitat are welcomed and this should where possible seek to connect into adjoining land both to the north east and to the south west e.g. within the Benhar and Fauldhouse block in which there were species records present. Works should seek to improve the site for the species and a management plan be written in order to protect them long term. E.g. only working one side of the bank in any given intervention to minimise disruption, checks made regularly to ensure there is adequate suitable foraging areas and that scrub doesn't take over the riparian area etc. **The planned roads at the Crane hillock area (future proposed restoration site) will need to take into consideration the watercourse and the potential for impacts on the peatland. It is possible that sections near the forest to bog area should be "floated" in order to not further damage underlying hydrology.** **Additional measures could be to create additional Homes for nature as in those listed within the developing with Nature guidance document measures 8-18.**	Noted Noted
Councillor Mary Dickson		**Thank you for this presentation it is good to know what is happening in the area I live which is Dixon Court.** **I am also a local West Lothian Councillor and have been active in trying to find out what is happening on this site. Perhaps others are of the same view and it would be great to see an information board with details of plans and timescales etc.**	Once the plan has been approved by Scottish Forestry a copy will be available on our website for reference by people interested in the site. Our community ranger will be working with local community and partner on engagement as the site establishes. Notifications on upcoming works will be posted on site once dates are confirmed.
John Gorman Principal Compliance Officer - SEPA	10/08/2023	Thank you for consulting SEPA regarding the above plan. SEPA would raise the following general comments: • The Plan should maximise opportunities to improve the riparian zone along main rivers, burns and small tributaries to encourage native broadleaf planting and follow the principles as outlined in the Riverwoods Initiative Home | Riverwoods. • Good site planning is required to identify and implement good forestry practice measures required to minimise the risk of environmental pollution. For contractors and site managers, reference should be made to the Forestry & Water Scotland "**Know the Rules Booklet**", **version 2**, and it is imperative that all contractors follow the guidance therein. On-site tools (confor.org.uk) • In accordance with the published Scottish Forestry "**Cultivation of Upland Woodland Creation Sites -Applicants Guide, 2021**", the Plan should incorporate low risk ground preparation techniques during	Noted

		new planting and/or restocking to minimise soil and carbon losses to air and water. SEPA does not hold information on private water supplies [**PWS**]. It is therefore imperative to contact the Local Authority Environmental Health Department to establish whether they hold any details on any private water supplies **in or around** your Plan area. All efforts must be made to glean information from homeowners/occupiers on private water supply **source areas,** header tanks and transfer pipework. If any of these are identified adjacent to or within the proposed area, then great care **MUST** be taken to protect water quality. All operations must strive to go beyond compliance with best practice to fully protect the entire source area. All source areas must be afforded maximum protection from machinery damage, compaction and pollution from all forest activities, including future operations. This also applies to water transfer pipework. The buffer distances highlighted in the Know the Rules Booklet are **minimum distances** and greater buffers must be allocated where source areas are extensive or boundaries unknown. Note that the given 50m buffer is a minimum buffer area and should be exceeded depending on how extensive the supply source area is or if there is any doubt as to the risk of an activity impacting a supply. • Whilst the 50m minimum buffer is intended to afford protection to public and private water supplies, the forest planting design is crucial to protect these supplies from water quantity changes due to forest establishment. Whilst low density broadleaf trees are acceptable around the edges of the water supply source area boundary, conifers should be kept back from the source area due to the water scarcity pressures they may place upon the supply. • Any access tracks should ideally avoid areas of shallow and deep peat to avoid disturbance of peatland ecosystem which may also cause pollution. • Prior to site departure, all machinery working within the forest block should be power washed as per good forestry practice to avoid the accidental spread of invasive species. This practice also allows machines to be inspected and repairs identified e.g. oil leaks, tyre wear and metal fatigue. Photographic record of this wash down should be kept for UKWAS audit inspection purposes.	

		• For thinning operations, the right machine for the right job is important in order to complete operations without causing pollution issues on site from using oversized machines. • For some thinning compartments, brash and/or product availability is limited, therefore the ability to move product around the whole site to address pollution mitigation will form a key part of work planning and execution. In addition, having a selection of pipes on site will provide good back up for water management to separate clean water from dirty tracks. Any fish barriers should be identified such as old impoundments or abandoned weir structures. This would also include old pipe bridges where multiple smooth lined pipes of small diameter covered with a concrete screed are used to cross watercourses. Any identified features should be flagged for upgrade or removal. • If there are any old 'fords' these should be mapped, but only used as follows: intermittent quad bike crossings are acceptable, but heavy forestry machinery traversing watercourses is likely to cause pollution. SEPA would therefore expect to see log bridges as per good forestry practice or culverted water crossings in full compliance with the CAR Regulations car_a_practical_guide.pdf (sepa.org.uk) • All drainage from quarries and/or borrow pits must be collected and treated via settlement sumps and natural soakaway areas. This potentially highly polluting effluent must not be allowed to drain directly from site to a watercourse. • If the plan is to use tree guard tubes and/or vole guards, then these must come with a tree guard removal plan after the trees are established. Leaving the plastic-based tree/vole guards lying on the landscape is not acceptable and is likely to constitute unauthorised waste disposal. In addition, SEPA fully supports using biodegradable alternatives rather than polypropylene. • All waste materials **MUST** be removed from site for reuse, recycling or disposal upon work completion.	
Fauldhouse & Breich Valley Community		No response to email	N/A

Development Trust			
Whitburn Community Development Trust		No response to email	N/A
Fauldhouse Community Council		No response to email	N/A
Whitburn Community Council		No response to email	N/A
Angela Constance MSP		No response to email	N/A
Councillors Pauline Clark Craig Meek Cathy Muldoon Jim Dickson George Paul Kristeen Sullivan		No response to email	N/A
Sarah Collings - West Lothian Planning Officer		No response to email	N/A
Jane Begg - West Lothian Tree and Woodland Officer		No response to email	N/A
West Lothian Ranger Team		No response to email	N/A
Douglas Benson - West Lothian Council Community Regeneration Officer)		No response to email	N/A
Green Action Trust		No response to email	N/A

