LENZIE MOSS MANAGEMENT PLAN 2009 – 2014

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FINAL PLAN– JANUARY 2009

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SUMMARY OF SITE DETAILS

Site Name: Lenzie Moss

Status: Site of Importance for Nature Conservation (SINC) in the East Dunbartonshire Local Plan: Finalised Draft (March 2002) and proposed as a Local Nature Reserve (LNR) in the East Dunbartonshire (Strathkelvin Area) Local Plan (April 2000) and Finalised Draft Local Plan.

Planning Authority: East Dunbartonshire Council

Grid Reference: NS647718

Ordnance Survey Sheets: 1:50,000 Sheet No. 64/ 1:25,000 Sheet No. 404

Area: 40.83 hectares

Summary description

Lenzie Moss is an area of peatland known as a lowland raised bog. It now covers an area of approximately 41 ha, although the original area of the peatland would likely have been significantly larger. The Moss is designated as a Site of Importance for Nature Conservation (SINC) in the East Dunbartonshire Council Local Plan 2005. As a lowland raised bog it is an important habitat for a number of reasons explored further in Part 2 and Appendix 5

The majority of Lenzie Moss has been extensively modified by commercial peat extraction which ceased in the 1960's, with only a small area at the south-western edge maintaining its original (primary) surface. The nationally rare bog rosemary (Andromeda polifolia) has been recorded in this area. The remaining cut-over, or secondary surface, is now mostly recolonised with typical peatland plants and birch woodland.

Within the wet hollows of the cut areas, *Sphagnum* moss species have colonised, particularly *Sphagnum cuspidatum* and *recurvum,* with cotton grasses *Eriophorum* spp. and ericaceous shrubs. Grassland, scrub and birch woodland habitats are situated around the periphery and drier areas of the bog.

Lenzie Moss is used for informal recreation and has a formal circular path. There are also desire line footpaths across the site, some of which follow raised banks (known as baulks) created during peat extraction.

Access to the site is from the housing that bounds 2 sides of the site and directly from Lenzie Railway Station car park. Popular with local residents, the site has appreciable amenity value, and is a proposed Local Nature Reserve (LNR).

Site Contact: Greenspace Officer
Lesley Scott
East Dunbartonshire Council
Greenspace
Broomhill Industrial Estate
Kilsyth Road
Kirkintilloch G66 1TF
Tel: 0141 574 5566 Fax: 0141 578 5555

Long term objectives

The following Long term objectives were developed for the site in conjunction with stakeholders:

1. To maintain and enhance the remaining primary surface area of Lenzie Moss, as an example of a lowland raised bog habitat, with its associated floral and faunal communities, without prejudicing surrounding land uses.

2. To promote recovery of the area formerly cut for peat, at Lenzie Moss, as an example of a secondary re-vegetated raised bog, with its associated floral and faunal communities, without prejudicing surrounding land uses.

3. To maintain and enhance the nature conservation value of the habitats surrounding the raised mire without compromising Objectives 1 & 2.

4. To encourage community involvement in the management of the site, without compromising the nature conservation interest.

5. To encourage survey, monitoring, and research, which will aid in the understanding of the ecology and management of the site.

6. To encourage use of the site for the purposes of education, without compromising its nature conservation interest.

7. To encourage safe, all ability, visitor access to the site, for the purposes of recreation and interpretation, without compromising its nature conservation interest.

8. To meet all legal requirements and other obligations

Summary of site management costs for the period 2009 - 2013:

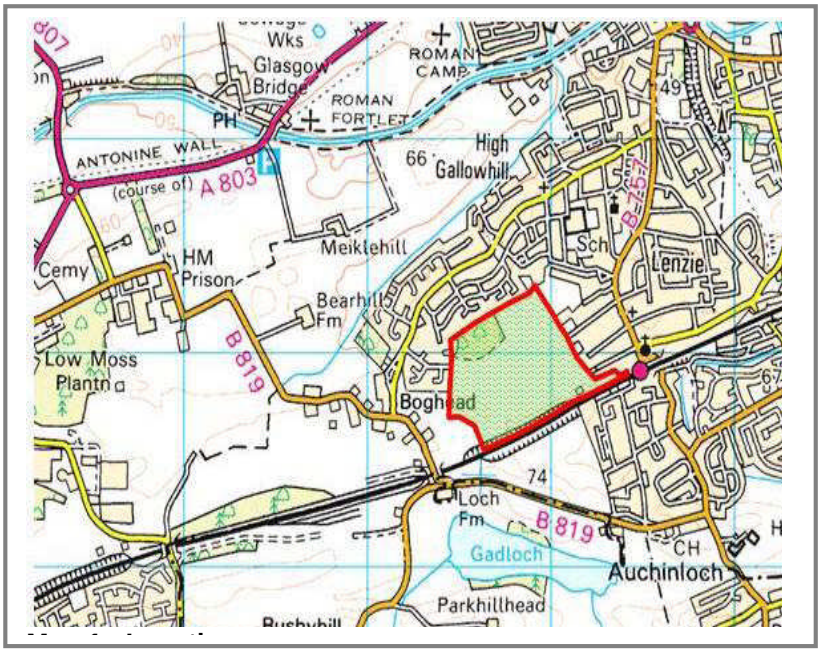
PROJECT	**YEAR**					**Totals**
	2009	**2010**	**2011**	**2012**	**2013**	
Monitoring Projects	£350	£1,750	£0	£0	£0	**£2,100**
Liaison Projects	£4,675	£350	£100	£350	£100	**£5,575**
Administration Projects	£0	£0	£0	£0	£0	**£0**
Research Projects	£350	£1550	£0	£1,000	£0	**£2,900**
One Off Practical Projects	£0	£6,000	£12,500	£600	£0	**£19,100**
Ongoing Practical Projects	£3,420	£4,220	£4,620	£3,960	£4,170	**£20,390**
Totals	**£8,795**	**£13,870**	**£17,220**	**£5,910**	**£4,270**	**£50,065**

PART 1 – DESCRIPTION

1 GENERAL INFORMATION

1.1 Location and status

1.1.1 Location



Lenzie Moss lies on the south western edge of the town of Lenzie, north of the B819, and is bisected by the main Edinburgh to Glasgow railway line (see location map).

This management plan only covers the area north of the railway line.

Grid Reference

NS647718

1.1.2 Area 40.83 ha. (101 acres).

1.1.3 Reserve conservation status

Lowland raised bog is listed under Annex 1 of the EC Habitats Directive (1992) as a priority habitat. Lenzie Moss is listed in the Kelvin Valley Countryside Nature Conservation Strategy and within the East Dunbartonshire Local Plan as a Site of Importance for Nature Conservation (SINC) and a proposed Local Nature Reserve (LNR).

There is a UK Habitat Action Plan for raised bog and it is a UK BAP priority habitat. Raised bog and woodland have been recognised under East Dunbartonshire's LBAP as Priority Habitat's for Conservation Action. The Scottish Biodiversity Strategy links to both these frameworks.

Several plant and animal species recorded at the site have been recognised as important, both nationally and locally:

Lenzie Moss is the only known site for the nationally rare Bog Rosemary *Andromeda polifolia*, within East Dunbartonshire. East Dunbartonshire's LBAP has identified Bog Rosemary and Round-leaved Sundew *Drosera rotundifolia*, as requiring active conservation management to ensure that they remain viable.

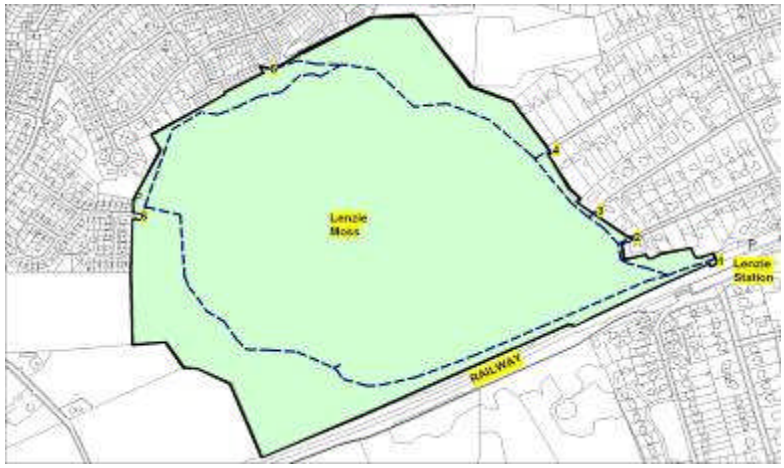
Reed Bunting *Emberiza schoeniclus* is a UK BAP priority species. Reed bunting and snipe *Gallinago gallinago* are also listed as priority species in the East Dunbartonshire LBAP.

The moth, silvery arches *Polia trimaculosa*, is listed as Nationally Scarce notable B. This means it occurs in between 31 and 100 ten km squares of the National Grid.

1.1.4 Council and planning authority

East Dunbartonshire Council.

1.1.5 Access



Map 2 - Access

The nearest car parking is at Lenzie Rail Station.

The site has open access with a 2.32km accessible circular path, with 6 entry points from the surrounding housing at:

1. Lenzie Railway Station car park,
2. Heath Avenue,
3. Fern Avenue,
4. Hawthorn Avenue
5. Laburnum Grove
6. Heather Drive.

See full map in Appendix 1

The circular path around the bog is mainly toptrek with a 383m boardwalk section which cuts through the area of primary bog.

Small sections of the path have sunk in places and puddle after heavy rain. There are several bridges which cross over drains or wet areas, made of timber and hardcore. The path cuts through both woodland areas, rank grass and scrub habitats. The boardwalk is 1.0m in width and has two passing places with one seat.

A full access audit has been carried out as part of the preparation for this plan. The Access Audit report and associated Bill of Quantity can be seen in Appendix 4.

Picture 1 - Boardwalk through primary bog

Picture 2 - Welcome sign

The formal path does not take visitors into the central secondary bog. There are a series of desire line footpaths along some of the baulks.

1.1.6 Facilities

There are two interpretation panels at entrances to the site. One is at the Railway Station car park entrance, the other at Heather Drive.

The panels are titled “A walk around ten thousand years of history” and tell the story of peat formation, its extraction and value for wildlife and people.

The interpretive panel can be seen in Appendix 3

There are “welcome” signs at entrance points which also warn of the dangers of the bog.

There are several dog bins at entrance points. The one at the railway station car park entrance is heavily used.

Picture 3 - Station car park bin

1.1.7 Contacts

Greenspace Officer
Lesley Scott
East Dunbartonshire Council
Greenspace
Broomhill Industrial Estate
Kilsyth Road
Kirkintilloch
G66 1TF
Tel: 0141 574 5566
Fax: 0141 578 5555

Friends of Lenzie Moss

www.Friendsoflenziemoss.org.uk

Biodiversity Officer
Gillian Telfer
East Dunbartonshire Council
biodiversity@eastdunbarton.gov.uk

Tel: 0845 045 4510

East Dunbartonshire and Mugdock Country Park Ranger Service

Tel: 0141-956-6586
e-mail: rangers@mugdock.org

1.2 Land tenure, other legal agreements and buildings

This is not a legal document. Please refer to the original tenure documents before taking any decision, or any action, which may have legal implications.

1.2.1 Owners

East Dunbartonshire Council.

The area of land used as rugby pitches is owned by Lenzie Rugby Club.

The Rugby Club also owns the football field adjoining the housing on the northern boundary.

1.2.2 Dates established

Three parcels of land were purchased under a compulsory Purchase Order in 2009. An excambion (exchange of land) with the Rugby Club was completed in 2007.

With the excambion, the Local Authority gained the areas of rank grass and scrub habitat adjoining Heath, Fern and Hawthorn Avenue (compartment 6), while the Rugby Club acquired the area west of the rugby pitch including the football field.

1.2.3 Obligations

At the end of Heather Drive is a wet field which is outwith the reserve and scope of this plan. It is cut every 6 weeks by the Local Authority during the grass cutting season.

1.2.4 Rents/agreements

None.

1.2.5 Services

A series of ditches lead to drains on the periphery of the site. (See 1.2.3 Hydrology).

1.2.6 Buildings/structures

The brick remains of the peat processing plant are situated off the path near the main railway line. The remains are less than 1m in height.

1.2.7 Neighbours

Lenzie Rugby Club owns the pitch and grassland and scrub habitat to the north east of the Moss.

Lenzie Academy and Lenzie Primary School are adjacent to the site.
The Edinburgh – Glasgow rail line bounds the south of the site.
The other boundaries are private housing.

1.3 Property/equipment inventory

None.

1.4 Management responsibilities

The site is managed by East Dunbartonshire Council. The primary contact will be the Greenspace Officer.

Community involvement is facilitated by both the Ranger Service and the EDC Greenspace Officer.

1.5 Map coverage

Ordnance Survey Sheets: 1:50,000 Sheet No. 64
1:25,000 Sheet No. 404
1:10,000 Sheet No's. NS67SE, NS67SW

Geological Survey of Great Britain (Scotland) maps (1939):

Airdrie, Map Sheet 31 – Solid. This shows the site area to be composed of Carboniferous Limestone Series, Upper Limestone Group, Limestone.

Airdrie, Map Sheet 31 – Drift. This shows the area to be composed of Peat.

Historic Maps: 1823 The Kelvin Valley and Moss at Lenzie
1864 Dumbarton and Lanarkshire Districts

These maps can be viewed in the National Map Library, Edinburgh, and were reproduced in the Lenzie Moss education Pack, 1994.

1.6 Photographic coverage

1.6.1 Aerial photographs

Scottish Natural Heritage hold photograph 51588090 – Line 114 – 1988/89, Aerial Survey of Scotland. The photograph is dated 10/06/1988 and has a scale of 1:24,000.
SNH also hold a copy print of a large aerial photograph (1.5 x 2 metres), which was presented at a public inquiry (undated but believed to be circa 1990, so is probably the 1988 photograph).

East Dunbartonshire Council hold aerial photographic coverage.

1.6.2 General photographs

Photographic slides and prints of Lenzie Moss are held by East Dunbartonshire Council - Partnership and Planning Dept.

1.6.3 Fixed point photography

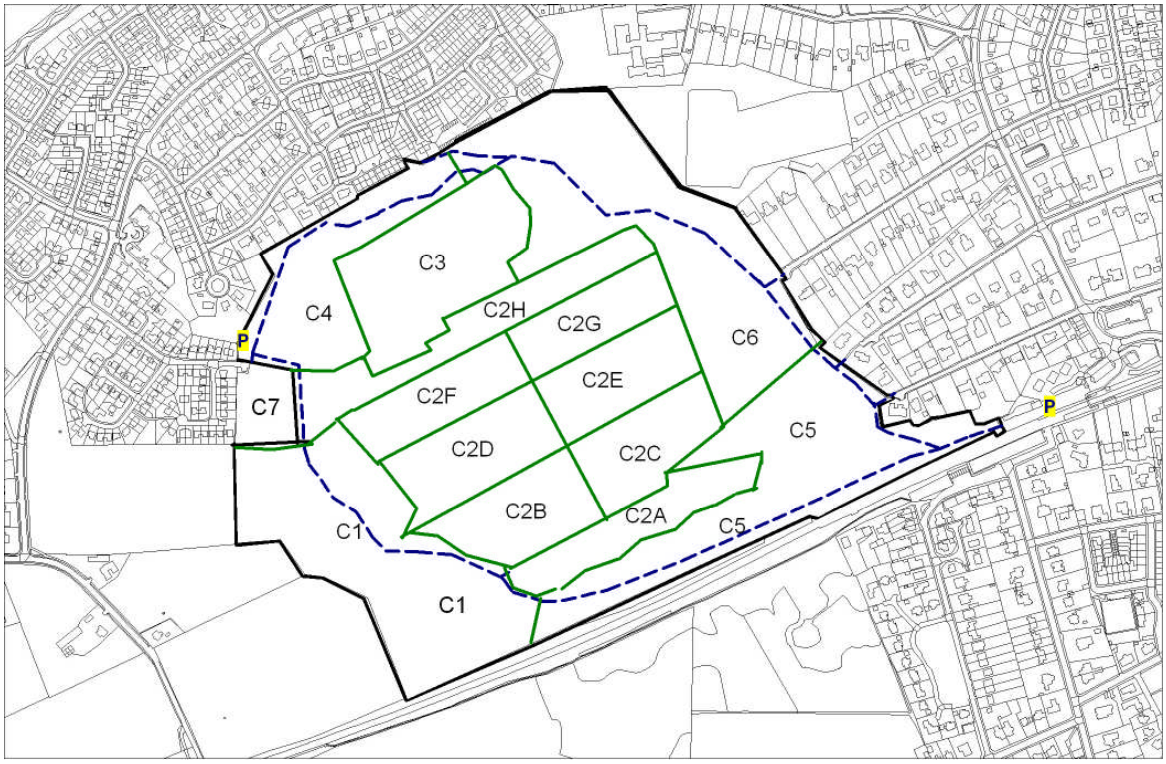
Fixed point photography was carried out as part of the 2007 Hydrology study.

1.7 Compartments

Management of the reserve requires the site to be divided into compartments.

Compartment boundaries must not change with time, be readily identifiable on the ground and will often reflect habitat types, ownership, access, hydrological conditions etc. Each compartment is given a number, and prefixed with the letter C.

For convenience, the compartments identified in previous management plans and the hydrology report will be retained as sub compartments in Compartment 2. Other compartments have been identified for this plan. *See compartment map below and in Appendix 1.*



Map 3 - Compartments

C1: The area of primary bog by the boardwalk, containing the bog rosemary.

Compartments 2 A to H comprise the previously cut peat field. The compartment boundaries are formed by raised baulks.

C3: Pioneer mixed woodland dominated by birch to the north of C2H.

C4: Mature mixed broadleaved woodland on the northern boundary.

C5: Mature mixed broadleaved woodland to the south, bordering the rail line.

C6: Rank grass and scrub habitat between the secondary bog habitats and the housing to the east.

C7 This area is not part of the reserve, however it is beside one of the main access points and has a project associated with it during this plan period.

2 ENVIRONMENTAL INFORMATION

2.1 Climate

Unfortunately, there is no local long term daily rainfall data. The nearest gauge is at Quinloch Farm, some 17 km north-west of Lenzie in the Blane Valley adjacent to the Campsie Fells. Limited data was gathered for the hydrology report.

In a Scottish context a 'very wet day' is generally taken to be when more than 25mm of rain falls in one day. In 2004 and 2005, there were at least six such occasions (Bone 2007):

Date	Rainfall (mm)
08/08/2004	37.8
10/08/2004	28.6
03/10/2004	28.2
07/01/2005	30.8
17/04/2005	34.4
25/05/2005	32.0

It can be seen from the table that intense rainfall can occur at any time of the year.

2.2 Topography / geology / geomorphology / soils

The Raised Bog Inventory states the site lies at 70m above sea level.

Boulder clay (undifferentiated drift) was deposited in this area over Limestone. This resulted in an impermeable layer. Infilling of organic material in a water filled depression created the raised bog over thousands of years.