Central Scotland Raptor Study Group		No response to email	N/A
Scottish Badgers		No response to email	N/A
NatureScot		No response to email	N/A
Lloyd Edwards – Owner of Fauldhouse Moor c/o Gareth Mason (NatureScot)		No response to email	N/A
Historic Environment Scotland		No response to email	N/A
RSPB		No comment to make on the plan	Noted
Confor		No response to email	N/A
West Of Scotland Archaeological Services (WOSAS)		No response to email	N/A

Appendix II: Supporting information

II/1 The existing forest and land

The existing woodland on site totals approximately 20 ha and consists mainly of mature Sitka spruce, Lodgepole pine and Japanese larch established in 1973. This woodland is consolidated in two blocks along the southern site boundary. Existing broadleaf woodland is somewhat fragmented with small pockets of naturally regenerated mixed broadleaves in the north-west of the site, some mixed broadleaf planting adjacent to the large waterbody in the north of the site and a more recently established mixed broadleaf woodland along the south-eastern boundary of the site. Natural regeneration, mainly of Sitka spruce, is present in pockets spread across the site where some natural, partially disturbed soils are present.

A further 207 ha of open ground is present on site, the vast majority of which is restored former mining ground with a smaller proportion of natural ground present, mainly consisting of peatland priority habitat. Polkemmet Moor is a former cutover lowland raised bog surrounded by smaller blocks of afforested conifer crops. The hydrology links Polkemmet Moor, the neighbouring FLS Fauldhouse block and privately owned Fauldhouse Moor. Due to Polkemmet being largely a former mining site, no detailed soil survey has been undertaken for the plan area. However, site surveys were conducted by the FLS peatland team to establish baseline habitat condition for both the open and afforested peatlands. The peatland consists of two separate hydrological units, namely the larger Polkemmet/Fauldhouse Moor, and a smaller unit to the south of the former opencast mine. The afforested peatland blocks were historically ploughed and drained in order to establish a productive conifer crop.

II/1.1 History of the land holding

Figure 3 is taken from historic Ordinance Survey maps of the Polkemmet area. This compared to a contemporary OS map shown in Figure 2 illustrates the land use change over the last 125 years. Most notable is the expansion of the open cast coal mine and the establishment of Fauldhouse Forest to the west of Polkemmet.

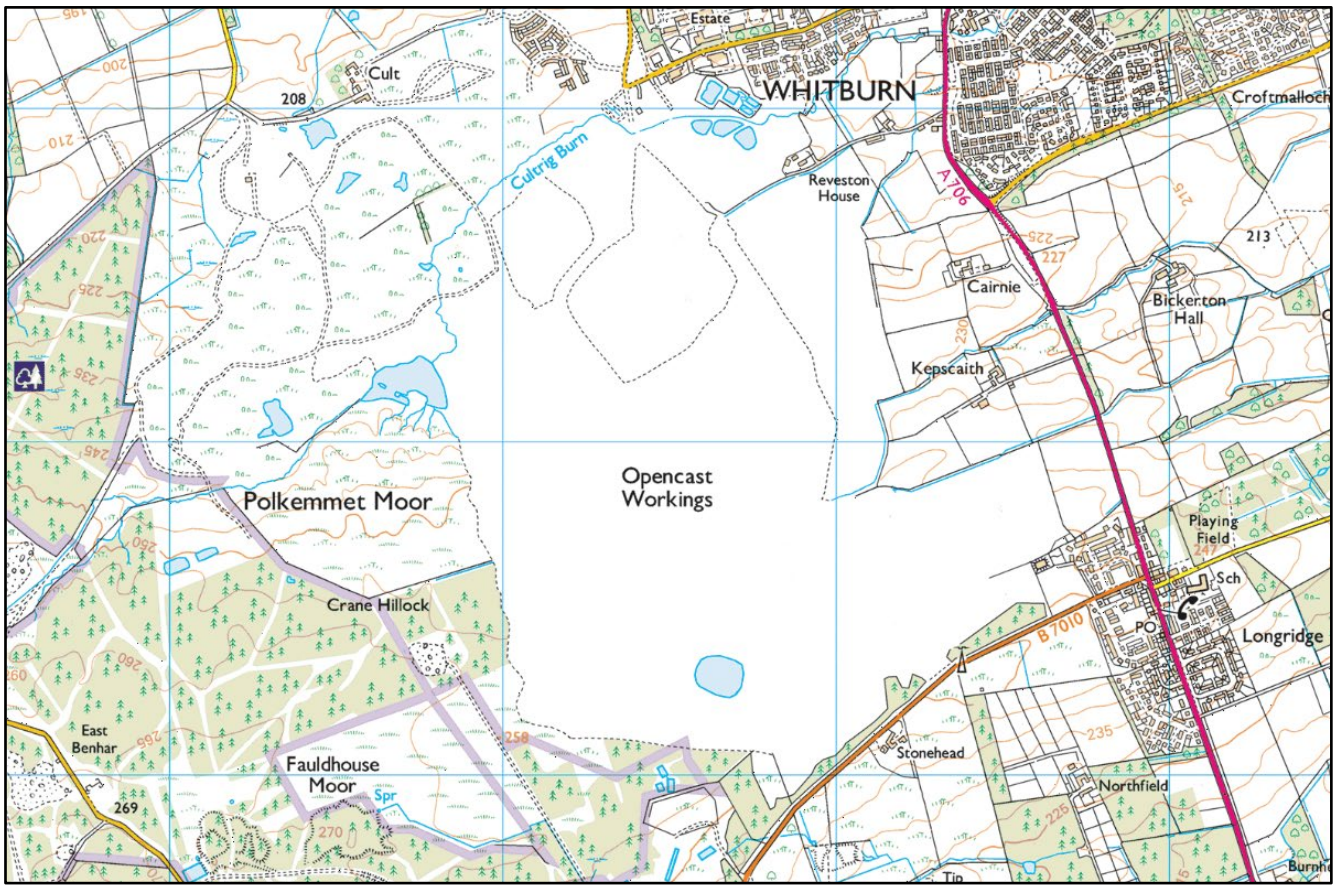

Figure 2: Ordinance Survey. Contemporary.

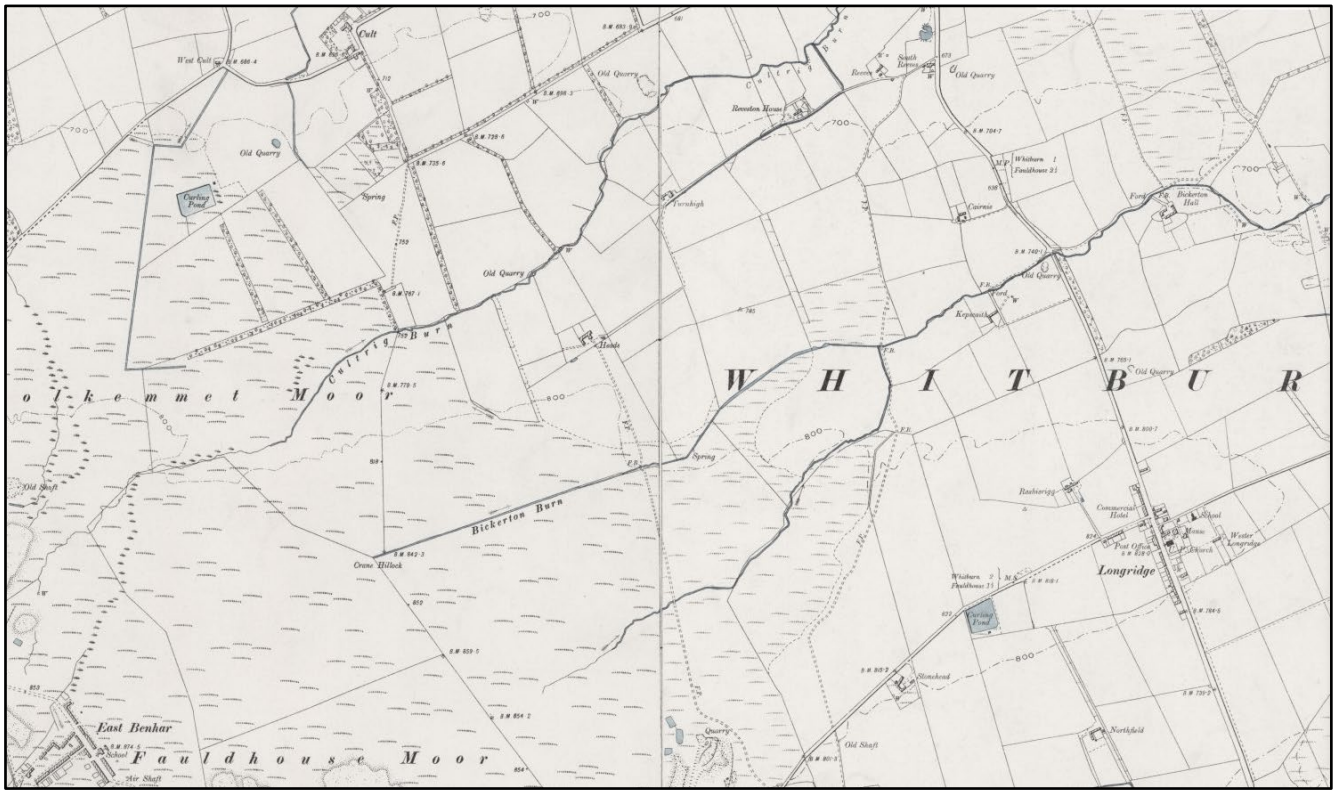

Figure 3: Ordinance Survey. Surveyed 1895, Published 1898.

II/1.2 Physical site factors

II/1.2.1 Geology, soils and landform

Underlying geology at Polkemmet is largely classified as Scottish Lower Coal Measures Formation by the British Geological Survey. This is characterised by sequences of sandstone, siltstone and mudstone. In the restored opencast elements of the site, these sequences have been amalgamated and mixed during removal and redistribution of overburden.

Soils on the restored opencast mine areas have been subject to stripping, relocation and recent partial mechanical de-compaction and enrichment with organic material. They are therefore mixed and disturbed in nature. Restored soils do not act as natural soils due to disturbance of structure and microbiological function. It has been documented by studies conducted by Forest Research that such disturbed soils are characterised by impeded drainage, a lack of cohesion with underlying layers and a heightened vulnerability to compaction. Restored coalfield soils are generally of clay (2m) or coarse stone (2s) texture and require de-compaction to a depth of 70 – 100 cm to allow for sufficient tree rooting and drainage.

A contiguous area of deep peat along the western boundary of Polkemmet has availed disruption during mining operations. Historic peat extraction, establishment of coniferous woodland and associated drainage has degraded the peat considerably.

Onsite topography is extensively influenced by historic mining activity. Slopes are generally relatively short and gently rolling. An elevated ridge runs west to east near the site's north-western boundary and is one of the most prominent topographical features at Polkemmet.

II/1.2.2 Water

There are several former mine settling ponds, flooded mine voids and more naturalistic ponds formed during phases of land forming within the site. These are now functioning as valuable habitat for wetland birds and associated species.

Cultrig Burn and Bickerton Burn run through the site from west to east. The course of both burns has been modified to varying extents during multiple phases of opencast mining activity. Flow rates have therefore been altered and as such, Bickteron Burn only flows following prolonged periods of rainfall.