Due to extensive peat extraction, the dome of the bog is now non-existent, and instead, much of the central area is lower lying than the periphery.

The central area is partitioned into nine irregular rectangular peat working areas which now form shallow basins (Compartments 2A to 2H). The compartments have raised 'baulks' of uncut peat around the margins and smaller linear partitions within the compartments.

Picture 4 - Baulks and cut over fields in C2A

Picture 5 - Ditch between C2D and C2E

A larger baulk is present running east to west through Compartment 2A, which is the site of a narrow gauge railway line.

There is a man made peat mound at the western end of Compartment 2D. This raised ground provides a good view of the bog, but the peat is eroding due to a combination of use by scrambling bikes along with sun and wind action. Once peat is removed and dried it losses its key structural and mechanical characteristics. Vegetation finds it very difficult to colonise these bare, black peat surfaces.

A topographic survey was undertaken as part of the hydrology study. In addition to the composition of the peat core, the actual depth of peat was recorded at various sample points. Peat depths are highly variable across the site and range from as little as 0.2m to 3m (Bone, 2007). The original depth of peat is believed to be in the region of 7-10m.

The survey also deduced that the surface generally slopes to the northeast from a high point of 69m AOD near the railway cutting, to 63.5m AOD towards the Lenzie Rugby Club pitches.

2.3 Hydrology

Because the railway line bisects the northern and southern halves of Lenzie Moss in a cutting 3m deep with associated hardcore foundations, the two halves are now individual hydrological units. This plan covers only the northern part of the moss.

Raised bogs are solely dependent on rainfall for their water supply. Such ombrotrophic (rain fed) systems give rise to nutrient deficient conditions on the bog and result in characteristic bog vegetation such as *Sphagnum* moss species. Despite being extensively cut for peat in the past, Lenzie Moss is still considered to be an ombrotrophic system (Bone 2007), as the cut over peat dome is still hydrologically independent of the surrounding landscape and is regenerating itself.

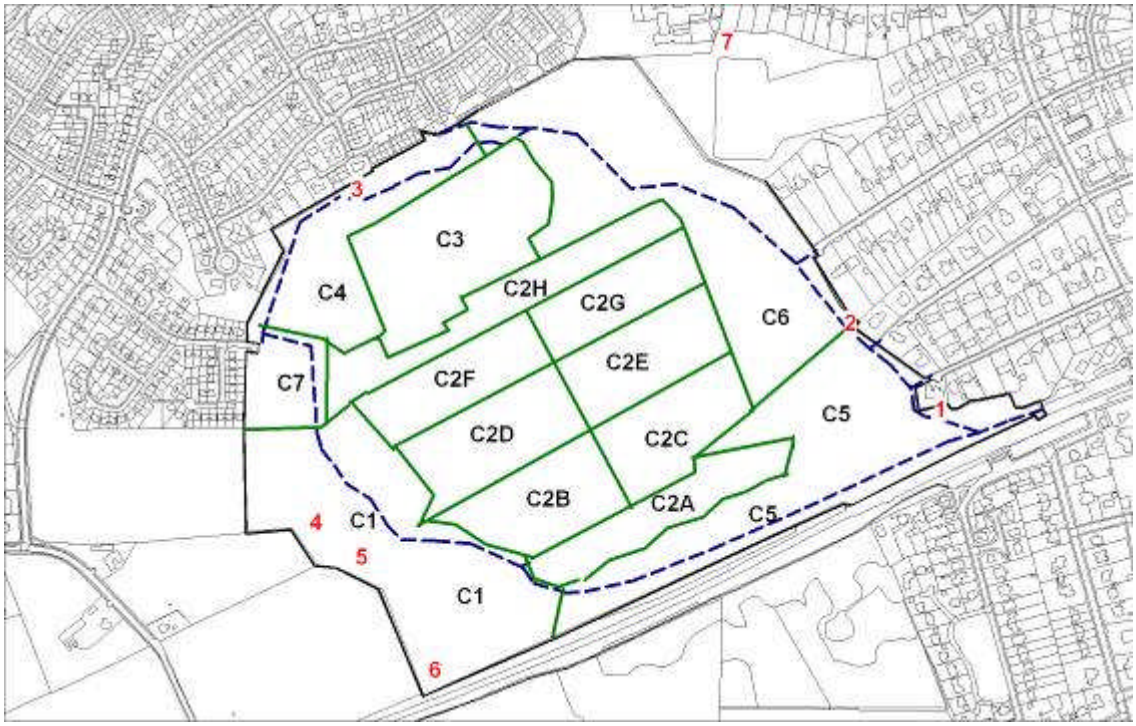
However, the drainage system installed to facilitate peat cutting is still active. This is an interconnected network which drains the whole of the site to 4 main outflow points. A separate but less extensive system is present on the uncut area. These drains with baulks divide the secondary bog area into compartments (see Compartment Map).

Compartments 2C, 2D and 2E are the wettest compartments, along with the northern area of Compartment 2A. For considerable periods of the year and after rainfall events, shallow open water covers large areas of compartments 2A, 2D and 2E. Compartment 2H is reasonably wet, while Compartments 2F and 2G are notably drier, with extensive heather growth. Compartment 2B is drier with dense birch growth.

Picture 6 – Secondary bog vegetation in C2A

Picture 7 - Heather dominated C2G

Seven outflow points have been identified (see map below):



Map 4 - Outflows 1 to 7

See full map in Appendix 1

1. An underground pipe beneath gardens backing onto the path leading to Lenzie station. This drain takes water from the ditch which flows from Compartments 2A and 2C. The ditch / drain point had a metal grill installed in 2008 to help stop the drain blocking with debris. The grill is close to the end house of Heath Avenue, and the drain is a 300mm pipe.

2. An open channel on the right of way from Heath Avenue to Blackthorn Avenue, between the back gardens of Fern Avenue and Hawthorn Avenue. This drain takes water from the ditch which flows from Compartment 2C.

3. An underground pipe running north-east, parallel to gardens behind Blackthorn Avenue.

4 & 5. Two open drains along field boundaries, originating to the west side of the peat mound. Drain 4 is at the corner of the High School rugby field.

6. A conduit beneath the railway line at the extreme south-west corner of the site.

7. Manhole to the southeast corner of the Lenzie Primary School grounds, adjacent to the rugby ground.

Eroded baulks allow passage of water between a number of peat cut compartments, particularly when water levels are high. Natural and human induced erosion will, over time, further reduce the integrity of the baulks allowing the secondary bog to drain more freely.

The abandoned playing pitch area lying to the west of Lenzie Rugby Club pitches has been infilled with coarse crushed stone with constructed under-drainage. Birch scrub has colonised this area, but there are still open areas within it.

The toptrek circular path acts as a barrier to lateral surface flow of water off the bog and it ponds behind the path in many places. There are a series of pipes under the path in places to facilitate drainage.

Between April 2004, and January 2006, a hydrological study was undertaken of the bog by Mouchel Parkman Ewan (Bone, 2007). The study was commissioned because of concerns raised by local residents that the bog is responsible for flooding of nearby properties and that any conservation work undertaken on the bog would result in further flooding of properties.

Data recorded consisted of water levels at various locations across the bog and flow rates to some of the discharge points which connect into culverts leading through Lenzie. Rainfall intensities, outflows and water levels were analysed to obtain information on the drainage of the bog.

It is thought that the manhole on outfall 7 was constructed by the Lenzie Rugby Club and the drains leading into it are from the club's grounds and related drains, including the unfinished football pitch on the northern boundary of the site.

Drains 4, 5 and 6 appear to be drainage ditches, but they rise towards the west. It appears that water collects in the ditches and infiltrates to the surrounding area over time.

For most of the site except the western margin, water that percolates through the peat layer drains away in an easterly direction. Walrag data from the hydrology study also shows that there is a gradient of the water table running from west to east (Bone, 2007). Surface water and shallow groundwater are intercepted by drainage ditches and flow in a variety of directions to outfall points around the site, but most water outflow occurs through outfalls 1 and 2. Data indicates (Bone, 2007) that the flow in drain 2 is ten times that of drain 1.

Although after rainfall events the flow of drain 7 is three times that of drain 2, the surrounding conditions, (rugby fields, hardcore and old rubbish tips) suggest that this is due to faster run off from those areas.

Picture 8 - Outflow 1

Picture 9 - Outflow 2

Some of the culverts leading from Lenzie Moss pass through areas which have suffered from flooding and the allegation has been made in 2002 that runoff from the bog was responsible for the flooding. The drainage is a combined sewer system which means it carries domestic waste water as well as surface runoff from roads, footpaths, roofs and a number of other impermeable areas such as driveways etc.

Analysis of the water flow after an intense storm showed that the Moss is in fact acting to attenuate the discharge of water into the system, with the peak flow from the bog occurring in excess of 24 hours after peak rainfall. Data from this and other storm events shows that in all cases the contribution from urban sewer flooding is by far the largest proportion of discharge and the contribution from Lenzie Moss is a minor element that ranges from 3% to 7% of total water (Bone, 2007).

As well as the timing of water discharge from the bog, the quantity is significantly low.
Because the contribution Lenzie Moss makes to the Laurel, Hazel and Middlemuir areas is a small percentage of the total volume of water, any improved drainage as a result of further damage to the bog, would result in a more rapid run off.

The conserve option outlined in the hydrology study was approved by EDC in January 2008.

2.4 Ecological position

Although there are 7 raised bog sites in East Dunbartonshire, the largest bog at Lenzie is isolated from other bog sites, and is surrounded by urban development on 3 sides. The nearest bog habitat is a half mile to the west, Low and High Moss, both of which are smaller than Lenzie Moss (18.1ha and 17.6 ha) and in poorer condition with more tree encroachment. Between Lenzie and Low Moss is Cadder Yard Moss, a small site of only 3.7 ha. All of these bogs have intact areas.

There are two links to other habitats:

The railway line which connects a variety of habitats.
The Boghead Road walks which connect to wooded and grassland areas.

2.5 Vegetation communities and flora

2.5.1 Surveys

A species list of flowering plants and mosses, compiled by Edna Stewart and George Langley (the local Botanical Society of the British Isles recorders) is given in the " Lenzie Moss: Local Nature Reserve Management Plan ", Strathkelvin District Council (Balling, 2002), although this was unavailable for the preparation of this plan.

March/April 1998: National Vegetation Classification (NVC) of the mire, woodland, and grassland, commissioned as part of Scottish Natural Heritage's (SNH), Scottish Lowland Raised Bog Inventory. (SNH Inventory site code LZMO26). However, care needs to be taken with the data as both sides of the rail line were surveyed. For example, the southern half of the site was described as degraded primary bog and *Sphagnum tenellum* was only recorded from there.

September 2000: Scottish Wildlife Trust (SWT), Wildlife Site survey. Commissioned by the Kelvin Valley Countryside Project.

2.5.2 Vegetation communities

The SNH Raised Bog Inventory identified five communities, with two main community types forming the largest components – M19 (*Calluna vulgaris -Eriphorum vaginatum* mire) and M18 (*Erica tetralix-Sphagnum papillosum* mire). The M25 (*Molinia caerulea-Potentilla erecta* mire) is also present but poorly defined.

According to the previous 1996-2001 management plan, the area of uncut primary bog contains the M18a *Sphagnum magellanicum – Andromeda polifolia* sub-community. It was speculated that the community was probably representative of the vegetation prior to the onset of peat extraction (Hughes and Brooks, 1996). This primary bog area lies on shallower peat which is why it was not extracted. Unfortunately, the extent of *Polytrichum* moss in this area suggests nutrient enrichment as a result of repeated burning. Anecdotal evidence (Brooks pers com) suggests that the M18a community has deteriorated over the last ten years with reduction in Sphagnum cover and associated peatland species.

Compartment 2J is pioneer or transitional birch woodland with bilberry and some cranberry.

The woodlands were identified as having one main community type – W4 (*Betula pubescens-Molinia caerulea* woodland), with the grassland being composed of two communities – MG9 (*Holcus lannatus-Deschampsia cespitosa* grassland) and MG1 (*Arrhentherum elatius* grassland).

The 2001 – 2005 Woodland Management Plan separated the woodland into two main community types – W4 (*Betula pubescens-Molinia caerulea* woodland) and W17 (*Quercus – Betula – Vaccinium myrtilus* woodland).

2.5.3 Vascular plant species

The block peat cutting has left a topography of raised baulks and flat cut fields. The dry, oxidising baulks maintain typical dry heath communities dominated by heather *Calluna vulgaris*. The vegetation within the cut fields is variable, reflecting the characteristics of the fluctuating water table and uneven surface level. The wetter fields are dominated by *Sphagnum recurvum* (a typical aquatic species in slightly nutrient enriched conditions) with associated cotton grass *Eriophorum angustifolium* and harestail cotton grass *E. vaginatum*. The drier fields are characterised by extensive *C. vulgaris* and *Erica tetralix*.

Downy birch *Betula pubescens* has encroached from the mature woodland boundary onto much of the open bog. The trees are most abundant in the cut fields where there is continual fluctuation of the water table and seedlings can colonise the damp floating rafts of vegetation. They are less abundant in some of the drier fields dominated by heather.

The nationally scarce plant, bog rosemary *Andromeda polifolia*, is confined to an area approximately 10m² of primary uncut bog. While it is estimated that there were only 6 flowers in 2002 (Baker, 2004), fifty to sixty flowers of bog rosemary flowered in this location in 2008.

Round-leaved Sundew *Drosera rotundifolia* is present on many of the baulks, and Cranberry *Vaccinium oxyccocus* is sparsely present.

Picture 10 - Royal fern

Royal fern *Osmunda regalis* was found under mature birch trees at the south east corner of Compartment 2G.

The southern birch woodland is predominately birch with a good understory of rowan *Sorbus aucuparia*, ferns and bilberry *Vaccinium myrtillus*.

The northern wood has more mature trees, particularly near the housing, such as oak *Quercus petraea* and beech *Fagus sylvatica*. There is also good ground cover of ferns and bilberry.

Both woodland areas contain mature and saplings of sycamore *Acer pseudoplatanus*.

In the grassland, of interest are lesser twayblade *Listera cordata*, moonwort *Botrichium lunaria;* common spotted orchid *Dactylorhiza fuchsii* and greater butterfly orchid *Platanthera chlorantha* are fairly common, with 50+ spikes of the latter recorded in 2007.

Japanese knotweed *Fallopia japonica*, is present in the south-eastern corner of the site, by the railway boundary fence 10m into the site from the car park, and south of the railway line at the edges of the birch woodland. It is currently sprayed by the Ranger Service.

There are many other non-native garden escapees present on the periphery of the site, including bridewort, dogwood, *Aster*, *Cotoneaster* and *Rhododendron* species.

Picture 11 - Bridewort

Picture 12 - Dogwood

2.5.4 Bryophytes, lichens and fungi

Polytrichum moss is abundant, including the area of primary bog.

Picture 13 - Area of primary bog with *Polytrichum*

Picture 14 - Polytichum in primary bog

The areas of regenerating secondary bog have nine *Spahgnum* species recorded in the Raised Bog Inventory:

Sphagnum cuspidatum, magellanicum, papillosum, recurvum, subnitens, caplofolium, and *palustre.*

In addition, blushing bog moss *Sphagnum molle* was recorded as occasional.

Picture 15 - *Sphagnum cuspidatum* in C2A

2.6 Fauna

2.6.1 Surveys

The East Dunbartonshire and Mugdock Country Park Ranger Service undertook a small mammal survey in July 2007. 8 traps were set in compartments C5 and C6 capturing 3 wood mice, 2 bank voles and 1 field vole.

2.6.2 Invertebrates

Dragonflies

Four species of Odonata have been recorded:

Common hawker *Aeshna juncea,* black darter *Sympetrum danae,* Common blue damselfly *Enallagma cyathigerum* and large red damselfly *Pyrrhosoma nymphula.* All 4 species are common and both common hawker and black darter are commonly associated with acidic pool conditions.

Butterflies and moths

Moths recorded include woodland moths such as poplar hawk moths and large emerald, but the silvery arches *Polia trimaculosa*, is notable B. Compete lists of moths caught at Lenzie Moss are held by the Ranger Service.

There are two records of green hairstreak *Callophrys rubi* from 1996, when more than 10 adults were observed.

2.6.3 Amphibians

Common frog *Rana temporaria* was recorded during the SWT Wildlife Site survey of 2000, and they are noted by local residents.

2.6.4 Reptiles

There are no records of adder *Vipera berus* or lizard.

2.6.5 Mammals

Roe deer *Capreolus capreolus* are common, which helps control birch spread over the bog. Foxes *Vulpes vulpes* are seen regularly, probably attracted by the rabbits *Oryctolagus cuniculus* which burrow in the drier baulks in compartments 2F and 2G.

Wood mouse *Apodemus sylvaticus*, bank vole *Clethrionomys glareolus* and field vole *Microtus agrestis* along with a dead water shrew *Neomys fodiens* have been recorded by the Ranger Service.

2.6.6 Birds

Reed bunting *Embrezia schoeniclus*, is known to breed and snipe *Gallinago gallinago* have been recorded. Skylarks *Alauda arvensis* are resident, but dog walking is thought to have decreased their numbers. There is a lack of information regarding other bird species.

3 CULTURAL INFORMATION

3.1 Archaeology / Past land use

Lenzie Moss, or Mountain Moss as it has been called, has a long history of peat extraction. Early records show that the Charter of Alexander II, dated 1226, allowed the canons of Cambuskenneth to dig peat. This was later to become a right bestowed on the freemen or 'Peat Lords' of the Burgh of Kirkintilloch.

During the Victorian era, part of the north-east end of the bog was used as a municipal dump by local householders. This explains the old glass bottles and broken plates along with clinker and cinders from household fires. This area is now lower lying rank grass and scrub to the north east of the bog, owned by the Rugby Club following the excambion.

In the nineteenth century, the Volunteer Movement used the bog as a rifle range and bullets found on the bog can be seen in Kirkintilloch Museum. The No. 10 Company of the Dunbartonshire Rifle Volunteers created a raised mound (to the west of Compartment 2D) in which to fire their bullets. For safety considerations, this practice was stopped and the use of the bog as a public park was considered, but not pursued by the Lenzie Ward Committee of the Burgh of Kirkintilloch.

Also during the late 19th century the railway line was constructed. This effectively split the bog into two hydrological units.

The site has been grazed by sheep and was noted in the Raised Bog Inventory as being part grazed by cattle in 1998.

More recently, the Lenzie Peat Development Company extracted peat commercially for horticultural use, ceasing operations in the 1960's. The company was responsible for trench digging and constructing a narrow gauge railway line, (running along the central baulks) which linked into Lenzie train station. The scars of these operations are evident today, with the ' peat fields ', or ' baulks and hollows ', which have become re-vegetated.

The brick remains of the peat processing plant can be seen opposite the main rail line on the edge of the main path. Narrow gauge rail lines led to this plant, where peat was shredded and bagged. On the other side of the path, can be seen the remains of the rail platform and steps down to the main line. The siding was demolished.

Urban and agricultural development has encroached on all sides around the bog. The housing development to the east side is generally circa 1880s whereas housing to the northwest is from about 1950s and later. Along with the housing development came the associated culverting of what would have been open drainage ditches leading away from the bog.

A rugby pitch and now abandoned playing field have been established on the north east area of the bog, in the area owned by the Rugby Club.

Since the cessation of peat extraction, the site has been used for informal recreation. A network of desire paths developed across much of the site, including the surrounding woodlands and grasslands.

The major baulks which form the primary divisions between the former peat working areas

were used as the informal access routes, and in some places these are extensively eroded. This human traffic is thought to have decreased since the construction of the circular path.

3.2 Past interest

Local residents have demonstrated an interest and concern for the site since the housing development was established, because of its wildlife and amenity value.

Scottish Natural Heritage have also been supportive of the site funding management and footpath works.

The Kelvin Valley Countryside Project commissioned a management plan in 1996.

The site was added to the Raised Bog Inventory following a survey in March and April 1998.

Following a survey by Scottish Wildlife Trust in 2000, the site was given Wildlife Site (SINC) status.

2001: A management plan (2001 – 2005) for the woodland was produced by Mark Hamilton (Landscape Services), on behalf of the Kelvin Valley Countryside Project.

The site is used by the Ranger Service for environmental education, community group activities as well as guided health walks which are part of a wider programme of events.

The site has been used as a fully accessible walk in the East Dunbartonshire Walking Festival.

3.3 Past management

YEAR	ACTION	CARRIED OUT BY
1992	Upgrading of Right of Way from Blackthorn Grove to Lenzie Station	Kelvin Valley Countryside Project and the Friends of Lenzie Moss .
1992	Scrub clearance commenced and 4 compartments cleared over the next few years.	Kelvin Valley Countryside Project
1994/5	Insertion of five corrugated sheets across channels in the south west corner of the site to test the viability and ease with which drainage could be blocked.	
1995	Wildflower plugs (bluebells) inserted along the woodland edge near the rail line	Friends of Lenzie Moss and school children
1995/6	Limited removal of encroaching birch)	Scottish Wildlife Trust Kelvin Valley Countryside Project
1995/6	Underplanting of south woods with oak and hazel.	local primary school children
2003/4	People counters installed on path near Laburnum Gardens and boardwalk (vandalised)	
2003	Vegetation on paths cut back.	
2003	3 sections of footpath repaired and bridge ramped to improve wheelchair access	
2004	Planting of bramble and hawthorn at the back of the sheltered housing of Laburnum Gardens, to screen the back gardens.	
2004	Upgrading of path. A stretch of boardwalk was installed around the periphery of the bog dome between Blackthorn Avenue and railway line.	
2004/5/7	Bog rosemary cuttings taken and transplanted in 4 areas. Limited success.	
2006	2 orientation and interpretation panels installed. - Fence repair at Heath Avenue. - 10m section of dangerous trees felled.	
2007	- Tree thinning at the back of Laburnum Gardens at the request of residents. - 3 sleeper bridges replaced with culverts and hardcore bridges. - Woodland thinning around paths and other areas (Woodland in and around Towns grant).	
2007	- Warning signs at access points installed - School children planted 500 snowdrop bulbs in the north west woodland. - Path repairs. - Vegetation cut back along boardwalk.	
2008	4 new culvert grills installed on drains	

Circular footpath

Funded by Scottish Natural Heritage "Transforming Your Space" and the Local Authority. Established in 3 phases from 2003, includes the right of way. See map 1.3 in Appendix 1.

Phase 1: Toptrek path from Lenzie Station north to Laburnum Gardens
Phase 2: The hardcore and boardwalk section from Heather Drive to the southern boundary of the primary bog.
Phase 3: 2 sections linking Heather Drive to Laburnum Gardens and the end of the boardwalk to Lenzie Station.

Woodlands In and Around Towns Grant

Forestry Commission.
Thinned trees and opened up footpaths by pruning.
Culverts installed on ditches leading to drains 1 and 2, and the main path to Lenzie Station.
See map 1.4 in Appendix 1.

General Management

The Local Authority mow the path edges twice annually.
The Ranger Service spray non-native invasive species such as Japanese knotweed.

3.4 Landscape

Lenzie Moss is a semi-wild area in an urban landscape. This local "wilderness" feeling is greatly appreciated by the surrounding residents and users of the site.

3.5 Public use

3.5.1 Education

Local schools have used the site for educational purposes including Lenzie Primary, Lenzie Moss Primary, Millersneuk Primary, Campsie View and Lenzie Academy.

An Education Pack was produced by the Kelvin Valley Countryside Project in 1994, for teachers wishing to use the site. This is however, now out of date with the school curriculum.

The East Dunbartonshire and Mugdock Country Park Ranger Service, provide a direct link to schools and community groups. The following list details work since 2003:

School Groups

Lenzie Moss Primary
13/05/03 Minibeast hunting with P3 class
03/06/04 Minibeast hunting with 2 P3 classes
05/10/04 Eco-day involving whole school
09/06/05 Minibeast hunting with 2 P3 classes
01/06/06 Minibeast hunting with P3 class
05/06/07 Minibeast hunting with P3 class

2007 Bluebell planting with Greenspace Officer
03/06/08 Minibeast hunting with P3 class

Holy Family Primary School
29/05/08 Conservation and pollution focus on peat bogs with P5 class

Campsie View School
Met with Ranger Service to visit boardwalk and find a location for replacement bench

No record of events on the moss with Lenzie Academy or Holy Family Nursery.

3.5.2 Events

2003: Birch Bash and Litter Pick, Birch Bash and Bog Rosemary Planting, Meet on the Moss
2004: Meet on the Moss – large open day, now Birch Bash
2005: Conservation Task Day and Litter Pick, Minibeasts of Lenzie Moss
2006: Meet on the Moss – large open day, Lenzie Moss clean up, Conservation Task Day and Litter Pick
2007: Dawn Chorus Walk, Minibeasts of Lenzie Moss, Mini Mammals of Lenzie Moss, Walk Lenzie Moss Loop
2008: LNR Celebrations – History walk, Herbal walk, craft activities
Meet on the Moss – large open day

3.5.3 Research

None known.

3.5.4 Recreation

The site is used by local residents for informal recreation, mainly dog walking, but also as a thoroughfare to get to the schools and shops etc.

As with many sites that lie close to an urban population there are problems relating to vandalism, footpath erosion, littering, and fire-raising.

At present there is an extensive network of casual footpaths around the site. These paths follow the main raised baulks. Generally the peat is dry and reasonably well compacted with pedestrian use. However, where the surface is heavily trampled, vegetation is lost - the resultant bare peat surface is then rapidly eroded by further trampling. The most heavily eroded zones are footpath intersections along the baulks. In some cases the baulk has been completely eroded away, effectively rendering the path impassable. A number of planks and boards have been laid over very wet or badly eroded areas, and in most cases they are unstable and hazardous. It is thought that these paths are no longer used as frequently as before, now that the formal circular path has been installed.

Motorcycles and quad biking is an issue. Riders of these are known to ride up the peat mound, and it is thought they caused subsidence of a section of boardwalk which needed repair.

A full Access Audit report and associated Bill of Quantity can be seen in Appendix 4.

3.6 Current interpretation provisions

There are two interpretation panels at entrances to the site. One is at the Railway Station car park entrance, the other at Heather Drive.

The panels are titled “A walk around ten thousand years of history” and tell the story of peat formation, its extraction and value for wildlife and people. See Appendix 3 for detail of panels.

There are also “welcome” signs at entrance points which also warn of the dangers of the bog.

There is an education pack for use by local schools, but this no longer ties in with the curriculum.

3.7 The site and the local community / landowners

The site is used mainly for informal recreation such as dog walking, and as a thoroughfare to get to shops and schools etc.

There is an active Friends of Lenzie Moss Group who hold regular events on site with the Ranger Service, including clean up events and a “Meet on the Moss” event every two years.

The Ranger Service undertakes practical management tasks a few times a year, numbers of volunteers are growing steadily, with 15 participants at the last event.

The site is ideally situated to encourage community involvement, being surrounded on two sides by housing. The established Friends Group demonstrates the local interest in the site.

East Dunbartonshire’s Greenspace Strategy (2005-2010) has five themes from which tasks and actions are developed: This management plan is able to contribute to themes 2 – 5 as outlined below:

Theme 2. Provide a network of well designed multi-functional, clean, safe and accessible greenspaces that are well resourced/managed and meet the needs and aspirations of the community.

Lenzie Moss is popular with local people, although there is no data on visitor numbers or on user views and aspirations. Counters have been installed on the site in the past, however no data is available.

Lenzie Moss path network is relatively new, having been installed in the past 5 years. The path edge is cut every year, however the walking corridor is reducing and will require management in the next plan period. Boghead Community Woodland is located to the west of the site.

Theme 3. Encourage a sense of ‘ownership’ and involve local communities in the planning and management of greenspaces through meaningful community engagements.

Lenzie Moss has an active 'Friends of Lenzie Moss' Group. The group produces a newsletter on the Moss and is involved in organising and running events. A lot of the management prescriptions listed in the Plan can be undertaken by community volunteers.

The Ranger service organise 2 practical task events per year on the site and currently work with local scouts, brownies and guides.

Theme 4. Extend functionality and maximise the greenspace resource.

The Moss does have 2 interpretive/orientation panels on the site, however there is no signage creating awareness and promoting the site from local settlements. Although the site is used primarily by local people, there is no directional signage to the site from surrounding areas.

An access audit has been carried out for the site (see Appendix 4). The path surface and gradients comply with BT Countryside for all (urban fringe and managed) standard. The width of the boardwalk (1m) means that the whole site cannot be promoted as complying with this standard. Overall the site could however be promoted as complying with the 'Rural and working landscape standard' as an accessible low level short walk.

Theme 5 Raise awareness of greenspace issues through education, building understanding and community capacity

The Friends Group and the ranger service have led a range of guided walks on the site over the years. The site has 2 interpretive panels that are relatively new. On site interpretation is thought to be adequate, however there is potential to develop 'off site' interpretation to raise to profile of the Moss and the importance of Peatlands.

The 4 local primary schools visit the site with the Ranger service for curriculum based activities. These visits should continue to be facilitated by the Ranger service. Secondary schools find it difficult to schedule time for countryside visits. There are opportunities to target 'not in school' pupils for extra curricular activities.

A popular open day 'Meet on the Moss' is held every 2 years. There is also an annual Gala Day in Lenzie. There may be potential to combine these 2 events and bring the Moss more into the community.

Picture 16 - Site of 'Meet on the Moss' event

PART 2 - EVALUATION

4. EVALUATION OF BIOLOGICAL ASPECTS

4.1 Physical geography

The internationally important raised bog habitat is totally dependant upon the hydrology of the site. It is the hydrology which creates and sustains the bog habitat, while problems with the hydrology, i.e. drainage, threaten the integrity of the bog and its associated communities.

4.2 Flora

Raised bogs such as Lenzie Moss are of international significance in western Europe, as examples of Atlantic raised bogs (concentrated in Scotland and Ireland), which retain good potential for restoration.

They are listed in Annex 1 of the 1992 EC Habitats Directive as priority habitats, and consequently the UK has a duty to conserve and enhance their conservation status.

Bog Rosemary is nationally scarce. It occurs in less than 100, ten kilometre squares of the National Grid. It is recognised within East Dunbartonshire's Local Biodiversity Action Plan as a Priority Species for Conservation Action, with a Species Action Plan (SAP). It only occurs in a small patch within Lenzie Moss and so exists in a fragile state. Bog rosemary is highly rhizomatous, and one plant can cover many square metres with associated flowers. Consequently, although it appears that the plant is spreading at Lenzie Moss, The plant should still be considered to be in a fragile state.

Round leaved sundew also has a Species Action Plan in the East Dunbartonshire LBAP.

Greater butterfly orchid is classed as "near threatened".

4.3 Invertebrates

The invertebrates are not well recorded and there are many gaps in knowledge. The silvery arches moth is listed as Nationally Scarce Notable B. Green hairstreak is a widespread but local butterfly, in decline.

4.4 Reptiles and amphibians

Common frogs are the only known herptile on site, and so further investigations are needed to determine the herptile fauna.

4.5 Mammals

Although a water shrew has been found on site, the status of the animal needs to be determined. All the other mammal species recorded are common species with widespread distributions.

4.6 Birds

Reed bunting *Embrezia schoeniclus*, is a UK Biodiversity Action Plan Priority Species.

Reed bunting and snipe *Gallinago gallinago* are recognised within East Dunbartonshire's Local Biodiversity Action Plan.

Further survey work is needed to determine other bird species present.

5. EVALUATION OF CULTURAL ASPECTS

5.1 Landscape

The site lies in an urban setting and is surrounded by housing and schools on three sides. Yet, because of the wooded edge habitats and large flat central area, from within the site offers a "remote" or even "wilderness" experience. The semi-natural vegetation and lack of sound all add to the nature of the experience.

The site appears as woodland from the outside.

5.2 Archaeology

The remains of the peat processing plant have value in interpreting the history of the site. These remains are relatively stable.

5.3 Community involvement

No site is isolated from its surroundings and the involvement of neighbours is crucial in ensuring successful conservation management.

Surrounded by housing and well used by locals for informal recreation, the site has great potential for community involvement. This may take the form of practical management, general wardening duties and study and research. The Friends of Lenzie Moss, with the Greenspace Officer and Ranger Service, should be instrumental in taking this forward.

The potential for community involvement at this site warrants a Long Term Objective to be formulated, with associated projects to guide the process.

Fire raising is a problem for the bog vegetation and community involvement could help alleviate this.

There are a number of strategies that have a bearing on the management of Lenzie Moss. The relevant themes from East Dunbartonshire's Greenspace strategy have been outlined in Section 3.7.

Conservation Management of Lenzie Moss will also contribute to the delivery of the Council's Local Biodiversity Action Plan.

5.4 Interpretation and education

Surrounded by both primary and secondary schools, the site has great potential to contribute towards environmental education.

An education pack was prepared for teachers using the site in 1994 by the Kelvin Valley Countryside Project. There is potential to revise environmental education provision on the site to tie in with the current curriculum.

The ecological gaps in knowledge may be suitable for undergraduate and post graduate student research projects.

The peat mound provides a vantage point over looking the bog, where appropriate interpretation may be installed, but the peat needs stabilising to stop drying and wind erosion.

5.5 Health and Safety

Risk assessments for *significant* hazards are noted below:

HAZARD	PERSONS AFFECTED			RISK ASSESSMENT			CONTROL MEASURES	RISK
	PUBLIC	STAFF/CONTRACTOR	VOLUNTEERS	SEVERITY	LIKLIHOOD	RISK SCORE		
Deep water and peat				**3**	**1**	**3**	**Warning signs at access points Staff/volunteer contractor briefing**	**Slight risk**
Leptospirosis (Weils disease)				**3**	**1**	**3**	**Risk assessments for practical work Use of Protective equipment**	**Slight risk**

Risk score is calculated by multiplying **Severity** by **Likelihood**

Severity values:	**Likelihood values:**	**Risk score**
1 – SLIGHT HARM	1 - UNLIKELY	1 – 3 = Slight risk
2 – HARMFUL	2 - LIKELY	4 = Moderate risk
3 – VERY HARMFUL	3 - VERY LIKELY	6 = Substantial risk
		9 = Intolerable risk

6. CONFIRMATION OF IMPORTANT FEATURES AND LONG TERM OBJECTIVES

6.1 Important features

The following features are ranked in order of importance:

	International	National	Regional	Local
Primary raised bog	■			
Secondary bog	■			
Bog rosemary		■		
Silvery arches		■		
Reed bunting		■		
Snipe			■	
Round leaved sundew			■	
Greater butterfly orchid			■	
Broad leaved woodland			■	
Landscape				■
Education resource				■
Community involvement				■

Of highest concern is the primary bog, with its associated bog rosemary. This will form **Feature 1.**

Conservation measures to conserve and enhance the secondary bog will also benefit reed bunting, snipe and round leaved sundew. This assemblage will form **Feature 2.**

The peripheral habitats surrounding the bog**,** birch woodland and neutral grassland with scrub also hold biological interest, with green hairstreak and greater butterfly orchid. These communities will form **Feature 3.**

6.2 Long term objectives

Long term objectives that will guide site management over the next 5 years have been developed through consultation with local stakeholders. The objectives cover the important features listed above and other aspects of essential management of the Moss such as community involvement, education and research, access, health and safety and legal obligations.

1. To maintain and enhance the remaining primary surface area of Lenzie Moss, as an example of a lowland raised mire habitat, with its associated floral and faunal communities, without prejudicing surrounding land uses.

2. To promote recovery of the area formerly cut for peat, at Lenzie Moss, as an example of a secondary re-vegetated raised mire, with its associated floral and faunal communities, without prejudicing surrounding land uses.

3. To maintain and enhance the nature conservation value of the habitats surrounding the raised mire without compromising Objectives 1 & 2.

4. To encourage community involvement in the management of the site, without compromising the nature conservation interest.

5. To encourage survey, monitoring, and research, which will aid in the understanding of the ecology and management of the site.

6. To encourage use of the site for the purposes of education, without compromising its nature conservation interest.

7. To encourage safe, all ability, visitor access to the site, for the purposes of recreation and interpretation, without compromising its nature conservation interest.

8. To meet all legal requirements and other obligations.

These long term objectives inform the development of projects that will take forward the management of the Moss. These are explored in more detail in Part 3 of this Plan.

PART 3 - MANAGEMENT RATIONALE

7. MANAGEMENT RATIONALE

7.1 Long term objective 1

To maintain and enhance the primary surface area of Lenzie Moss, as an example of lowland raised bog habitat, with its associated floral and faunal communities, without prejudicing surrounding land uses.

Feature	1 – Primary raised bog
Monitoring indicator	NVC Community
Status[1]:	Unfavourable, declining.

7.1.1 Rationale

There is a small network of drainage channels active on the primary peat area. Plastic piling dams have proven to be very effective at blocking ditches on other bog sites (Brooks, pers com), by providing long lasting effective watertight seals, and so the identified ditches should be blocked with plastic piling dams to raise and stabilise water levels.

The relative proximity to key bog species on the revegetated secondary surface means that it should be possible for the primary surface to recover if the water table can be raised and stabilised and fires prevented.

Installation of hydrological monitoring equipment is best avoided on well used public sites. The most appropriate means of monitoring the overall condition of the site is to use the vegetation. The presence and absence of species can indicate factors such as water levels, nutrient status and shading. The NVC community, determined every 5 years, will indicate any changing condition of the primary bog. Such studies provide ideal student research projects.