II/1.2.3 Climate

The site is generally classified as cool, highly exposed and wet with DAMS scores of 17-18.

II/2 Biodiversity and environment

As part of the land management planning process a range of surveys were undertaken between 2021-2022, the information gathered in these surveys was used to inform the land management plan design process and ensure that cultural and natural heritage features were protected and enhanced by the proposed woodland creation.

All forestry operations to be conducted within the lifetime of this land management plan will adhere to and comply with current best practise guidelines and conform with statutory regulations relating to the protection of species and habitats.

In compliance with UKWAS and UKFS standards all forestry operations will be subject to an assessment of their environmental impacts and surveys will be conducted prior to any operations to identify and protect species and habitats of conservation concern.

II/2.1 Habitats and species

A list of key habitats and species recorded during these surveys is provided below along with management actions planned within the period of this land management plan.

II/2.1.1 Birds

Breeding bird surveys were conducted in the spring and summer of 2022 in order to identify and protect the assemblage of avian species present on this site.

The survey findings were used to inform the land management plan design and retain significant areas of open habitat. These open areas will ensure that breeding and foraging habitats are maintained for a range of avian species.

As the woodland matures and develops a mosaic of coniferous and broadleaved woodland will develop creating a diverse range of habitat niches for woodland species currently absent from the site.

In line with regional and national environment priorities Forestry and Land Scotland as a partner in the “Scottish Raptor Monitoring Scheme” (SRMS) will continue to protect and support raptor populations within our land holdings. Working with local conservation organisation’s opportunities will be identified as part of the work plan process to protect and bolster these priority species through habitat creation, modification and the monitoring of populations. Tawny owl, Barn owl and Kestrel boxes will be installed within this LMP area to support and bolster these species until such time as natural habitat niches develop.

II/2.1.2 Water vole

In 2022 a survey was conducted to identify the presence and extent of water vole within the footprint of the site. The surveys identified a single population within the site and population density was estimated to be low.

Due to historic land use and recent mining activity within this site the habitats on which water vole depend have become heavily fragmented and degraded.

To aid this species and support its recovery water courses will be designed to incorporate areas of open space in areas with existing habitat suitable for water vole, excessive shading will be avoided and any planting within riparian corridors will be of low density broadleaved species.

Terrestrial habitat along riparian margins will be improved by removal of sheep from the footprint of the site which are currently causing significant degradation to ground and field layer.

All existing ponds, scrapes and waterbodies will be retained and opportunities to enhance and connect these existing habitats through the creation of new wetland areas will be identified during the course of this LMP.

II/2.1.3 Invertebrates

Opportunities will be taken to increase the value of existing habitats for invertebrate communities, deadwood will be retained wherever possible and as the woodland matures diversity in structure and species will create an array of habitat niches currently absent from the site.

The existing mosaic open habitat areas to the west of the site will be retained and adjacent areas of species poor semi-improved acid grassland will be scarified and sown with a native wildflower mix to increase the biodiversity value of the habitat.

New ponds and wetland habitat areas will be created during the woodland creation phase and riparian corridors will be planted with low density native broadleaved species to improve water quality and habitat for aquatic invertebrates.

II/2.1.4 Invasive non-native species

A survey conducted in 2022 failed to identify any Invasive non-native species (INNS) within the LMP area. The site will continue to be monitored by FLS staff and if found to be present any INNS will be scheduled for treatment and removal as and when necessary in line with current best practice guidance.

II/2.1.5 Deadwood

Opportunities will be sought during this LMP period and deadwood will be retained wherever possible in line with FLS deadwood policy.

Peatland restoration works will provide some limited opportunity to create and retain volumes of deadwood within the life cycle of this plan, however there is limited scope to produce large volumes of deadwood on this site due to the lack of mature woodland present.

Opportunities to create and retain deadwood habitats will increase as woodland establishment takes place and structural diversity increases with the age of the woodland.

II/2.1.6 Terrestrial habitats

Extensive areas of deep peat were identified within the Polkemmet moor, these peatland areas will be retained and restoration works are planned within the length of this LMP to remove scrub and block ditches.

An area of UKBAP and Scottish Biodiversity List priority habitat "Open Mosaic Habitats on Previously Developed Land" was identified to the north of the site and surveyed in 2022.

Consisting of a mosaic of ephemeral ponds, mixed woodland, reedbeds, grassland and dense scrub, this area is structurally diverse, species rich and holds significant biodiversity value within the landscape, it supports a broad range of habitats and species.

This habitat will be retained and a connective belt of broadleaved woodland will be planted directly adjacent providing a buffer between these habitat areas and the productive commercial conifers to the east of the site.

Opportunities will be taken to increase the habitat value of adjacent areas of species poor semi-improved acid grassland by sowing them with a native wildflower mix to increase the biodiversity value of the habitat.

Livestock will be removed from the site which is currently heavily grazed and opportunities will be taken during the course of the LMP period to retain successional habitat areas through episodic management of scrub.

II/2.1.7 Riparian areas and waterbodies

There are several former mine settling ponds, flooded mine voids and more naturalistic ponds formed during phases of land forming within the site. These are now functioning as valuable habitat for wetland birds and associated species.

Cultrig Burn and Bickerton Burn run through the site from west to east. The course of both burns has been modified to varying extents during multiple phases of opencast mining activity. Flow rates have therefore been altered and as such, Bickteron Burn only flows following prolonged periods of rainfall.

II/3 Landscape

The wider landscape at Polkemmet has been altered through several phases of coal mining. Most recently, a land-forming operation has shaped mining spoil and infrastructure to a point where it is visually more in-keeping with the surrounding landscape.

II/3.1 Landscape character

Polkemmet falls within the 'Lothians Lowland Plateaux' landscape character type, as defined by Scottish Natural Heritage. Key characteristics of this landscape character type are an extensive, smoothly undulating lowland plateau, heavily influenced by the areas industrial past. Other physical characteristics are moorland and coniferous plantations as well as extensive views out to the north and east.