Fire raising is degrading the primary bog. This is evident from the extensive *Polytrichum* mats as a result of nutrient enrichment, at the expense of *Sphagnum* species. For this reason, the primary bog is given a status of unfavourable, declining. Deliberate fire raising may be prevented through raising water levels and community involvement (see long term objective 4).

Ideally, the water table should be maintained at or near the surface of the moss, and no lower than 20cm below the surface. Hydrological conditions appear suitable for the desired plant community, and water levels may rise if conservation measures are taken to wet secondary bog areas. This is because most water flow occurs in an easterly direction, with little drainage to the west. Consequently, raising water levels on the cut fields of the secondary bog, will also increase water levels to the west where the primary bog lies.

Birch is encroaching onto the bog, and requires some control. Roe deer are present and help to reduce the spread of birch. In order to prevent excessive trampling, cut trees and saplings should be left where cut. Felling to waste does not affect nutrient levels significantly (Brooks pers.com.). The stumps of cut trees require treatment with glyphosate painted onto the stumps to prevent multi-stemmed re-growth.

[1] Note: Statements of status are provisional. These will be formalised once the 2009 NVC monitoring is undertaken

Previous attempts to encourage the spread of bog rosemary appear to have failed. It will spread naturally to suitable areas as they become available. For this to happen, the water table needs to be stable and fires need to be prevented.

7.1.2 Summary of factors affecting achievement of objective

Positive	**Negative**
Increasing bog rosemary population	Isolation and fragmentation of habitat
Roe deer	Vandalism of equipment.
Actions to raise water table	Fire
	Birch invasion.
	Existing free-flowing drains

7.1.3 Projects

M01 – Monitor primary bog by NVC community assessment
E01 - Insert plastic piling dams, locations 1- 6, following dam location map
E02 - Insert plastic piling dam with support, at location 7.
P01 - Control birch in Compartment 1, by cutting and herbicide treatment.

7.2 Long term objective 2

To promote recovery of the area formerly cut for peat, Lenzie Moss, as an example of secondary re-vegetated raised mire, with its associated floral and faunal communities, without prejudicing surrounding land uses.

Feature	2 - Secondary re-vegetated raised bog with associated communities
Monitoring indicator	NVC Communities
Status[1]:	Unfavourable, recovering.

7.2.1 Rationale

The raised baulks provide compartmentalisation which allows the re-wetting of the enclosed cut fields. Unfortunately, the drainage ditches still flow to the east, especially ditches leading to drains 1 and 2. This is resulting in lowered water tables which in turn is preventing colonisation of bog species. In addition, some baulks have eroded and allow water to move between compartments.

Some cut fields exhibit good colonisation of *Sphagnum* species as secondary bog, particularly *S. cuspidatum*, which is an early aquatic coloniser. This demonstrates the potential of these compartments to establish bog vegetation communities if the hydrology can be improved. Retaining water will also help attenuate flood runoff.

Plastic piling dams are needed as located on the dam map (Map 1.2 in Appendix 1) to retain a higher water table within the cut fields. 7 dams are required to span ditches. The dam location at 7 is 10m in width, which will require timber support and contractors to install.

Although trees are a natural feature of marginal bog habitats they are not considered representative of typical open mire communities as they draw water and shade-out bog vegetation. Trees have become established on the central area for a number of reasons:

- Water levels have been lowered across the site due to drainage and cutting of peat.
- Drying of the peat leads to oxidation and mineralisation, providing suitable conditions for seed germination.
- Burning provides suitable conditions for colonisation as it increases nutrient availability.
- There is a growing seed source from established and colonising trees, particularly around the edge of the site.
- Disturbance on the site from cutting and trampling exposes bare peat which is readily colonised by birch.

The spread of birch across Lenzie Moss conforms to recognised encroachment patterns on bogs. Typically it invades from the edge (adjacent to the seed source) along ditch and drain lines and centres on disturbed zones.

Birch, once established, can grow in extremely waterlogged conditions. It is not uncommon on Lenzie Moss to see individual trees growing in standing water or on top of *Sphagnum* mats. These situations occur when water levels fluctuate throughout the season, dropping in the summer months during the growing phase.

[1] Note: Statements of status are provisional. These will be formalised once the 2009 NVC monitoring is undertaken

If water levels are significantly raised and maintained throughout the year it may be enough to stress some trees sufficiently to cause death after 1-2 seasons.

Although the spread of birch across the bog appears to be slow (Brooks, pers com), the colonising birch still represents a significant threat to its long-term integrity. Their spread, if left unchecked, will result in the loss of bog vegetation communities and the functioning mire system.

Birch should be cut on rotation in priority areas, and the waste left in situ. This will help reduce excessive trampling. Where possible, waste may be placed in open ditches where it will help *Sphagnum* colonise open water. The birch on the baulks is easy to access and after cutting, the tree stumps should be treated with Glyphosate. Trees within the wetter cut fields are harder to access.

The wettest compartments will provide the best results with tree removal and should consequently be priorities for management. Compartment 2B has dense birch growth and the leading edge should also be a priority for management, to stop encroachment into Compartment 2D. The advancing edge should be cut and treated on rotation.

Compartments 2F and 2G are considered a lower priority for the life of this plan, but should be targeted in future management plans.

Roe deer help reduce the spread of birch and other woody growth, and their presence should be viewed positively.

Round leaved sundew colonises suitable habitat readily and will benefit from improved hydrology and tree removal.

Reed bunting and snipe will also benefit from improved hydrology. This will improve feeding and nesting habitat, and help reduce disturbance.

7.2.2 Summary of factors affecting achievement of objective

Positive	**Negative**
Baulks provide compartments for re-wetting.	Baulks eroded, allowing water flow.
Compartments 2A,C,D & E reasonably wet.	Drainage ditches.
Roe deer	Compartments 2F & G drier.
Circular path discourages access to bog.	Colonising birch
	Dense birch in Compartment 2B

7.2.3 Projects

M02 Monitor secondary bog by NVC community assessments
E01 - Insert plastic piling dams, locations 1- 6, following dam location map (Map 1.2 in Appendix 1)
E02 - Insert plastic piling dam with support, at location 7.
P02 - Control birch Compartments 2A, C, D and E, by cutting and herbicide treatment.
P03 - Control advancing edge of birch in Compartment 2B, by cutting and herbicide treatment.

7.3 Long term objective 3

To maintain and enhance the nature conservation value of the habitats surrounding the raised bog without compromising Objectives 1& 2.

Feature	3 - Woodland, scrub and grassland communities
Monitoring indicators	Butterfly populations. Garden escapes.
Status[1]:	Unknown

7.3.1 Rationale

There is little information available on the species present in the grassy and scrub areas. It is imperative that these communities are better understood before any management work is undertaken.

Surveys should be undertaken of flora, birds, reptiles, butterflies and other insect groups where knowledge is available.

Both the mature oak type wood and pioneer birch woods of Compartments 4 and 5 are linked to other woodlands to the north of the site and along the rail line to the south, which allows the movement of species between habitats.

Compartment 3 is pioneer birch woodland with some cranberry, typical of marginal raised bog habitats. To prevent succession to mature woodland, this habitat is best managed by area rotational cutting and herbicide treatment of cut stumps to prevent coppicing.

The green hairstreak butterfly inhabits heathland and woodland edge. The adults fly in May – June, while the caterpillars feed on bilberry (Thomas, 1993). Gorse and cross leaved heath may also be used. There is no shortage of either suitable habitat or food for this species at Lenzie Moss. However, its current status should be determined.

Greater butterfly orchid occurs in scrub and woodland edge, in well drained neutral to calcareous soils. Poor nutrient status is thought to be critical (Baker, 2004). It is difficult to prescribe management of the grassland and scrub areas until the population of this and other species are known.

The silvery arches is a moth of wooded heathland, and the larvae feed on birch (Skinner, 1984). The adult flies in June-July. This moth is better attracted with sugar, than light, which needs to be taken into consideration when monitoring the species.

Non-native species pose a problem for natural systems when those species are invasive. Unfortunately, many problem species have found their way to Lenzie Moss, many of them, over the garden fence. Japanese knotweed appears to have spread along the rail line, and is highly invasive. These species need constant removal to conserve the biodiversity potential of the site.

[1] Note: Statements of status are provisional. These will be formalised once the 2009 NVC monitoring is undertaken

Although not a problem presently, beech regenerates rapidly. One factor for its spread is that the leaves are unpalatable to deer. Consequently, beech saplings require periodic removal to maintain mixed woodland. Sycamore poses similar problems.

The wet grassland which comprises compartment 7 is outwith the scope of this management plan as this area does not form part of the site. However, the large proportion of *Juncus* means the area does look un-cared for. It may be useful for the Greenspace Officer to approach local residents to gather their views on the future management of this area.

7.3.2 Summary of factors affecting achievement of objective

Positive	**Negative**
Connectivity to other woodlands	Japanese knotweed
Established woodland with ground flora	Mature and sapling sycamore
Good fern and bilberry coverage	Mature and sapling beech
	Garden escapes
	Gaps in knowledge

7.3.3 Projects

M03 Butterfly transect.
M04 Monitor garden escapes
R01 - Determine green hairstreak population.
R02 - Determine orchid and moonwort populations of neutral grassland.
R03 - Determine fern and bryophyte populations of peripheral woodlands
R04 - Breeding bird survey.
R05 - Determine reptile populations.
P04 - Manage transitional birch woodland by rotational cutting.
P05 - Control Japanese knotweed, Rhododendron and non-native garden escapes.
P06 - Control beech and sycamore saplings.
A04 - Discuss Management of C7 with local residents.

7.4 Long term objective 4

To encourage community involvement in the management of the site, without compromising the nature conservation interest.

7.4.1 Rationale

East Dunbartonshire's Greenspace Strategy as outlined in section 1.3.7 provides the strategic direction for the actions listed below:

The Management Plan process has identified a great deal of practical management required to maintain and enhance the conservation interest of the site. The Ranger Service wish to take advantage of the local interest, and establish a Lenzie Volunteer Group to undertake practical management work on the site.

There are also gaps in knowledge which the Friends Group and other local volunteers may be able to help with.

Some of these projects can only be undertaken with guidance from the Ranger Service, either because of expert knowledge, tools and equipment or legislation with respect to herbicides etc. However other projects, such as butterfly transects and practical works lend themselves to local volunteers undertaking the work.

In addition, to help foster local residents adopting an interest in the site, further promotional work could include guided walks, and recruitment to help with projects. The site also has potential to form a resource for local youth groups and activities.

It is clear the site is popular with local people. There is however no data on visitor numbers or on user views and aspirations. Counters have been installed on the site in the past, however they were vandalised. Well positioned and covert counters should be installed to gather information on user trends. This information will assist with future funding bids.

Although the site is well known by local people, those visiting the area would find it difficult to locate the site or know when they have reached it. There is a need to provide better directional signage at the main access points to the site and provide some form of entrance signage.

The circular path provides access to people of a wide range of ages and ability to a variety of habitats close to the urban area. There is potential to connect to other greenspace areas close to the Moss, for example by creating a link from the Moss to Boghead Community Woodland.

The circular path complies with BT rural and working standard, and although it will require some passing places and rest areas installed on the boardwalk, it should be promoted as an accessible low level health walk.

The Ranger Service and Friends Group have delivered a number of interpretive events over the years and there are 2 interpretive panels on the site. We do not think there is merit in developing further on site interpretation due to potential vandalism problems, however there is potential to develop 'off site' interpretation in the form of mobile panels that could be used in the local library and other public buildings.

These panels could help raise the profile of the Moss and the importance of Peatlands.

The Ranger Service has provided a number of curriculum based activities on the Moss to local primary schools over the years. These activities should be continued and further developed to relate to the new Curriculum.

Secondary schools find it difficult to use outdoor sites due to time constraints. There is potential to explore the use of the Moss for extra curricular activities. These activities could be channelled through established groups such as the John Muir Award and Duke of Edinburgh Award.

Every two years a successful 'Meet on the Moss' event is held. There is also an annual Gala event held on the adjacent Rugby Club grounds. There is potential to bring the Moss more into community focus by combining the two events.

7.4.2 Projects

L01 - Distribute and promote the management plan
L02 - Establish a Conservation Volunteer Group.
L03 - Run two guided walks per year.
L04 - Investigate holding joint "Meet on the Moss" /Local gala event.
E07 - Install visitor counters.
E08 - Create footpath link to Boghead Community Woodland.
L06 - Develop opportunities for community group programmes
L07 - Produce mobile interpretive panels to coincide with LNR designation.
L08 - Promote Lenzie Moss as a health walk site.

7.5 Long term objective 5

To encourage survey, monitoring and research, which will aid in the understanding of the ecology and management of the site.

7.5.1 Rationale

Although with the recent hydrological study and production of this management plan, much is now known about the function of the site, there are still important gaps in the knowledge relating to wildlife and how it utilises the various habitats. Also, it is important to know if management is effective, particularly the installation of dams (Project E01) and how they affect the hydrology of the site.

There are gaps in knowledge relating to plants such as orchids, moonwort, butterflies such as green hairstreak, beetles (including aquatic species), reptiles, water shrew and breeding birds.

Identifying water beetles and bryophytes is specialist work, often undertaken by contractors, but student projects may be useful in determining populations of water shrews and how the site is responding to the installation of the dams.

Standard monitoring of hydrology (such as dipwells and Walrags) is difficult at this site due to vandalism of equipment, so a more simplistic approach should be taken, inspecting the integrity and impact of each dam (is it holding back water, have water levels risen behind dam), making observations on water flows through compartment 2 and a general assessment of the changes in area of open water after dam installation.

7.5.2 Projects

M01 - Monitor primary bog by NVC community assessment.
M02 - Monitor secondary bog by NVC community assessments
R01 - Determine green hairstreak population.
R02 - Determine orchid and moonwort populations of neutral grassland.
R03 - Determine fern and bryophyte populations of peripheral woodlands
R04 - Breeding bird survey.
R05 - Determine reptile populations.
R06 - Determine water shrew population.
R07 - Determine effectiveness of hydrological management.

7.6 Long term objective 6

To encourage use of the site for the purposes of education, without compromising the nature conservation interest.

7.6.1 Rationale

The Ranger Service based at Mugdock Country Park provide the link with local schools. Schools currently using the site are Lenzie Moss Primary, Millersneuk Primary, and Holy Family Primary. This mainly involves minibeast hunting, but also includes Eco-days and looking at pollution.

The following local schools do not currently use the site:

Lenzie Academy, Lenzie Primary, Holy Family Nursery.

An Education Pack was produced by the Kelvin Valley Countryside Project in 1994, for teachers wishing to use the site. This is however, now out of date with the school curriculum.

With so many local schools around the site, there is further potential for more school children to use the site for education.

As the Lenzie Moss Education Pack is now out of date, the present curriculum needs to be examined to see where the site may be used by teachers. With this information, local schools could be targeted by the Ranger Service.

SNH provide a 5 – 14 educational tool: Wild, Wet and Wonderful – A teaching pack for peat bog projects. It has 5 – 14 and secondary school curricular links.

Secondary schools find it difficult to schedule time for countryside visits. There are opportunities to target 'not in school' pupils for extra curricular activities.

"Meet on the Moss" is held every 2 years. There is also an annual Gala Day in Lenzie. There may be potential to combine these 2 events and bring the Moss more into the community.

7.6.2 Projects

A01 - Examine school curriculum
A02 - Obtain "Wild, Wet and Wonderful".
L05 - Target schools currently not using Lenzie Moss.
tasks)

7.7 Long term objective 7

To encourage safe, all ability, visitor access to the site, for the purposes of recreation and interpretation, without compromising the nature conservation interest.

7.7.1 Rationale

The formal path needs ongoing maintenance, and an annual maintenance budget is required for this. The toptrek path sinks in places and requires topping up with additional material. Additional culverting of the path in places will reduce further water collection problems.

The boardwalk is occasionally set on fire. There are only two passing places on the boardwalk, which cause problems for dog walkers meeting pushchairs / wheelchairs etc. Motorbikes and quad bikes currently access the site. They damage the boardwalk and cause a nuisance to other users.

Paths on the Moss can be used by pedestrians, cyclists and horse riders, and disabled users of mobility vehicles. Other forms of mechanised transport have no right of access, this includes motor bikes. It is an offence to drive a vehicle or motorbike on land without the land owner's permission.

The path is starting to narrow due to edge encroachment. On average there is still a 1.2m walking surface. There is also some tree encroachment.

The boardwalk is only 1m wide with two passing places, and so more passing places are needed. Repair of the boardwalk provides a convenient time to install wider sections.

The peat mound provides a good vantage point overlooking the bog, but is only accessible on foot from the boardwalk. The peat's black surface results in high summer temperatures. This, coupled with its windy location, means that vegetation cannot colonise the peat and it is eroding away. The peat needs stabilising by vegetation establishment.

Although the site is used primarily by local people, it may be used more widely if signage to and on the site was improved. The Access Audit Report suggests gateway stone way markers at the access points to the site and metal finger posts at key junctions (see Visitor Management Map).

7.7.2 Projects

M05 - Monitor path inspection by walking
P07 - Mow path edges
P08 - Prune back path edges
P09 - Repair infrastructure with passing places.
E03 - Investigate the installation of Gateway stone way markers at access points
E04 - Upgrade signage with metal finger posts
E05 - Install new culverts under path.
E06 - Stabilise peat mound by vegetation establishment.
E09 Install boardwalk access to viewing area/Install viewing area

7.8 Long term objective 8

To meet all legal requirements and other obligations.

7.8.1 Rationale

The site must comply with the Occupiers Liability Act, which means the site must be maintained in a safe condition at all times, for all visitors, whether legal or not.

The site is open 24 hours per day. Safe access for the public is required during any maintenance or upgrading work. Working areas need to be secured and warning notices posted.

Water and deep peat are hazards should visitors venture off the paths. Warning signs are required at all access points. Some signs have graffiti on them.

Rats carry Weil's disease (Leptospirosis). Contractors and volunteers need to be aware of the risk and take precautions before working on site.

Contractors on site need to carry out their own risk assessment and provide method statements on how they intend to reduce the risk these hazards present.

The culverts and drains on the edge of the site will require regular clearing of debris to prevent a rise of the water table near housing. This refers to the culverts/grills of the main outflows from the site (require regular inspection and full clear out 4 times per year) and the small culverts under the paths that can be cleared by volunteers.

7.8.2 Projects

A03 -	Ensure all contractors provide method statements and risk assessments before work.
P10 -	Maintain signs.
P11 & 12 -	Clear culverts and drains on the edge of the site of debris.
A05	Conduct annual review of project progress with key stakeholders
A06	Commission review of Management Plan

Part 4
Project Register and Recording

8. PROJECT REGISTER

KEY	
Project prefix	
M	Monitoring projects
L	Liaison projects
A	Administration projects
R	Research projects
E	Practical management, one off event projects
P	Practical Management, annual projects
Personnel	
Vol	Volunteer
RS	Ranger service
GO	Greenspace Officer
Con	Contractor
FoLM	Friends of Lenzie Moss
SWT	Scottish Wildlife Trust
BC	Butterfly Conservation
EDC	East Dunbartonshire Council
BSBI	Botanical Society of the British Isles
CARG	Clyde Amphibian and Reptile Group
UGR	Undergraduate research project
EDC AO	EDC Access Officer

MANAGEMENT OBJECTIVES	PROJECT NUMBER	PROJECT DETAIL	COMPARTMENT	WHO	YEAR					
					2009	2010	2011	2012	2013	Totals
Monitoring Projects										**£2,100**
1,5	M01	NVC Survey	C1	Con		£700				**£700**
2,5	M02	NVC Survey	All C2	Con		£1,050				**£1,050**
3	M03	Butterfly transect	C6,C4,C 1 and C2	Con/Vol	£350					**£350**
3	M04	Monitor garden escapes	All	Vol						**£0**
7	M05	Monitor path inspection by walking	Paths	Vol						**£0**
Liaison Projects										**£5,575**
4	L01	Distribute and promote the Management Plan		GO	£75					**£75**
4	L02	Establish Conservation Volunteer Group		GO	£500					**£500**
4	L03	Run 2 guided walks per year		RS/Vol	£100	£100	£100	£100	£100	**£500**
4	L04	Investigate holding joint “Meet on the moss2/local gala event		RS/Vol		£250		£250		**£500**
6	L05	Encourage School use of the moss		RS						**£0**
4	L06	Develop opportunities for community groups programmes		RS						**£0**
4	L07	Produce mobile interpretive panels to coincide with LNR designation		Con/GO	£3,000					**£3,000**

MANAGEMENT OBJECTIVES	PROJECT NUMBER	PROJECT DETAIL	COMPARTMENT	WHO	YEAR					
					2009	2010	2011	2012	2013	Totals
4	L08	Promote Lenzie Moss as a health walk site		GO/RS	£1,000					**£1,000**
Administration Projects										**£0**
6	A01	Examine School Curriculum		RS						**£0**
6	A02	Obtain SNH Bog Publication		RS						**£0**
8	A03	Ensure all contractors provide method statements and risk assessments before work		GO						**£0**
3	A04	Discuss management of C7 with local residents	C7	GO						**£0**
8	A05	Conduct annual review of project progress with key stakeholders		GO						
8	A06	Commission review of Management Plan		GO						
Research Projects										**£2,900**
3,5	R01	Determine Green hairstreak population	C2A,C3, C4	RS/Vol		£350				**£350**
3,5	R02	Determine orchid and moonwort populations	C6	Con		£250				**£250**
3,5	R03	Fern & Bryophyte Survey		Con		£600				**£600**
3,5	R04	Breeding bird survey		Vol	£350					**£350**
3,5	R05	Reptile Survey		Vol		£350				**£350**
5	R06	Water Shrew Survey		Con				£1,000		**£1,000**

MANAGEMENT OBJECTIVES	PROJECT NUMBER	PROJECT DETAIL	COMPARTMENT	WHO	YEAR					
					2009	2010	2011	2012	2013	Totals
5	R07	Assess hydrology after dam installation		Con/GO						**£0**
One Off Practical Management Projects										**£19,100**
1,2	E01	Insert plastic dams at locations 1-6	C2	Con		£2,500				**£2,500**
1,2	E02	Insert plastic dam at location 7	C2	Con		£1,500				**£1,500**
7	E03	Investigate the installation of Gateway stone way markers at access points		GO						**£0**
7	E04	Upgrade signage with metal fingerposts		Con			£2,500			**£2,500**
7	E05	Install new culverts under path		Con			£2,000			**£2,000**
7	E06	Stabilise peat mound by vegetation establishment		Vols				£600		**£600**
4	E07	Install visitor counters	Paths	Con		£2,000				**£2,000**
4	E08	Create footpath link to Boghead community wood		EDC AO						**£0**
7	E09	Install boardwalk access to viewing area Install viewing area	C1	Con			£8,000			**£8,000**

MANAGEMENT OBJECTIVES	PROJECT NUMBER	PROJECT DETAIL	COMPARTMENT	WHO	YEAR					
					2009	2010	2011	2012	2013	Totals
Annual Practical Management & Maintenance Projects										**£20,390**
1	P01	Control birch in compartment 1	1	Con/Vols		£300		£300		**£600**
2	P02	Control birch in compartments 2A, 2C,2D and 2E	2	Con/Vols	£1,300	£1,300	£1,300	£1,300	£1,300	**£6,500**
2	P03	Control birch in compartments 2B	2	Con/Vols	£240	£240	£240	£240	£240	**£1,200**
3	P04	Manage transitional birch woodland by rotational cutting	3	Con/Vols				£240		**£240**
3	P05	Control Japanese knotweed, Rhododendron and non-native garden escapes	As needed	Con/Vols	£500	£500	£500	£500	£500	**£2,500**
3	P06	Control Beech and sycamore saplings	2A,3,4,5	Con/Vols					£250	**£250**
7	P07	Mow path edges	Paths	EDC						**£0**
7	P08	Prune path edges	Paths	Con		£500			£500	**£1,000**
7	P09	Repair infrastructure and passing places		Con	£400	£400	£1,600	£400	£400	**£3,200**
8	P10	Repair signs		Con/Vols	£500	£500	£500	£500	£500	**£2,500**
8	P11	Clear culverts of debris		EDC/Con	£480	£480	£480	£480	£480	**£2,400**
8	P12	Clear path drains of debris		Vols						**£0**
Grand Totals					**£8,795**	**£13,870**	**£17,220**	**£5,910**	**£4,270**	**£50,065**

9. PROJECT RECORD

The project record gives details of the work which needs to be undertaken over the five year period in order to meet the long term objectives. The details include costs, where and when the work will be carried out, by whom, in what compartments and includes any special considerations. The record also provides space to record details of work undertaken.

9.1 Monitoring projects

Project	**M01- Monitor primary bog by NVC community assessment**	
Detail	Determine the NVC community, including sub community, every 5 years to detect change in hydrology and other environmental variables such as burning. Standard NVC survey methodology. Costs based on 2 days including write up.	
Compartments	C1	
Year	2010	
Months	May-Sep	
Personnel	Contractor	
Cost	Estimated: £700	Actual:
Work carried out		

Project	**M02 - Monitor secondary bog by NVC community assessments**	
Detail	Determine the NVC community, including sub community, every 5 years to detect change in hydrology and vegetation. Standard NVC methodology. Costs based on 3 days including write up.	
Compartments	C2	
Year	2010	
Months	May-Sep	
Personnel	Contractor	
Cost	Estimated: £1050	Actual:
Work carried out		

Project	**M03 - Butterfly transect**	
Detail	Standard Pollard walk methodology on following transect line: Follow east side of ditch and trees that separates C6 from C2, rejoin main path round through C4, south onto boardwalk, and turn into old rail line that separates C2A from C2B / C2C. Warm and clear day, between noon and 2pm. The observer walks at a slow pace and counts butterflies ahead and to each side but not behind. Fortnightly until August, then every 3 weeks. Cost is for 1 days training from suitable contractor or Butterfly Conservation	
Compartments	6,4,1 and 2	
Year	Annual	
Months	mid May – mid September.	
Personnel	Volunteer (FoLM, SWT, BC)	
Cost	Estimated: £350	Actual:
Work carried out		

Project	M04 - Monitor garden escapes	
Detail	Search site and note the occurrence of non-native garden escapes, particularly *Rhododendron, Cotoneaster, Aster*, bridewort, dogwood etc. Mark locations on map. Maps to be made available to FoLM and Ranger Service at end of each year.	
Compartments	All	
Year	Annual	
Months	May, June, July	
Personnel	Volunteer (FoLM)/Ranger Service	
Cost	Estimated:	Actual:
Work carried out		

Project	M05 - Monitor path inspection by walking	
Detail	Walk the path inspecting path surface, verges, trees, culverts, bridges, signage and amenities. Reports should be submitted to the Greenspace Officer Inspect path after flooding and storm events. The importance of the primary bog and prevention of fires should also be stressed	
Compartments	Paths	
Year	All	
Months	March and October	
Personnel	Volunteer (F0LM).	
Cost	Estimated:	Actual:
Work carried out		

9.2 Liaison projects

Project	L01 - Distribute and promote the management plan	
Detail	The management plan should be made available to the Friends of Lenzie Moss, local SWT branch and all other interested groups to promote community involvement in the site and help recruit volunteers to help undertake projects, particularly research and monitoring projects such as butterfly transects, breeding bird survey, reptile survey and plant surveys. Costs to cover photocopying or/and CD Roms	
Compartments		
Year	2009	
Months	February	
Personnel	EDC GO	
Cost	Estimated: £75	Actual:
Work carried out		

Project	**L02 - Establish Conservation Volunteer Group.**	
Detail	A practical work calendar should be produced, detailing the work to be undertaken for the management plan, to help establish a Conservation volunteer group. This should be distributed to FoLM, SWT and all interested parties. 6 work days should be run per year	
Compartments		
Year	2011	
Months	February	
Personnel	Ranger Service, Greenspace Officer	
Cost	Estimated: £500 (tools)	Actual:
Work carried out		

Project	**L03 - Run two guided walks per year**	
Detail	Organise two guided walks per year with themes, such history of the moss, conservation management, wildlife, spring flowers etc.	
Compartments		
Year	All	
Months	Spring and Autumn	
Personnel	FoLM/Ranger Service	
Cost	Estimated: £100/yr (publicity)	Actual:
Work carried out		

Project	**L04 - Investigate holding joint "Meet on the Moss" /Local gala event.**	
Detail	Discuss with the local gala committee possibility of combining the 2 events. This could simply involve running the 2 events on the same date and promoting them under the same 'banner'. Costs to cover publicity and refreshments	
Compartments		
Year	Alternate	
Months	August	
Personnel	Ranger Service / FoLM	
Cost	Estimated: £250	Actual:
Work carried out		

Project	L05 - Target schools currently not using Lenzie Moss	
Detail	Distribute information from projects A01 ands A02 to Lenzie Academy, Lenzie Primary, Holy Family Nursery and Campsie View. Continue to run Education visits with local schools, and run 4 school visits per year.	
Compartments		
Year	All	
Months		
Personnel	Ranger service	
Cost	Estimated:	Actual:
Work carried out		

Project	L06 - Develop opportunities for community group programmes	
Detail	Discuss opportunities with relevant programme leaders (Scouts/Brownies/JMT/DofE/Princes Trust) for use of the Moss for aspects of these awards. Maximum 4 groups per year	
Compartments		
Year	All	
Months		
Personnel	Ranger Service	
Cost	Estimated:	Actual:
Work carried out		

Project	L07 - Produce mobile interpretive panels to coincide with LNR designation	
Detail	Based on present interpretation panels, depicting species such as bog rosemary, sundew, green hairstreak, butterfly orchid, water shrew, black darter etc.	
Compartments		
Year	2009	
Months		
Personnel	Contractor/Greenspace Officer	
Cost	Estimated: £3000.00	Actual:
Work carried out		

Project	L08 - Promote Lenzie Moss as a health walk site	
Detail	Through local walking co-ordinators and doctors surgeries. Use mobile interpretation from project L07 and produce leaflets providing information	
Compartments		
Year	All	
Months		
Personnel	Greenspace Officer/Ranger Service	
Cost	Estimated: £1000.00 (leaflet)	Actual:
Work carried out		

9.3 Administration projects

Project	A01 - Examine school curriculum	
Detail	Determine how Lenzie Moss may contribute to the current education curriculum.	
Compartments		
Year	2010	
Months		
Personnel	Ranger Service	
Cost	Estimated:	Actual:
Work carried out		

Project	A02 - Obtain "Wild, Wet and Wonderful"	
Detail	Obtained from SNH Awareness & Involvement Section, Battleby (01738 444177). Distribute to local schools.	
Compartments		
Year		
Months	2010	
Personnel	Ranger Service.	
Cost	Estimated:	Actual:
Work carried out		

Project	**A03 - Ensure all contractors provide method statements and risk assessments before work**	
Detail	Contractors must understand the risks posed by water and leptospirosis. Risk assessments and method statements should describe how these risks will be avoided before any work begins.	
Compartments		
Year	All	
Months		
Personnel	EDC	
Cost	Estimated:	Actual:
Work carried out		

Project	**A04 - Discuss Management of C7 with local residents.**	
Detail	Discussions should be held on the future management of Compartment 7. Less regular cutting would produce a more diverse grassland. This would make the area more attractive and beneficial to biodiversity conservation. Options should be explored with local residents in the first instance.	
Compartments		
Year	2009	
Months		
Personnel	Greenspace Officer	
Cost	Estimated:	Actual:
Work carried out		

Project	**A05 - Conduct annual review of project progress with key stakeholders**	
Detail	The Reserve Management group should convene a review meeting at the end of each financial year to review progress on projects for that year. The Greenspace Officer should submit a report to the group.	
Compartments		
Year	All	
Months	January	
Personnel	Greenspace Officer	
Cost	Estimated:	Actual:
Work carried out		

Project	A06 - Commission review of Management Plan	
Detail	A review of the Management Plan should be commissioned during the last year of this Plan. This review should take on board the annual reports for the Reserve and note the views of key stakeholders. All monitoring or survey records should form part of the review.	
Compartments		
Year	2013	
Months	October	
Personnel	Greenspace Officer	
Cost	Estimated:	Actual:
Work carried out		

9.4 Research projects

Project	R01 - Determine green hairstreak population	
Detail	Survey of site, particularly birch woodland edge, to determine presence of green hairstreak and centres of activity. Frequency: Every two weeks. Cost is for 1 days training from suitable contractor	
Compartments	2A, 3, 4,	
Year	2010/2012.	
Months	May and June	
Personnel	Ranger Service/Volunteers	
Cost	Estimated: 350	Actual:
Work carried out		

Project	**R02 - Determine orchid and moonwort populations of neutral grassland**	
Detail	Survey to determine presence of orchids and other notable plants which may have an influence of management of the neutral grassland and scrub. Costs cover contractor for 1 day	
Compartments	6	
Year	2010	
Months	June- August .	
Personnel	Contractor	
Cost	Estimated: £250	Actual:
Work carried out		

Project	**R03 - Determine fern and bryophyte populations of peripheral woodlands**	
Detail	Survey of woodland and woodland edges to determine species present and locations. Costs are for 2 days of specialist contractor	
Compartments	3, 4, 5, 6	
Year	2010.	
Months	Aug / September.	
Personnel	Contractor	
Cost	Estimated: £600	Actual:
Work carried out		

Project	**R04 - Breeding bird survey**	
Detail	As general BTO guidelines. Every 3 years. Transect line being the circular path and baulk separating C2A from C2B and 2C. Three visits required, late April, late May and late June. Timing should be early morning, between 6 and 7 am. No later than 9am. Reasonable weather. Walk transect route at slow pace, marking bird observations and song on a map. Cost is for 1 days training from suitable contractor	
Compartments	All	
Year	2009, 2012	
Months	Late April – late June.	
Personnel	Ranger Service/Volunteer (BTO)	
Cost	Estimated: £350	Actual:
Work carried out		

Project	R05 - Determine reptile populations	
Detail	Establish a transect through C2G and C2F by placing numbered sheets of corrugated iron no larger than 0.5m square in discreet, south facing locations, with cover such as heather behind the sheet. Establish the transect in late February. Walk the transect at slow pace looking ahead at the sheets to check for basking lizards and adders. Although adders are deaf, they sense ground movement, and so feet should be placed carefully on the ground. Lift each sheet carefully to check for slow worms and adders. Gloves should be worn to protect against the unlikely event of an adder bite. Frequency:Every two weeks. Cost is for 1 days training from suitable contractor	
Compartments	C2G and C2F	
Year	2010	
Months	late March to end June.	
Personnel	Ranger Service/Volunteer (FoLM).	
Cost	Estimated: £350	Actual:
Work carried out		

Project	R06 - Determine water shrew population	
Detail	Small mammal trapping survey to investigate the presence of water shrew in the ditch systems, and how they utilise the site. Costs based on 3 days contractor time. Note: Approval from Scottish Natural Heritage is required for this work,	
Compartments	All	
Year	2012	
Months	May - June	
Personnel	Contractor	
Cost	Estimated: £1000	Actual:
Work carried out		

Project	R07 – Determine effectiveness of hydrological management	
Detail	Standard monitoring of hydrology (such as dipwells and Walrags) is difficult at this site due to vandalism of equipment, so a more simplistic approach should be taken, inspecting the integrity and impact of each dam (is it holding back water, has water levels risen behind dam), making observations on water flows through compartment 2 and a general assessment of the changes in area of open water after dam installation.	
Compartments	2	
Year	2013	
Months	Immediately after installation then at regular intervals especially after rainfall events	
Personnel	Dam Contractors, Greenspace Officer	
Cost	Estimated:	Actual:
Work carried out		

9.5 Practical management projects – one off events

Project	E01 - Insert plastic piling dams, locations 1- 6, following dam location map	
Detail	Insert interlocking plastic piling sections together across the 6 ditches marked on the dam location map. Avoid locations with tree roots. The sections may be cut to length with a panel saw. The central sheet should be inserted first. The sheet should be gently hit until it is at ground level. The sections either side of the central sheet should then be inserted, by interlocking them into the adjacent sheet before hitting, but remain slightly proud of ground level. When the ditch is full, excess water will flow over the slipway of the central section. The dam should protrude at least 0.5m into each bank. When the ditch is full, water will push the sheets back, but this will help the sheets lock, and make the dam watertight. It would be useful to cut birch trees near each dam location and put the waste into the ditches to help Sphagnum colonisation. The remaining stumps would have to be treated with Glyphosate as in P03. Costs based on 2 days labour @ £240/day plus materials. Piling sheets can be ordered from: HL Plastics **Flamstead House** **Denby Hall Business Park** **Denby** **Derbyshire DE5 8NN** **Tel:** 01332 883800	
Compartments	C2	
Year	2010	
Months	Any (Easier in summer)	
Personnel	Contractor such as SWT or BTCV – could involve other volunteers	
Cost	Estimated: :£2,500	Actual:
Work carried out		

Project	E02 - Insert plastic piling dam with support, at location 7.	
Detail	See Dam Location Map for location 7. As project E01, but as the width of the ditch here is 10m, timber supports are necessary to stabilise the piling sheets. Costs cover materials and 2 days labour	
Compartments	C2	
Year	2010	
Months	March / April.	
Personnel	Contractor	
Cost	Estimated: :£ 1,500	Actual:
Work carried out		

Project	E03 - Investigate the installation of Gateway stone way markers at access points	
Detail	EDC Greenspace should investigate the provision of the appropriate type of stone way markers(suggested positions located on the Visitor Management Map (Map 1.5 in Appendix 1)	
Compartments	See map	
Year	2011	
Months		
Personnel	EDC GO	
Cost	Estimated:	Actual:
Work carried out		