Further details can be accessed directly from Scottish Natural Heritage at:

https://www.nature.scot/professional-advice/landscape/landscape-character-assessment/scottish-landscape-character-types-map-and-descriptions

II/3.2 Visibility

Despite its relatively close proximity to Whitburn (1 km), Fauldhouse (>1 km) and Longridge (>1 km), Polkemmet is relatively discreet in terms of visibility. This is due to its slightly sunken landform internally, raised adjacent ground and existing woodland. Most significant landscape impacts of afforestation at Polkemmet will be on views from the south-west of Whitburn, the A706 which runs adjacent to the eastern site boundary and the B7066 which runs adjacent to the northern site boundary.

II/4 Heritage

Key FLS priorities for archaeology and the historic environment are to undertake conservation management, condition monitoring and archaeological recording of our significant historic assets; and to seek opportunities to work in partnership to help to deliver Our Place in Time: the Historic Environment Strategy for Scotland and Scotland's Archaeology Strategy. Significant historic environment features will be protected and managed following the UK Forestry Standard (2017). Harvesting coupes, access roads and fence lines will be surveyed prior to any work being undertaken in order to ensure that upstanding historic environment features can be marked and avoided. At establishment and restocking, work prescriptions remove relevant historic environment features from ground disturbing operations and replanting. Where appropriate,

significant historic assets are recorded by archaeological measured survey, see active conservation management and may be presented to the public with interpretation panels and access paths. Opportunities to enhance the setting of important sites and landscapes will be considered on a case-by-case basis (such as the views to and from a significant designated site).

The Regional Historic Asset Management Plan includes conservation management intentions for those designated historic assets in Scotland's national forests. Details of all known historic environment features are held within the Forester Web Heritage Data (built using national and regional historic environment records) and included within specific operational Work Plans to ensure damage is avoided. Significant historic environment features will be depicted on all relevant operational maps.

II/5 Statutory requirements and key external policies

- Scotland's Forestry Strategy 2019-2029
- Scotland's Third Land Use Strategy 2021-2026
- The UK Forestry Standard 2017
- UK Woodland Assurance Scheme 2018
- Central Scotland Green Network: Delivery Plan 2030
- SNH National Landscape Character Assessment 2019

Appendix III: LMP brief

III/1 Key background information

III/1.1 Introduction

- Polkemmet is a ~242.6 ha former opencast coal mining site situated 1 km south-west of the town of Whitburn and within 1 km of the villages of Fauldhouse and Longridge. The site is directly adjacent to Fauldhouse Forest, part of the National Forest Estate.
- The OCCS was owned and operated by Scottish Coal and covered approximately 611 ha. Production spanned over 60 years.
- Parts of the site fall within the Woodland In and Around Towns (WIAT) 1 km zones associated with Whitburn and Fauldhouse. All plantable ground falls under the 'Preferred' Forestry and Woodland Strategy classification within the Central Scotland Green Network (CSGN) project area.

III/1.2 Silvicultural potential

- FR climate models classify the site as cool, highly exposed and wet. DAMS score is 17-18. Elevation ranges from 225 – 260 m and the site has a generally northerly aspect.
- On former mining areas, soils have predominantly been restored with follow up remediation. Mechanical de-compaction and enrichment with bio-solids has been carried out to a depth of 50 – 60 cm. A smaller area of the site has not been restored to the same standard and was only cultivated with plough and tine and enriched with bio-solids/biomass to a depth of around 30 cm.
- Some areas were previously undisturbed by industry and the natural soils are mainly deep peat with some peaty gleys on the southern edge of the site.
- Some smaller areas appear to have been enriched with peat in a patchy distribution. These areas are being colonised by natural regeneration of conifer. Stocking density will be assessed for suitability and potential enrichment planting could be carried out where necessary.
- A significant block of lowland raised bog on the western half of the site remains in reasonable condition and will be excluded from afforestation.

III/2 Strategic Drivers

To succeed in realising the vision as set out in the Scottish Forestry Strategy 2019-2029, six 'Priorities for Action' been identified for implementation:

- ***Ensuring forests and woodlands are sustainably managed***
- ***Expanding the area of forests and woodlands, recognising wider land-use objectives***
- ***Improving efficiency and productivity, and developing markets***
- ***Increasing the adaptability and resilience of forests and woodlands***
- ***Enhancing the environmental benefits provided by forests and woodlands***
- ***Engaging more people, communities and businesses in the creation, management and use of forests and woodlands***

As detailed in Forestry and Land Scotland's Corporate Plan 2022-2025, we have developed five Corporate Outcomes to guide our work during this period. Each Corporate Outcome sets out a position statement of where we want to be by 2025. The Corporate Outcomes support the delivery of the Scottish Forestry Strategy Priorities for Action, listed above. In brief the FLS Corporate Outcomes are:

1. ***Supporting a sustainable rural economy***
2. ***Looking after Scotland's national forests and land***
3. ***Scotland's national forests and land for visitors and communities***
4. ***A supportive, safe and inclusive organisation***
5. ***A high performing organisation***

In preparing the Brief and Objectives for this Land Management Plan for Polkemmet, site opportunities and constraints relating to delivery of the Corporate Outcomes were evaluated. Those most relevant to Polkemmet are detailed below.

III/3 Draft LMP objectives

Table 13: Relevant Corporate Outcomes and actions for their delivery derived from the FLS Corporate Plan 2019, leading to draft Polkemmet LMP objectives.