Project	E04 - Upgrade signage with metal finger posts	
Detail	6 metal finger posts required as on the Visitor Management Map (Map 1.5 in Appendix 1). Costs cover materials and labour.	
Compartments	See map	
Year	2011	
Months		
Personnel	Contractor	
Cost	Estimated: £2500	Actual:
Work carried out		

Project	E05 - Install new culverts under path	
Detail	8 x 150mm pipes along with feeder drains at points detailed on the Access Audit report (Appendix 4) Path will require top dressing.	
Compartments	See Report	
Year	2011	
Months		
Personnel	Contractor	
Cost	Estimated: £2000	Actual:
Work carried out		

Project	E06 - Stabilise peat mound by vegetation establishment	
Detail	It may be possible to stimulate growth of a vegetation mat by planting plugs of Cotton grass at 30cm intervals. If the cotton grass takes, other species will start to colonise around it. Plants can be grown on from seed in newspaper type root trainers or purchased from a specialist nursery (ie. Jupiter Wildflower Nursery)	
Compartments	1	
Year	2012	
Months		
Personnel	Volunteers	
Cost	Estimated: £600	Actual:
Work carried out		

Project	E07 - Install two visitor counters	
Detail	Install two visitor counters in the toptek path as shown in the Visitor Management Map (Map 1.5 in Appendix 1)	
Compartments		
Year	2010	
Months		
Personnel	Contractor	
Cost	Estimated: £2000	Actual:
Work carried out		

Project	E08 - Create footpath link to Boghead Community Woodland	
Detail	Consult with relevant stakeholders to establish the preferred route and type of path. Cost will be determined by type of path. A Centrewire Marlow self closing gate should be installed in the fence. See Visitor Management Map for location (Map 1.5 in Appendix 1). Install sign at gate.	
Compartments		
Year	2010	
Months		
Personnel	EDC Access Officer/Ranger Service	
Cost	Estimated:	Actual:
Work carried out		

Project	E09 – Install boardwalk viewing area and access	
Detail	Install 1m wide boardwalk access to viewing area. Install 2m wide viewing area as per Bill of Quantity in Appendix 4. Costs include design and specification of infrastructure	
Compartments	1	
Year	2011	
Months		
Personnel	Contractor	
Cost	Estimated: £8000	Actual:
Work carried out		

9.6 Practical management projects – annual

Project	P01 - Control birch in Compartment 1, by cutting and herbicide treatment	
Detail	Trees should be cleared from the area by zonation. Clearing one area at a time over a number of years. Birch trees should be cut well above the ground level and the waste left on site to minimise trampling. The stumps should be painted with Glyphosate as soon after cutting as possible, no more than a few hours. Only qualified personnel may apply herbicide. Costs based on 2 days activity per year.	
Compartments	1	
Year	Alternate years	
Months	As conditions allow	
Personnel	Contractor – using volunteers such as BTCV or SWT	
Cost	Estimated: £300pa	Actual:
Work carried out		

Project	**P02 - Control birch Compartments 2A, C, D and E, by cutting and herbicide treatment**	
Detail	Trees should be cleared from the area by zonation. Clearing one area at a time over a number of years. This work should be viewed as ongoing. Birch trees should be cut above the ground level and the waste left on site to minimise trampling. The stumps should be painted with Glyphosate as soon after cutting as possible, no more than a few hours. It is important that it doesn't rain for at least 6 hours after stump treatment for the Glyphosate to be effective. Only qualified personnel may apply herbicide. The work is scheduled for June and July, for access and dry conditions, but treatment may be effective at any time. Costs are based on 1 weeks activity per year – although this could be extended if resources allowed.	
Compartments	2A, C, D and E	
Year	All	
Months	As conditions allow	
Personnel	Contractor and/or Ranger Service with Volunteers	
Cost	Estimated: £1,300pa	Actual:
Work carried out		

Project	**P03 – Control advancing edge of birch in Compartment 2B, by cutting and herbicide treatment**	
Detail	This to prevent birch encroachment into compartment C2B. Trees should be cleared from the area by zonation. Clearing one area at a time over a number of years. This work should be viewed as ongoing. Birch trees should be cut above the ground level and the waste left on site to minimise trampling. The stumps should be painted with Glyphosate as soon after cutting as possible, no more than a few hours. It is important that it doesn't rain for at least 6 hours after stump treatment for the Glyphosate to be effective. Only qualified personnel may apply herbicide. The work is scheduled for June – August, for access and dry conditions, but treatment may be effective at any time. Costs based on one contractor day per year. If resources allowed the area might be cleared entirely – with regrowth treated every second year.	
Compartments	2B	
Year	All	
Months	June / July	
Personnel	Ranger Service with Volunteers	
Cost	Estimated: £240pa	Actual:
Work carried out		

Project	P04 - Manage transitional birch woodland by rotational cutting	
Detail	Rotational clearance of the compartment, to allow a continual early successional stage. A 10m x 10m coupe cut every 5 years. Birch trees should be cut above the ground level and the waste left in piles in more established and shaded woodland. The stumps should be painted with Glyphosate as soon after cutting as possible, no more than a few hours. It is important that it doesn't rain for at least 6 hours after stump treatment for the Glyphosate to be effective. Only qualified personnel may apply herbicide. Cost based on 1 day labour.	
Compartments	3	
Year	2012	
Months	February	
Personnel	Contractor or Ranger Service with Volunteers	
Cost	Estimated: £240	Actual:
Work carried out		

Project	P05 - Control Japanese knotweed, Rhododendron and non-native garden escapes	
Detail	Escapes include Bridewort, dogwood, *Aster* and *Cotoneaster* as identified in Project M04. Spraying with Glyphosate and additive to help adhesion. Costs based on 2 days labour per year and chemicals.	
Compartments	As needed	
Year	As needed	
Months	May	
Personnel	Contractor or Ranger service	
Cost	Estimated: £500	Actual:
Work carried out		

Project	P06 - Control beech and sycamore saplings	
Detail	Every 5 years a sweep of woodland compartments to cut and treat saplings of sycamore and beech. The stumps should be painted with Glyphosate as soon after cutting as possible, no more than a few hours. It is important that it doesn't rain for at least 6 hours after stump treatment for the Glyphosate to be effective. Only qualified personnel may apply herbicide. Costs based on 1 day per year plus chemicals.	
Compartments	2A, 3, 4, 5	
Year	2013	
Months	July	
Personnel	Ranger Service with Volunteers or Contractors	
Cost	Estimated: £250	Actual:
Work carried out		

Project	P07 - Mow path edges	
Detail	Flail mower and strim path edges to widths of 1m.	
Compartments	Path edges	
Year	All	
Months	May. August.	
Personnel	EDC maintenance contract	
Cost	Estimated:	Actual:
Work carried out		

Project	P08 - Prune back path edges	
Detail	Cut back trees and shrubs to clear a height of 2.5m clear walking tunnel and 1m back from path edge. Every 3 years. Some work may require a chainsaw. Costs based on 2 days labour	
Compartments	Path	
Year	2010 / 2013	
Months	Oct - Nov.	
Personnel	Contractor	
Cost	Estimated: £500	Actual:
Work carried out		

Project	P09 - Repair infrastructure with passing places	
Detail	Repair boardwalks and bridges as required and indicated by project M05. When repairing boardwalk, 3 new passing places should be installed.	
Compartments	Boardwalk, bridges	
Year	All 2011 (passing place installation)	
Months	March	
Personnel	Contractor	
Cost	Estimated: General repair - £400/yr Passing place installation - £1200	Actual:
Work carried out		

Project	P10 - Maintain signs	
Detail	Signs should be cleaned annually. Allow for replacement of 2 signs/per year	
Compartments	Path	
Year	All	
Months	March	
Personnel	Contractor/Volunteer (FoLM)	
Cost	Estimated: £500/yr	Actual:
Work carried out		

Project	**P011 - Clear culverts of debris**	
Detail	*This project refers to the main drain culverts with grills* Clearance by hand. Remove debris and haul away.	
Compartments		
Year	All	
Months	Weekly	
Personnel	EDC Greenspace	
Cost	Estimated:	Actual:
Work carried out		

Project	**P012 Clear open drains of debris**	
Detail	*This project refers to the small path culverts* Clearance by hand. Remove debris and haul away. Fix loose stones.	
Compartments		
Year	All	
Months	Twice a year	
Personnel	Volunteers	
Cost	Estimated:	Actual:
Work carried out		

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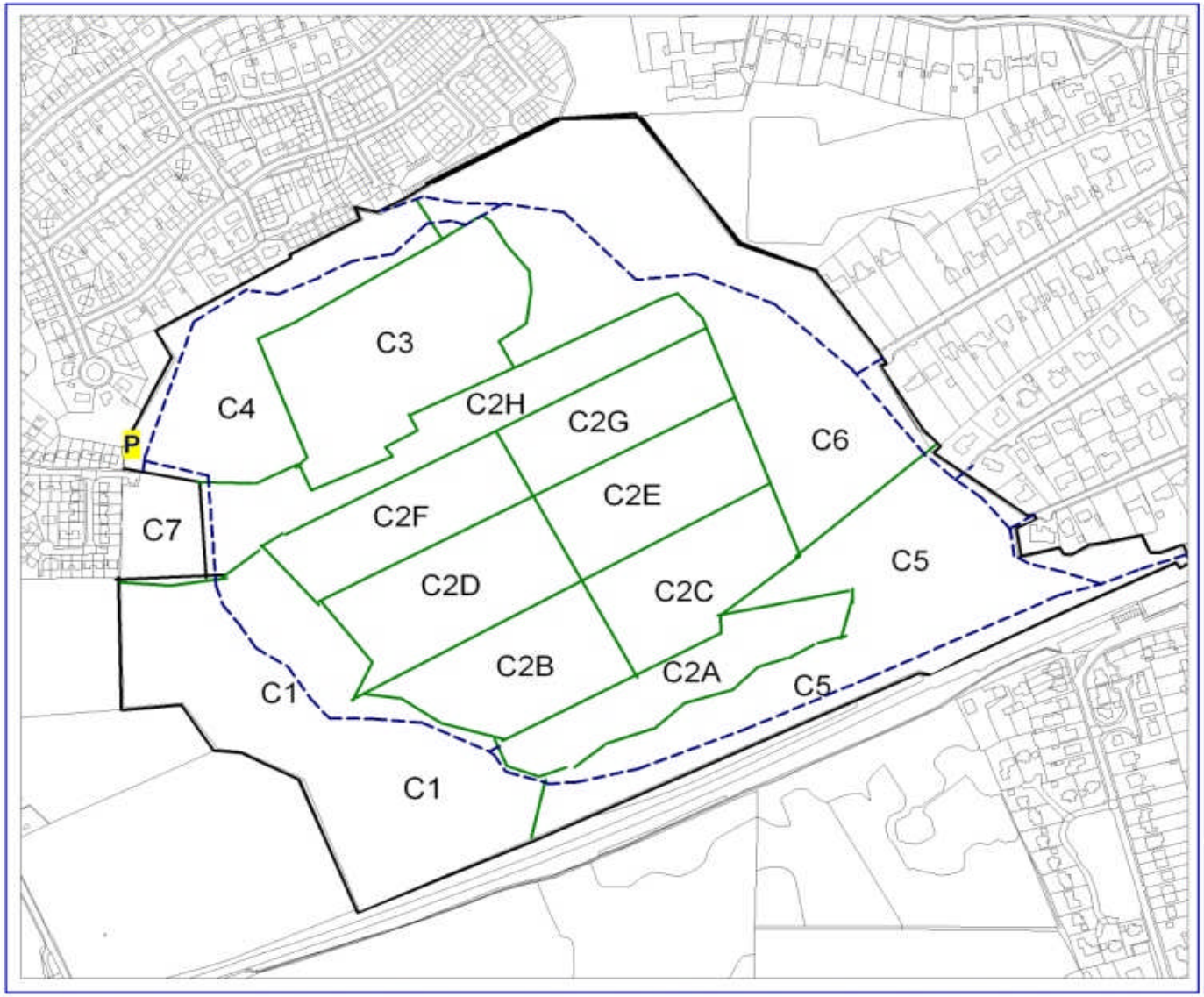
Appendices

Appendix 1

Maps

1.1 Compartment map
1.2 Hydrology map showing dam locations
1.3 Current access map
1.4 WIAT Operations map
1.5 Visitor management map



Key

COMPARTMENT BOUNDARY

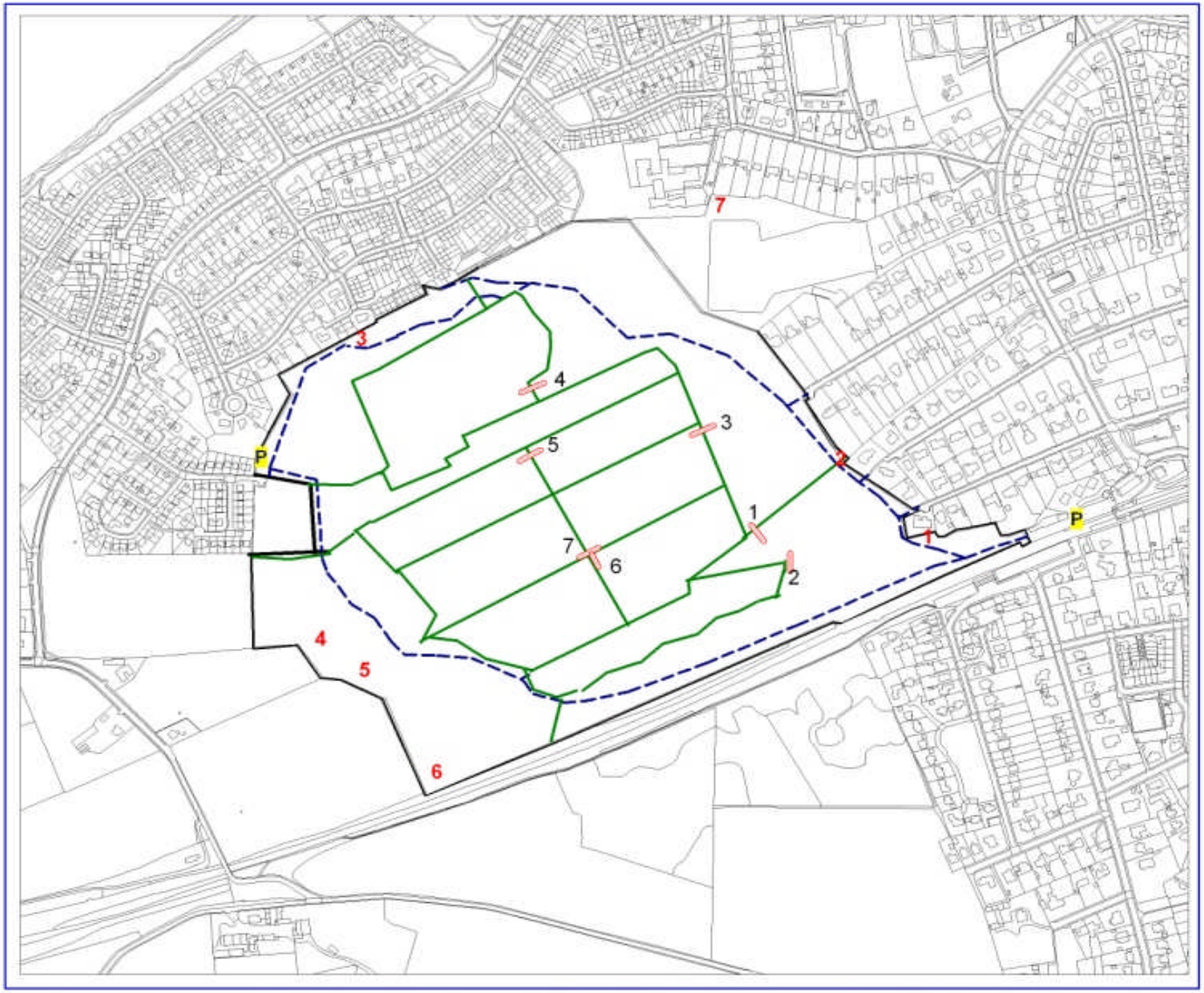
ACCESS PATH

1 COMPARTMENT NUMBER

SITE BOUNDARY

Scale 1:5000

Lenzie Moss
Management Plan
Map 1.1
Compartments



Key

ACCESS PATH

COMPARTMENT BOUNDARY

SITE BOUNDARY

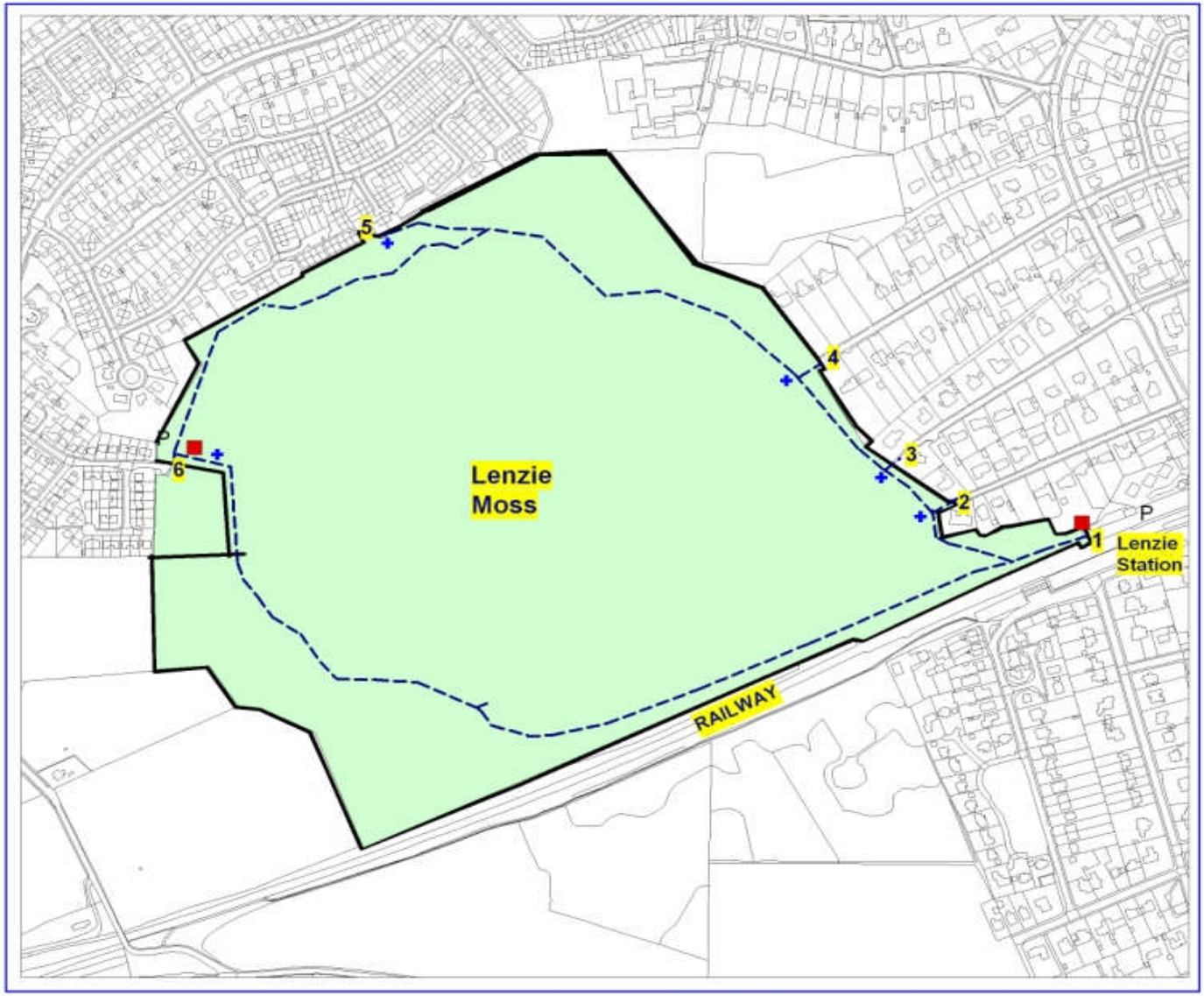
PROPOSED DAM LOCATION

1 OUTFALL LOCATION

2 CAR PARKS

Scale 1:5000

Lenzie Moss Management Plan Map 1.2 Hydrology



Key

ACCESS PATH

CURRENT INTERPRETIVE PANEL

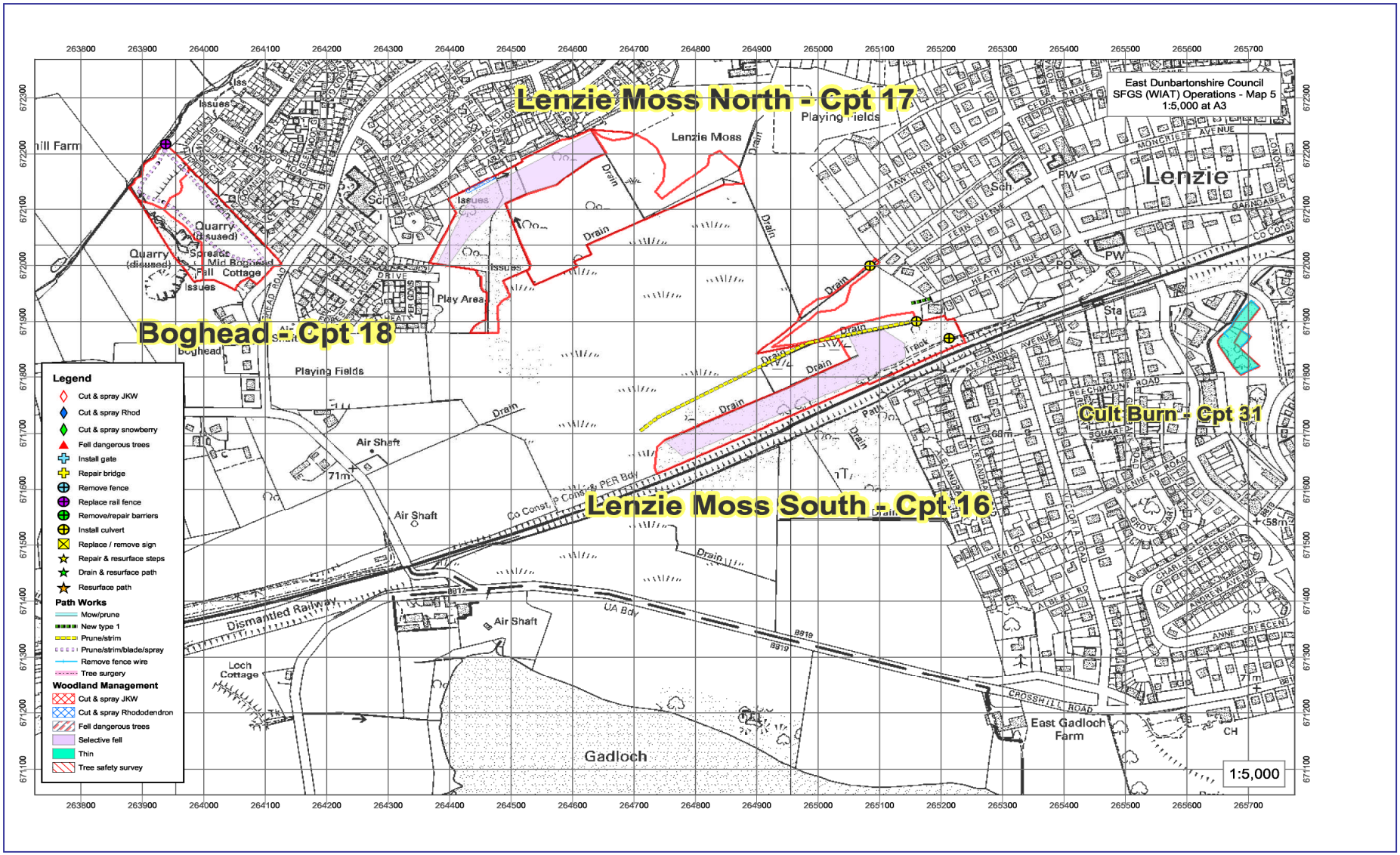
WARNING SIGN

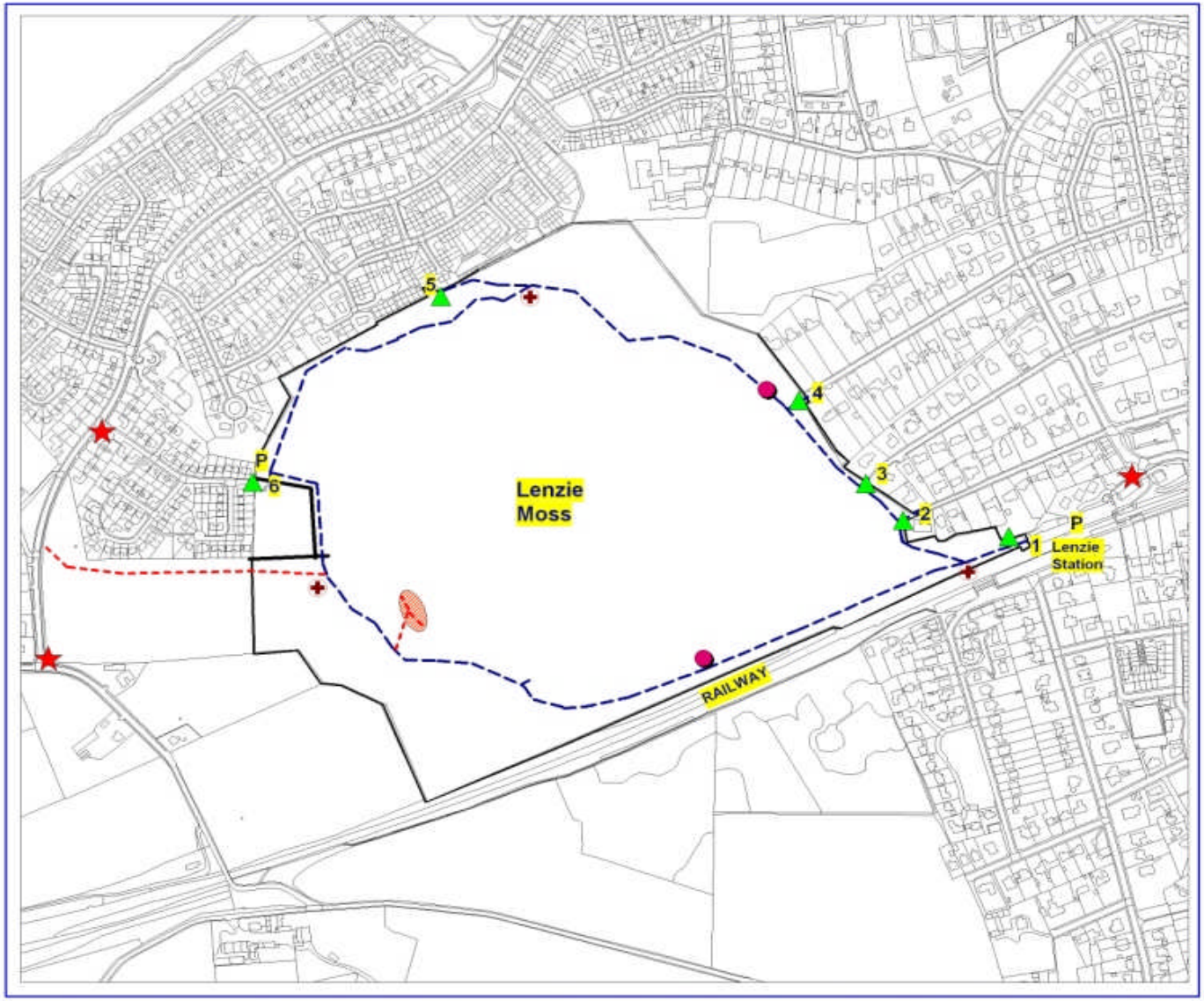
2 ACCESS POINT

Scale 1:5000

Lenzie Moss
Management Plan
Map 1.3
Current access

Map 1.4 – WIAT Operations





Key

- ACCESS PATH
- PROPOSED LINKS
- PROPOSED GATEWAY MARKER POSITION
- PROPOSED EXTERNAL FINGERPOST POSITION
- PROPOSED INTERNAL FINGERPOST POSITION
- PROPOSED VISITOR COUNTER POSITION
- 1 ACCESS POINT
- P PARKING
- PROPOSED VIEWING AREA

Scale 1:5000

Lenzie Moss Management Plan Map 1.5 Visitor management

Appendix 2

1998 Raised bog inventory

LENZIE MOSS			LZM026
Grid Ref:	NS648718	**Local Authority:**	East Dunbartonshire
Surveyed For:	The Wildlife Partnership	**Survey Date:**	31/03/98
Surveyor Name:	Theo Loizou		

DESCRIPTION

This is a relatively large site (about 50 ha) which is divided in two unequal halves (north and south) by a railway line with embankment. The north section of the moss is three times the size as the south section and management of both of these parts has differed. Much of the north section of the moss has been cutover by baulk and hollow extraction methods and regular drains are extensive over the area. Only some peripheral parts have been left untouched. The south section has not been cutover and here the surface is relatively intact. The vegetation in the north section is recovering and although the surface has been greatly disturbed, bog communities occur here and Sphagnum cover is locally high. Nevertheless birch scrub is also quite extensive here. Round peripheral areas of the moss birch scrub is the main community and, over the mire expanse, birch is regenerating. Burning on this site has prevented birch from becoming more extensive. Although the south section of the moss is relatively intact the surface is disturbed and the railway has probably affected the hydrology of this part of the bog. Trampling intensity is moderate to high over this part of the bog and the vegetation is in a degraded state. Nevertheless Sphagnum is locally abundant and bog communities (M18 and M19) occur here.

STRUCTURE

Because of peat extraction a domed surface is lacking on this site and most peripheral areas are higher than the central parts of the moss. Because of extensive peat extraction in the north section of the moss microtopography is not well developed. 13 hummocks are quite extensive and low T2 hummock is fairly widespread. Ti lawns are not infrequent and in places are quite extensive. Aquatic zones are not a feature of this site except along drainage channels, which are artificial features. The south section of the moss is mainly T2 and 13 hummock with locally extensive Ti lawns developed. Aquatic zones occur but are quite sparse and are not well developed.

VEGETATION

Because of disturbance, pristine bog vegetation is lacking here. Nevertheless the Calluna vulgaris-Eriophorum vaginatum mire (M19) and the Erica tetralix-Sphagnum papillosum mire (Mi 8) occur here, albeit in a degraded state and the site supports a wide range of bog plants including ten Sphagnum species. The Erica tetralix-Sphagnum papillosum mire is locally common but not extensive. Here, this community supports frequent to abundant Calluna vulgaris, Er/ca tetralix and Eriophorum vaginatum with frequent Eriophorum angustifolium and occasional Drosera rotundifolia. Andromeda polifolia occurs in this community but it is quite rare on this site (see polygon 4). Saplings of Betula pubescens are frequent in this community but the cover of birch is low (<4 %). The ground layer of this community supports abundant Sphagnum.

Sphagnum papillosum and Sphagnum recurvum are the most abundant types and there is occasional to frequent Sphagnum subnitens, Sphagnum cuspidatum, Sphagnum capilofolium, Sphagnum palustre and Sphagnum magellanicum. The sub-atlantic Sphagnum molle is occasional here, and Sphagnum tenellum is also occasional (this species was only seen at the south section of the moss). Polytrichum commune is frequent to locally abundant and Polytrichum alpestre, Caiypogeia muellerana, Cephalozia bicuspidata and Gymnocolea inflata are occasional to frequent and Mylia taylor/i is occasional.

The Calluna vulgaris-Eriophorum vaginatum mire is widespread here and is much drier than M18 and supports less Sphagnum than it. Calluna vulgar/s is abundant throughout and Eriophorum vaginatum is frequent to locally abundant. Eriophorum angustifolium is frequent and there is occasional Erica tetralix, Molinia caerulea and Trichophorum cespitosum. Saplings of Betula pubescens are frequent in this community but the cover of birch is low (<4 %). For the ground layer Polytrichum commune is the most abundant species but Sphagnum recurvum, Campy/opus pyriformis and Gymnocolea inflata are occasional to frequent and there is occasional Sphagnum papillosum and Sphagnum capillifolium.

Note that, some areas of degraded M18 and M19 resemble wet heath (M15). Also, in order to prevent birch invasion some parts of the bog (north section) have been burnt.

Toward the southern side of the north section of Lenzie Moss is an area of spongy peats with high water level ~o1ygon 21). The vegetation here is transitional between the Carex rostrata-Sphagnum recurvum mire (M4) and M18. Sphagnum recurvurn forms an extensive lawn, which is interspersed by Polytrichum commune and occasional Sphagnum papillosum. The field layer supports abundant Eriophorum angustifolium and frequent Eriophorum vaginatum and because of the wetness of the area, ericoids are lacking.

The Molinia caerulea-Potentil/a erecta mire (M25) is developed here but is floristically poorly defined. This community always occurs near peripheral areas (mire rand) and is notably abundant near the railway line and along southern borders of the south section of the moss. Mo/in/a caerulea is abundant throughout and its cover usually exceeds 50 %. Frequent associates include Gal/urn saxatile, Festuca ovina and Eriophorum vaginaturn and there is occasional to frequent Calluna vulgar/s and Deschampsiaflexuosa. The ground layer is sparse and the most frequent species is Polytri chum commune.

Birch scrub is a notable feature of this site, particularly round peripheral parts of moss and along railway embankment and tracks. Nearly all of the birch scrub on this site matches the Betulapubescens-Molinia caerulea woodland (W4) community. Betula pubescens is abundant throughout and Betula pendula is occasional to locally frequent. In some stands there is occasional to frequent Salix cinerea and occasional Crataegus monogyna. In more mature stands, Acer pseudoplatanus and Quercus petraea are occasional to locally frequent. The field layer and ground layer are variable and two distinct sub-communities occur here. They are the Dryopteris dilatata-Rubusfruticosus sub-community (W4a) and the Sphagnum spp. sub-community (W4c). For W4a, Deschampsiaflexuosa, Anthoxanthum odoraturn, Vaccinium myrtillus, Dryopteris dilatata and Rubusfruticosus are occasional to frequent and Chamaenerion angustifolium is locally frequent. The ground layer supports frequent Iiypnum cupress~forme s. 1. and Lophocolea bidentata s.l. and occasional to frequent Dicranum scoparium, Plagiothecium undulatum and Campy/opus introfiexus. There is occasional Sphagnum recurvum and Sphagnum fimbriatum.

For W4c Caluna vulgaris and Eriophorum vagina/urn are frequent and Mo/in/a caerulea, Eriophorum angustifolium, Deschampsia fiexuosa and Festuca ovina are occasional to frequent. For the ground layer Polytrichum commune, Sphagnum recurvum and Sphagnum fimbriatum are frequent to locally abundant and Sphagnum palustre, Campyopus introflexus and Qvpnum cupressiforme s./. occasional to frequent. On this site W4a is more extensive than W4c.

Besides W4 a few small patches of the Rubusfruticosus-Holcus lanatus underscrub community (W24) also occurs here. Rubusfruticosus dominates this community and Holcus lanatus, Dactyl/s glomerata and Rurnex acetosa are occasional to frequent.

Coarse grassland vegetation is locally extensive over some peripheral margins of the site. For example along the eastern side of the north section of the moss, coarse grassland is extensive. The Holcus lanatus-Deschampsia cespitosa grassland (MG9) is locally well developed and supports frequent to abundant Deschampsia cespitosa, Holcus lanatus, Rumex acetosa and Juncus effusus. The Arrhenatherum elatius grassland (MGi) also occurs here and typically
supports frequent Arrhenatherum elatius, Dactyl/s glomerata, Holcus lanatus and Rumex acetosa and occasional to frequent Chamaenerion angustifo/ium, Ranunculus repens, Centaurea nigra, Urtica dioica, Rosa agg. and Rubusfruticosus.

DAMAGE

Overall there is extensive damage to this site. The north section of Lenzie Moss has been extensively cutover by baulk and hollow extraction methods and has also been drained. The appearance of the surface is of a system of narrow ridges and wide hollows. Birch scrub is common and is invading onto the mire expanse. On the south side of the bog, trampling and possibly overgrazing by large herbivores has damaged the surface. The main railway line, which dissects the north side of Lenzie Moss from the south side, has probably affected the hydrology of this site.

SITE ASSESSMENT

Although damage is quite extensive the bog is recovering in places and there is potential that the site can be restored. Many bog species occur here including the locally scarce Andromeda polfolia and the sub-atlantic bryophyte Sphagnum molle. Also, certain bog communities could be defined. For example the Erica tetralix-Sphagnurn papi//osum mire occurs here and although it is not pristine it supports abundant Sphagnum. The site also supports a wide range of other habitat types including birch scrub and coarse grassland. Local residents use the site for recreational purposes and efforts should be made to enhance and preserve this site.

Other Damage:

Some evidence of past domestic peat cutting.
Damage extent: Localised

SITE INTEREST

A large site that is split in to two by the presence of a railway line. The northern half is much larger, has been extensively cutover and is drying out due to widespread scrub encroachment and drainage. The southern half contains the largest areas of viable bog habitat, as it is less easily accessible and so has remained relatively untouched, although scrub encroachment is occurring here, and is spreading. There is also cattle grazing on the southern section.

The site does support a wide range of bog vegetation, with the fairly scarce bog rosemary (Andromeda polifolia) and round leaved sundew (Drosera rotundifolia) occurring occasionally. Heather (Calluna vulgaris) and cross leaved heath (Erica tetralix) are abundant throughout the site, often alongside hares tail cotton grass (Eriophorum vaginatum). The scrub present on site is downy birch (Betula pubescens). A good range of Sphagnum species is present in the southern section, with a few patches in the north also.