Corporate outcomes relevant to this LMP	Operational Actions for delivery of corporate outcomes, relevant to this LMP	LMP action points
Outcome 1: Supporting a Sustainable Rural Economy **FLS supports a sustainable rural economy by managing the national forests and land in a way that encourages sustainable business growth, development opportunities, jobs and investments.**	• Managing the national forests and land in accordance with the UK Woodland Assurance Scheme (UKWAS) to ensure that timber and other products produced by FLS are guaranteed to be from a sustainably managed resource. • Providing a sustainable supply of timber to Scotland's timber processing sector. • Support the venison processing sector through our deer management.	• Create a land management plan which meets UKFS/UKWAS requirements and where possible guidelines. • Enhance the long-term sustainable productivity and resilience of the site through selection of site and climate suitable species. • Optimise yield and timber quality through sound long-term silvicultural prescriptions and harvest coupe design, with site climate and site constraints considered. • Design open space and infrastructure to facilitate safe and efficient deer management operations to improve opportunities for natural regeneration and support the venison processing sector.

Corporate outcomes relevant to this LMP	Operational Actions for delivery of corporate outcomes, relevant to this LMP	LMP action points
Outcome 2: Looking after Scotland's national forests and land **Scotland's national forests and land are looked after; biodiversity is protected and enhanced; and more environmental services are provided to people.**	• Managing the national forests and land to further the conservation and enhancement of biodiversity. • Maintaining and enhancing our work on peatland restoration. • Collaborating with partners on integrated landscape-scale approaches to habitat management and restoration. • Supporting policy development and research, and act as a testbed for new and innovative approaches to forestry and land management.	• Prescribe habitat types throughout the site, including open, native broadleaf and conifer woodland, to best complement existing site features and link neighbouring habitat areas. • Investigate peatland restoration opportunities in areas undisturbed by previous opencast mining activity. • Follow best practice guidelines for remediation and establishment of new woodland on former mining sites, including monitoring and recording outcomes for wider analysis and learning.

Corporate outcomes relevant to this LMP	Operational Actions for delivery of corporate outcomes, relevant to this LMP	LMP action points
Outcome 3: National forests and land for visitors and communities **Everyone can visit and enjoy Scotland's national forests and land to connect with nature, have fun, benefit their health and wellbeing and have the opportunity to engage in our community decision making.**	• Maintaining recreational routes to promote fun in the outdoors, focusing on improving entry level experiences for everyone to enjoy and gain health benefits. • Continuing to remove barriers to ensure that people from all backgrounds can and do access the full range of benefits of the national forests and land. • Enabling outdoor learning and encouraging schools and community groups to make use of the national forests and land. • Continuing to engage communities in decisions relating to the management of the national forests and land. • Continuing to support community empowerment by enabling communities to make use of the national forests and land to their benefit.	• Maintain current recreational infrastructure. • Design new woodland areas to provide a diverse and interesting setting for recreational access. • Where feasible, involve local community groups and organisations to develop informal recreational and education activites. • Continue to consult with local communities, schools and stakeholders throughout the Land Management Plan process.

Appendix IV: EIA screening opinion request form

Form located overleaf.

Scottish Forestry
Coilltearachd na h-Alba

Environmental Impact Assessment
Screening Opinion Request Form

Please complete this form to find out if you need consent from Scottish Forestry, under the **Forestry (Environmental Impact Assessment) (Scotland) Regulations 2017**, to carry out your proposed forestry project. Please refer to Schedule 2 Selection Criteria for Screening Forestry Projects under Applying for an opinion. If you are not sure about what information to include on this form please contact your local Conservancy office.

Proposed Work

Please put a cross in the box to indicate the type of work you are proposing to carry out. Give the area in hectares and where appropriate the percentage of conifers and broadleaves

Proposed Work	select	Area in hectares	% Conifer	% Broad-leaves	Proposed work	select	Area in hectares
Afforestation	☒	104.63	49	51	Forest roads	☒	0.54
Deforestation	☒	10.48	100		Forest quarry	☐	
Location of work		Polkemmet, near Whitburn, West Lothian.					

Description of Forestry Project and Location

Provide details of the forestry project (size, design, use of natural resources such as soil, and the cumulative effect if relevant).
Please attach map(s) showing the boundary of the proposed work and other known details.

Polkemmet is a former opencast coalmining site. Forestry and Land Scotland (FLS) plan to expand existing woodland on site, with 104 ha of afforestation.

All afforestation will be carried out on restored former mining ground. Soils on restored mining ground are highly variable and further remedial work will be required prior to woodland establishment.

Coniferous planting prescriptions are focused in the eastern half of the site, away from environmental constraints such as the two priority open habitats present in the west of the site.

Broadleaf planting prescriptions are focused on delivering biodiversity and amenity objectives. They will mainly be low density in nature, including 50% open space. Broadleaf planting will be largely located in riparian areas, adjacent to recreational infrastructure and as buffers between conifer planting and priority open habitats. Species mixture prescriptions include: native mixed broadleaf (NVC W17), native upland (NVC W11, W17), wet woodland (NVC W4, W7), and native shrubs. Once established, these areas will be largely managed under a minimum intervention prescription, to allow natural processes to develop.

Areas of existing priority terrestrial habitat on site, such as lowland raised bog and Open Mosaic Habitats on Previously Developed Land will remain unplanted.

Provide details on the existing land use and the environmental sensitivity of the area that is likely to be affected by the forestry project.

Existing Land Use breakdown

Existing woodland (broadleaf):	6.41 ha.	3%
Existing woodland (coniferous):	14.19 ha.	6%
Open ground:	214.78 ha.	88%
Open water (ponds):	7.22 ha.	3%
Total:	242.6 ha.	

Population and human health

Polkemmet is located approximately 1 km south-west of the town of Whitburn (1 km) and less than 1 km from the villages of Fauldhouse and Longridge to the south-west and south-east respectively. Footfall at Polkemmet is mainly on the internal road and path network which comprises a number of loops that link the northern, southern and eastern extremities of the site. Access from the south is via a gated entrance way which will be the location of the site's main operational entrance. Access routes crossing Polkemmet's northern and eastern boundaries are currently unrestricted due to the lack of march fence.