Appendix 3

Interpretive panel

A walk around ten thousand years of history

East Dunbartonshire Council

Supported by

Ten thousand years ago, Lenzie Moss was a big wet hollow. There was little goodness for most plants, but it was ideal for sphagnum mosses. The top part of the mosses soaked up rainwater, and kept growing upwards. Underneath, they partially decomposed and were compressed until peat formed. This process kept repeating. As the moss grew over thousands of years, the lower layer of peat became deeper and deeper. It grew until it formed a dome shape - a typical raised bog.

The peat at Lenzie was around 12 m deep. But, a thousand years ago, people began to take it away. You can still see the scars of peat extraction, which began in earnest in the 13th century and continued until XXX. Around nine metres of peat have been removed since then – around the height of a two-storey house. In the 19th century, the Volunteer Movement (a pre-Victorian Territorial Army) used Lenzie Moss for target practice. The Victorians also used it as a dump – glass and ceramics are still found here.

Now this proposed Local Nature Reserve is a scenic and peaceful haven for humans, plants and wildlife. It's the only site in East Dunbartonshire where bog rosemary grows, and it's ideall for butterflies like the green hairstreak. As you walk, imagine its long history, but notice how special Lenzie Moss is today.

Lenzie Moss Local Nature Reserve

For Bea Ray, who loved this place and worked hard for it

Appendix 4

Access Audit Report and Bill of Quantities

Donaldson Environmental Consultants,
Garden Cottage
Tayinloan
Argyll and Bute PA 29 6XG
Email: mail@donenvironmental.co.uk

Lenzie Moss

Access Audit Report

Prepared by
Donaldson Environmental Consultancy Ltd

November 2008

1. INTRODUCTION

1.1 Study Remit

This access audit report forms part of the revision of the Lenzie Moss Management Plan undertaken in November 2008.

The access network at Lenzie Moss is relatively new, having been installed over the past 5 years.

The remit is therefore to survey the network to identify:

- improvements to accessibility
- improvements to path drainage
- significant hazards to users

The survey took place on the 13th and 14th October 2008.

1.2 Study Approach

The paths were surveyed with a measuring wheel to identify, photograph and record any issues. The resulting Bill of Quantity is appended to this report.

The survey approach is to respect the natural setting and designation of the area and provide a 'low-key' approach to upgrade.

Accessibility evaluation was built into the survey, adopting the 'least restrictive option'.

Locations for possible view enhancement were to be identified, along with potential locations for signage.

2. ACCESS AUDIT

Route name	Lenzie Moss path
Site survey	13th and 14th October 2008
Length	2.323km (1.44miles)

1. Site and Environment

1.1 Location

Lenzie Moss is located to the south west of the town of Lenzie. (Grid ref NS 649716)

Location map can be seen in section 1.1.1

1.2 Path description

The path provides access around the edge of the Moss. It is a mixture of toptrek, aggregate and boardwalk.

See Map 1.5 in Appendix 1 of the Management Plan for path location.

The path provides access to a variety of habitats; woodland, grassland and bog.

There are 6 access/exit points on the path, with a large car park at Lenzie Station (1) and smaller local car parks at points 5 and 6.

There is also informal access through the rugby club.

1.3 Use of the path

The primary use of the path is for informal access and dog walking. There is some evidence of use of the path by scramblers and quad bikes, although this does not appear to be significant.

2. Path audit

2.1 Introduction

The path is 2.232km long. It has been split into 18 links.

There are 6 access paths: links 3, 5, 7, 10 and 12.

A possible link to Bog Wood was surveyed: link 14.

A possible link to a viewing area was surveyed: link 16.

Two links are on boardwalk (links 15 and 17), the rest of the path is toptrek.

2.2 Surface and drainage

Links 2,4,12 and 14

The surface of the path is mainly in good condition. There is evidence of subsidence in places, causing water to lie on the path.

Installation of drainage has been suggested in these areas.

2.2 Width, and Width restrictions

The path is starting to narrow due to edge encroachment. On average there is still a 1.2m walking surface. We understand that the path edge is cut twice a year.

The boardwalk is only 1m wide with two passing places.

Links 2, 5 and 11

Some links have tree encroachment. Selective pruning has been suggested for these links.

2.3 Barriers

There are no barriers on the main path.

2.4 Linear Gradients

There are no gradients in excess of 10° on the main path. The access from Hawthorn Avenue (link 7) has a gradient in excess of 10°for a short section.

2.5 Steps

There are no steps on the path.

2.6 Health and safety concerns

The main hazards associated with access to the site are:

HAZARD	PERSONS AFFECTED			RISK ASSESSMENT		
	PUBLIC	STAFF/CONTRACTOR	VOLUNTEERS	SEVERITY	LIKLIHOOD	RISK SCORE
PROXIMITY TO WATER/DEEP PEAT: This only presents a hazard if users leave the main path. Need to ensure waning signs are maintained at all access points				3	1	3
LEPTOSPIROSIS: Contractors or volunteers will be expected to provide protective clothing and washing facilities.				3	1	3

Risk score **is calculated by multiplying** Severity **by** Likelihood

Severity values:	Likelihood values:	Risk score
1 – SLIGHT HARM	1 - UNLIKELY	1 to 3 = Slight risk
2 – HARMFUL	2 - LIKELY	4 = Moderate risk
3 – VERY HARMFUL	3 - VERY LIKELY	6 = Substantial risk
		9 = Intolerable risk

Contractors and maintenance personnel will need to carry out their own risk assessment and provide method statement on working on a public site and how they intend to reduce the risk these hazards present.

3. Proposals

3.1 Rationale

The path around the site is in general in good condition, with only a few areas where remedial drainage and top dressing is required. We have suggested opening up the path corridor in places. This will be an on-going maintenance task.

Two new links were surveyed:

1. Link to Boghead Community Wood. A minimal approach has been suggested, with the installation of signage and a new gate in the fence suggested. The client may wish to provide a surfaced path following consultation with stakeholders.

2. Link to viewing platform. This is a boardwalk spur across the slope leading to a viewing platform.

Although the site is used primarily by local people, it would get greater use if signage to and on the site was improved. We have suggested gateway stone way markers at the access points to the site and metal fingerposts at key path junctions.

3.2 Development projects

A Bill of Quantity providing details and notional costs of works required is appended to this Report

4. Path Maintenance

4.1 Maintenance standards

The following standards should be applied to maintenance tasks:

Inspection by walking	
Maintenance task	Inspection of path by walking
Frequency	2 x per year – Autumn and Spring
Method	Walk the path inspecting path surface, verges, trees, culverts, bridges, signage and amenities Inspect path immediately after flood or storm events
Capital equipment	Clipboard/pen/measuring tape and dictaphone
Estimated costs	Access Officer/Greenspace Officer

Clear open drains	
Maintenance task	Clear culverts and open drains by hand
Frequency	2 x per year
Method	Remove debris built up along the bottom of drain/Haul debris away. Fix loose stones
Capital equipment	Shovel
Estimated costs	Volunteer

Clear culverts	
Maintenance task	Clear 4 culverts
Frequency	weekly
Method	Remove debris built up along the bottom of culverts/Haul debris away.
Capital equipment	Shovel
Estimated costs	EDC Greenspace

Verge maintenance	
Maintenance task	Flail or strim path verge
Frequency	Two passes per annum
Method	Flail
Capital equipment	Flail mower Hand strimmer
Estimated costs	Council maintenance contract

Tree and shrub pruning	
Maintenance task	Control of tree and shrub encroachment along path
Frequency	Once every 2-3 years (main) Every year – with hand clippers on annual inspection
Method	Cut back trees and shrubs to clear a 2.5m height clear walking tunnel and 1m back from path edge Inspect woodland areas immediately after storm events
Capital equipment	Chain saw/brush cutter Hand clippers
Estimated costs	Bramble/scrub – volunteer Tree work – contractor/Council

Infrastructure repair	
Maintenance task	Repair of wooden bridge decks
Frequency	Inspect annually
Method	Inspect bridge decking annually and replace as necessary The bridge should be inspected after flood or storm events
Capital equipment	
Estimated costs	Ranger/EDC Greenspace

4.2 Maintenance Schedule

Task	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Route inspection										
Tree pruning (per 2 years)										
Verge maintenance										
Drainage clearance										
Infrastructure repair										

Bill of Quantities

KEY

SURFACE	A	Hard and firm	**GRADIENT**	A	To standard		spur path
	B	Firm but uneven/loose		B	1:10 to 1:8		
	C	Loose, soft or unstable		C	1:8 to 1:6		

LINK #	LOCATION	METRES	PHOTO #	SURFACE	GRADIENT	WORK REQUIRED (LINEAR METRES & DESCRIBE)	UNIT	UNIT COST	TOTAL COST	LINK TOTAL
1	Station car park Top trek – 2m	0		A	A	Potential gateway waymarker position				
	Start of Knotweed - LHS	43								
	End of Knotweed	53								
	Junction	**118/0**	1/2/ 3			Maintenance: ensure free passage of water under bridge – annual No tree work required				
2	Turning north	0		A	A	Install metal fingerpost (3)	ea	350.00	350.00	1485.00
	Overhanging trees	20	4			Remove 2 trees	no	200.00	400.00	
	Sharp right turn Path narrows – 1m	47	5^/6							
	Overhanging tress	51				Remove 2 trees	no	200.00	400.00	
	Bridge over drain 1	63-67	7							
	Water on path	98	8			Install 150mm culvert and 10m feeder drain Allow for 5m topdress	ea m	160.00 15.00	160.00 75.00	
	Access to Heath Avenue	**122/0**	9> 10 11			Replace sign	ea	100.00	100.00	

LINK #	LOCATION	METRES	PHOTO #	SURFACE	GRADIENT	WORK REQUIRED (LINEAR METRES & DESCRIBE)	UNIT	UNIT COST	TOTAL COST	LINK TOTAL
3	Heath Avenue link	0		A	A					820.00
	End of link	41/0	12^			1m wide path. Cut and edge path to 1.5m Allow for 41m topdress Potential gateway waymarker position	 m m	 5.00 15.00	 205.00 615.00	
4	Main path	0		A	A					137.50
	Water on path	10	13			Install 5m top dress Hand dig 15m drain	m m	15.00 2.50	75.00 37.50	
	Fern Avenue access	**38/0**	14^ 15 16			Remove graffiti from sign	sum	25.00	25.00	
5	Fern Avenue link	0		A	A					410.00
	End of link	42/0	17			Prune hedge back – both sides Potential gateway waymarker position	m	5.00	410.00	
6	Main path	0		A	A					
	Double culvert	39	18							
	Hawthorn Avenue access Sign present	**126/0**	19^ 20 21							
7	Hawthorn Avenue link	0		A	B					
	End of link	33/0	22			Potential gateway waymarker position				
8	Main path	0		A	A	Install pressure pad counter	sum	1000.00	1000.00	1000.00
	Informal track to Rugby club Sign present	**90/0**	23^ 24 25							

LINK #	LOCATION	METRES	PHOTO #	SURFACE	GRADIENT	WORK REQUIRED (LINEAR METRES & DESCRIBE)	UNIT	UNIT COST	TOTAL COST	LINK TOTAL
9	Main path Path narrows from here	0		A	A					360.00
	Junction to left at football pitch Wet area	**304/0**	26 27 28^			Install 3 x 100mm culverts at 10m intervals	ea	120.00	360.00	
10	Link to	0		A	A					
	End of aggregate Start tar	99								
	End of link at parking area	151/0	29 30^			Potential gateway waymarker position				
11	Junction	0		A	A	Install metal fingerpost (3)	ea	350.00	350.00	1350.00
	Start of tree encroachment	44-313	31			Prune 270m path corridor to 3m wide	sum	1000.00	1000.00	
	Informal path LHS	159								
	Bridge Informal path on LHS	236-239	32 33^							
	Informal path on RHS	246								
	Water across path	270	34 35	A	A	Install 150mm culvert Allow for 15m drain	ea m	160.00 2.50	160.00 37.50	457.50
	Water across path	286	36			Install 150mm culvert Allow for 10m drain	ea m	160.00 2.50	160.00 25.00	
	Bridge Blocked underneath Wood opens up from here	313-315	37 38			Clear under bridge Allow for 10m drain and soakaway	Sum m	50.00 2.50	50.00 25.00	
	Junction at Heather Drive Interpretive board present Sign present	**438/0**	39 40 41							
12	Link to Heather Drive	0		A	A					
	At footpath Car park present	14/0				Potential gateway waymarker position				

LINK #	LOCATION	METRES	PHOTO #	SURFACE	GRADIENT	WORK REQUIRED (LINEAR METRES & DESCRIBE)	UNIT	UNIT COST	TOTAL COST	LINK TOTAL
13	Main path 2m wide aggregate	0		A	A					800.00
	Culvert	103				Re position culvert – min 150mm below path surface Allow for 20m drain Allow for 5m top dress	sum m n	100.00 2.50 15.00	100.00 50.00 75.00	
	Culvert	113				Re position culvert – min 150mm below path surface Allow for 20m drain Allow for 5m top dress	sum m n	100.00 2.50 15.00	100.00 50.00 75.00	
	Corner Bog wood access on RHS	**161/0**	42 43 44			Install metal fingerpost (3)	ea	350.00	350.00	
14	Link to Bog Wood Cut grass	0		C	A					750.00
	Rough grass	55			B					
	Start of mud	66								
	Fence	78	45 46^ 47			Install Centrewire Woodstock kissing gate Allow for removal and disposal of section of fence Install sign at gate	Ea Sum ea	350.00 50.00 100.00	350.00 50.00 100.00	
	Muddy area	233			A					
	Portacabin/gate	343/0	48 49			Install metal fingerpost (2)	ea	250.00	250.00	
15	Main path	0		A	A					
	Start of boardwalk 1m	14								
	Informal access to mound	150								
	Seat/passing area Proposed access to mound	**181/0**								

LINK #	LOCATION	METRES	PHOTO #	SURFACE	GRADIENT	WORK REQUIRED (LINEAR METRES & DESCRIBE)	UNIT	UNIT COST	TOTAL COST	LINK TOTAL
16	Access to mound	0	50 51 52	C	A					8000.00
	Top of mound	50/0				Install 50m of 1m wide boardwalk across side of slope. Maximum gradient 1:20. Include passing place at 25m	m	100.00	5000.00	
	Viewing area	20	53			Install 20m of 2m wide boardwalk from end of access boardwalk. Create low bund in front of viewing area	m	150.00	3000.00	
17	Main boardwalk	0		A	A					125.00
	Loose boards	44				Re-fix 6 loose boards	sum	50.00	50.00	
	Passing place	84								
	Access to informal path along old mineral railway	152	54 55 57	A	A					
	Access boardwalk - trip hazard		56			Raise and re-fix access boardwalk	sum	75.00	75.00	
	End of boardwalk	**216/0**	57^ 58							
18	Aggregate path 2m wide path Good walking corridor	0	59	A	A					1000.00
		406				Install pressure pad counter	sum	1000.00	1000.00	
	Old sleeper	426								
	Junction	**529/0**	60^ 61 62							

Appendix 5

Lowland raised bog background information

Lowland Raised Bogs

Lowland raised bogs are peatland ecosystems which develop primarily, but not exclusively, in lowland areas such as the head of estuaries, along river flood-plains and in topographic depressions. In such locations drainage may be impeded by low permeability substrata such as clays. The resultant water logging provides anaerobic conditions which slow down the decomposition of plant material which in turn leads to an accumulation of peat. The formation of peat is a very slow process, and it takes approximately 10 years for 1cm of peat to form.

In the UK lowland raised bogs are a particular feature of cool, rather humid regions such as the north-west lowlands of England, the central and north-east lowlands of Scotland, Wales and Northern Ireland, but remnants also occur in some southern and eastern localities, for example Somerset, South Yorkshire and Fenland. The area of highest concentration of this habitat is in the Central Belt of Scotland.

As elsewhere across north-west Europe there has been a dramatic decline in the area of lowland raised bog habitat since around the start of the nineteenth century. The area of lowland raised bog in the UK retaining a largely undisturbed surface is estimated to have diminished by around 94% from an original c95,000 ha to c6,000 ha at the present day (England 37,500 ha reduced to 500 ha, Scotland 28,000 ha to 2,500 ha, Wales 4,000 ha to 800 ha, Northern Ireland 25,000 ha to 2,000 ha). Historically, the greatest decline has occurred through agricultural intensification, afforestation, and commercial peat extraction. Future decline is most likely to be the result of the gradual drying out of bogs damaged by a range of drainage activities and/or a general lowering of groundwater tables.

Values of Peatlands

Peatlands are recognised as a vital ecological and economic resource in many countries. Man has used peatlands for centuries and has valued them for many different reasons. Conservationists, developers, energy producers, farmers, foresters, gardeners and rural households all value peatlands for very different reasons.

At various times in the past peatlands were used as a source of fuel, food and refuge, but a large proportion of these were inaccessible and so remained intact. This balance changed dramatically during the last century. Greater demands for housing, energy and agricultural land has increased exploitation of many natural habitats, contributing to their dramatic decline in Scotland and the rest of Europe.

Conserving peatlands is not just a local issue, the Ramsar Convention is an intergovernmental treaty which promotes the global conservation of wetlands. The Convention contains Guidelines for Global Action on Peatlands (GAP). The aim of GAP is to "achieve recognition of the importance of peatlands to the maintenance of global biodiversity, storage of water and carbon vital to the world climate system, and promote their wise use".

Some of the most important reasons for protecting and conserving peatlands include:

The biodiversity of peatlands is recognised as being a priority because they support some of Scotland's most rare and threatened species. Some species are able to survive on peatlands because they have special adaptations. Insectivorous plants such as the Sundew, overcome the lack of available nutrients in peat by trapping and digesting insects.

Storing carbon is an important function of peatlands and affects global climates. Carbon occurs naturally in the atmosphere in the form of carbon dioxide. Plants absorb carbon dioxide from the atmosphere where it is stored as they grow.

When a plant dies and decays the carbon within the plant is released into the atmosphere. The conditions found in peatland limit decomposition, so the carbon is retained and stored in the peat. It is estimated that a third of the worlds entire terrestrial carbon deposit is held within peatlands. When peatlands are drained or burnt they release this stored carbon back into the atmosphere. So, conserving and restoring peatlands can play a vital role in helping to mitigate against the affects of climate change.

Organic materials do not readily decompose in peatlands which makes them especially important for preserving archaeological remains.

Lowland raised bogs, such as Lenzie Moss started forming about 10,000 years ago when the glaciers retreated and left a landscape studded with wet hollows. As our culture has industrialized and modern society has grown up around the Moss its character has remained largely *natural* and *wild*. Easy access to such places, especially in such close proximity to urban dwelling, provides a range of mental and physical health benefits.