For future harvesting operations, timber transport will be carried out on the site's internal road network. All timber will be dispatched from the soon to be constructed main operational entrance on the site's southern boundary and onto the B7010.

Priority habitats

Polkemmet Moor is a former cutover lowland raised bog surrounded by smaller blocks of afforested conifer crops. The hydrology links Polkemmet Moor, the neighbouring FLS Fauldhouse block and privately owned Fauldhouse Moor. The peatland consists of two separate hydrological units, namely the larger Polkemmet/Fauldhouse Moor, and a smaller unit to the south of the former opencast mine. The afforested peatland blocks were historically ploughed and drained in order to establish a productive conifer crop. The site was previously cultivated utilising a deeply ploughed ridge/furrow system with ploughed drains, and will likely have been heavily fertilised. Taking into account this historical input, as well as the ground conditions of a consistently high water table, it would be difficult to achieve sufficient crop performance over the second rotation in line with UKFS, without causing significant soil disturbance and the subsequent release of greenhouse gases.

An area of UKBAP and Scottish Biodiversity List priority habitat "Open Mosaic Habitats on Previously Developed Land" was identified to the north of the site and surveyed in 2022.

Consisting of a mosaic of ephemeral ponds, mixed woodland, reedbeds, grassland and dense scrub, this area is structurally diverse, species rich and holds significant biodiversity value within the landscape, it supports a broad range of habitats and species.

Water
There are several former mine settling ponds, flooded mine voids and more naturalistic ponds formed during phases of land forming within the site. These are now functioning as valuable habitat for wetland birds and associated species.

Watercourses
Cultrig Burn and Bickerton Burn run through the site from west to east. The course of both burns has been modified to varying extents during multiple phases of opencast mining activity. Flow rates have therefore been altered and as such, Bickteron Burn only flows following prolonged periods of rainfall.

Geology and soils
Underlying geology at Polkemmet is largely classified as Scottish Lower Coal Measures Formation by the British Geological Survey. This is characterised by sequences of sandstone, siltstone and mudstone. In the restored opencast elements of the site, these sequences have been amalgamated and mixed during removal and redistribution of overburden.

Soils on the restored opencast mine areas have been subject to stripping, relocation and recent partial mechanical de-compaction and enrichment with organic material. They are therefore mixed and disturbed in nature. Restored soils do not act as natural soils due to disturbance of structure and microbiological function. It has been documented by studies conducted by Forest Research that such disturbed soils are characterised by impeded drainage, a lack of cohesion with underlying layers and a heightened vulnerability to compaction. Restored coalfield soils are generally of clay (2m) or coarse stone (2s) texture and require de-compaction to a depth of 70 – 100 cm to allow for sufficient tree rooting and drainage.

A contiguous area of deep peat along the western boundary of Polkemmet has availed disruption during mining operations. Historic peat extraction, establishment of coniferous woodland and associated drainage has degraded the peat considerably.

Landscape
The wider landscape at Polkemmet has been altered through several phases of coal mining. Most recently, a land-forming operation has shaped mining spoil and infrastructure to a point where it is visually more in-keeping with the surrounding landscape.

Polkemmet falls within the 'Lothians Lowland Plateaux' landscape character type, as defined by Scottish Natural Heritage. Key characteristics of this landscape character type are an extensive, smoothly undulating lowland plateau, heavily influenced by the area's industrial past. Other physical characteristics are moorland and coniferous plantations as well as extensive views out to the north and east.

Despite its relatively close proximity to Whitburn (1 km), Fauldhouse (>1 km) and Longridge (>1 km), Polkemmet is relatively discreet in terms of visibility. This is due to its slightly sunken landform internally, raised adjacent ground and existing woodland. Most significant landscape impacts of afforestation at Polkemmet will be on views from the south-west of Whitburn, the A706 which runs adjacent to the eastern site boundary and the B7066 which runs adjacent to the northern site boundary.

Description of Likely Significant Effects

Provide details on any likely significant effects that the project will have on the environment (resulting from the project itself or the use of natural resources) and the extent of the information available to assist you with this assessment.

Population and human health
Woodland creation at Polkemmet will effectively deliver restoration of a brownfield, former extractive industrial site to quality greenspace. The resulting landscape and setting will be more diverse, complex, biodiverse and interesting.

Priority habitats
Polkemmet Moor lowland raised bog and the adjacent designated open habitat on site are sensitive to disturbance caused by forestry establishment. Deforestation is proposed for 10.48 ha of productive conifer crop. The introduction of additional seed source adjacent to the priority open habitats could lead to some natural regeneration, potentially of non-native species.

Geology and soils
Soils on the restored opencast mine areas have been enriched with organic material however heavy compaction is present in some areas which will inhibit root development and drainage making woodland establishment more challenging.

Landscape
The site's moderate elevation currently offers extensive views of the Campsie Fells, Southern Highlands and Ochil Hills to the north and the Pentland Hills to the south-east. The creation of new woodland at Polkemmet will obscure some of the views as the trees establish.

Include details of any consultees or stakeholders that you have contacted in order to make this assessment. Please include any relevant correspondence you have received from them.
Feedback to be sought from consultees and stakeholders during the formal consultation period. All feedback received and Forestry and Land Scotland response will be stored in the consultation record table located in Appendix I of the Land Management Plan document.

Mitigation of Likely Significant Effects
If you believe there are likely significant effects that the project will have on the environment, provide information on the opportunities you have taken to mitigate these effects.
Population and human health No mitigation required. FLS has liaised with NatureScot regarding impact of re-wetting on neighbouring land (Fauldhouse Moor). Due to their commitment to peatland restoration, the work proposed in Polkemmet will complement this and create a more robust peatland. **Priority habitats** All priority open habitats will be excluded from afforestation, and opportunities instead will be explored to restore their natural functionality. A native shrub mix is proposed for establishment directly adjacent to the priority open habitats to reduce the likelihood of regeneration of non-native species within these habitats. The restoration potential of the lowland raised bog within Polkemmet is considered to be high due to the very wet ground conditions and abundant remnant bog vegetation that persists in rides and open areas. Rewetting will benefit the wider peatland unit as it will stop further oxidisation and erosion. The aim is to create a hydrologically functioning lowland raised bog complex similar to NVC M18 Erica tetralix – Sphagnum papillosum raised and blanket mire. FLS is committed to the long term restoration of these priority habitats. Pre-operational surveys will identify any protected or breeding species to ensure suitable mitigation is in place to avoid disturbance. **Water** All ponds on site will have operational buffering applied. Where this is not already established, wet woodland prescriptions shall be planted, with minimal to no ground preparation, in accordance with Forest and Water Guidelines and Practice Guide: Managing forest operations to protect the water environment. **Watercourses** Associated riparian areas will be enhanced with the planting of mixed native broadleaves, to a target canopy cover of 50%, as described above and in the Planting map. Re-wetting techniques on peatland areas have shown to cause no significant adverse effect on water

resource and quality. Ultimately, water quality of the local area should improve with a reduction in run-off from exposed peat and degraded peatland. These actions are in accordance with the UKFS and operations will adhere to Forest and Water Guidelines and Practice Guide: Managing forest operations to protect the water environment.

Geology and soils
Due to impeded drainage and compaction issues in the areas of former mining ground, it is purposed that further remediation works will be required. The remediation works will de-compact and fracture the soils to a depth of 1 m, sewage cake will then be incorporated and mixed into the soils and then backfilled. Any large stones or boulders (exceeding 600 mm) will be buried below 300 mm or removed and used elsewhere on site. The remediation work will be carried out systematically, in a way which will ensure that machinery does not track over the soils that are being, or have been placed - therefore mitigating against any re-compaction issues. A drainage plan will be developed in advance of remediation works starting. Where required this will include the installation of contour berms to reduce soil erosion and encourage water retention in sloping areas. A seed mix will also be sown following remediation works, to help quickly establish vegetation cover.

Prior to planting, further ground preparation works will be carried out to aid tree establishment. This will be achieved through Patch scarification - a shallow scraping of the ground that removes ground vegetation and exposes weed free planting positions. This will be done using light weight tracked vehicles with low ground pressure, to avoid the compaction of soils. This will be further aided by good planning and methodical work sequencing, resulting in vehicles only being required to make a single pass over the remediated ground.

There will be no remediation or ground preparation works in the low density upland mix in the north west of the site or within the wet woodland mixes in the riparian corridor in the north east of the site. Instead, if required, hand screefing or 100% biodegradable mulch mats will be used to help aid establishment.

This aforementioned ground preparation work will alleviate compaction and improve the soil structure which are still disturbed in nature and as such won't initially function like natural soils.

Re-wetting the site will benefit the peat soils as forestry modifications will be reversed to stop oxidisation and further degradation/erosion of the peat.

Landscape
The wider landscape at Polkemmet has been altered through several phases of coal mining. Most recently, a land-forming operation has shaped mining spoil and infrastructure to a point where it is visually more in-keeping with the surrounding landscape. The

restoration of peatland habitats will have a positive effect on the landscape by removing hard edges to the open habitats. This, coupled with the creation of a new mixed woodland will further help to improve the visual diversity of Polkemmet and contribute to the long-term recovery of an ex-industrial site.

The key viewpoint considered in the planting design is the view from the housing scheme in the south-west of Whitburn which looks onto the northern extremities of the site. A soft edge of native mixed broadleaves has been proposed along the northern edge of the site to improve the transition from open ground to woodland.

The proposed method of protection is through the erection and maintenance of new deer, stock, and rabbit/hare proof fencing. This will not be one large perimeter fence, but instead groups of smaller fences. These fences will follow the edges of the network of access tracks, but will not cross them. This will provide free flowing, easy access throughout the site. It is hoped that this will reduce the risk of the fence being vandalised / cut open. All deer fences will have vehicle gates for maintenance works and self-closing pedestrian gates for recreational access.

Vole guards and canes will be fitted to all trees within the enclosed areas, excluding Sitka spruce.

There will be no deer fence enclosing the low density upland mix in the north west of the site or the wet woodland mix in the riparian corridor in the north east of the site. Instead these will be protected by tree shelters.

Fences, gates, shelters and guards will be maintained in an effective condition and enclosed areas will be monitored for the presence of deer.

Sensitive Areas	
Please indicate if any of the proposed forestry project is within a sensitive area. Choose the sensitive area from the drop down below and give the area of the proposal within it.	
Sensitive Area	Area
Deep peat soil.	47.8 ha
Select...	
Select...	
Select...	
Select...	

Property Details	
Property Name:	Polkemmet

Scottish Forestry
Coilltearachd na h-Alba

Environmental Impact Assessment
Screening Opinion Request Form

Business Reference Number:		Main Location Code:	
Grid Reference: (e.g. NH 234 567)	NS 9311 6275	Nearest town or locality:	Whitburn
Local Authority:		West Lothian Council	

Owner's Details			
Title:		Forename:	
Surname:			
Organisation:	Forestry and Land Scotland	Position:	
Primary Contact Number:		Alternative Contact Number:	
Email:	enquiries.central@forestryandland.gov.scot		
Address:	Five Sisters House, Five Sisters Business Park, West Calder		
Postcode:	EH55 8PN	Country:	
Is this the correspondence address?		Yes	

Agent's Details			
Title:	Mr	Forename:	Tom
Surname:	Roberts		
Organisation:	Forestry and Land Scotland	Position:	Woodland Creation Forester
Primary Contact Number:	07341 788403	Alternative Contact Number:	
Email:	tom.roberts@forestryandland.gov.scot		
Address:	Five Sisters House, Five Sisters Business Park, West Calder		
Postcode:	EH55 8PN	Country:	
Is this the correspondence address?		Yes	

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GLS Ref number:	