



Rural Opportunities Mapping for: East Dunbartonshire Green Network Strategy



A Report for



November 2015

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1 Background

The planning process is the primary mechanism through which the Green Network should be delivered. It is therefore critical that strategic planners have robust and defensible evidence for the decisions they make in the targeting of effort and resource. The Green Network Opportunities Mapping analysis undertaken for East Dunbartonshire's Green Network Strategy provides that evidence base to support strategic decision making.

The Opportunities Mapping approach employs Geographical Information Systems (GIS) based analysis which identifies relationships between, or gaps in, a range of Green Network related data. Geographical locations where a strong relationship exists are taken to be areas where there is the opportunity to deliver multiple Green Network benefits through the prioritisation of delivery. Areas where network gaps are identified are likewise deemed worthy of prioritised action.

The analysis for East Dunbartonshire consists of two distinct parts. The first considers urban areas only and applies the methodology developed to identify Green Network Priorities for the Clydeplan Strategic Development Plan but, replaces regional data with locally relevant data. The urban methodology and analysis is set out in the companion document to this report: Urban Opportunities Mapping for East Dunbartonshire Green Network Strategy. The second analysis considers only rural areas and a new approach has been developed specifically for the East Dunbartonshire Green Network Strategy.

This document sets out the data and methodology used in the rural analysis.

2 Rural Opportunities Mapping Methodology

2.1 Introduction

After identifying and reviewing relevant rural Green Network data it was concluded, in discussion with East Dunbartonshire Council, that the technical, analytical approach used for the urban analysis wouldn't be appropriate for the rural analysis. The urban methodology uses GIS to identify correlations and relationships between data within relatively small geographical areas. For the rural analysis there is less data and a much greater area to consider so the same kinds of correlations and relationships which are evident in urban areas don't occur. A new approach was therefore required.

2.2 Data

In the first instance a range of rural habitat, access and recreation datasets were identified and collated. These were:

Table 1- East Dunbartonshire rural data and data sources

Data	Source
Access	
Central Scotland Green Network Long Distance Routes (LDR)	SNH
ED Strategic Access Routes	ED dataset
ED Core Paths	ED Core Path Plan
Habitat	
ED Local Nature Conservation Sites including qualitative assessment	ED dataset
Integrated Habitat Network Model	SNH
EUNIS Landcover data	SNH
Recreation	
Rural open spaces with strategically significant recreation value	ED, FCS

2.3 Analysis

GIS was used to view and analyse the access, habitat and recreation set out in Table 1 to identify:

1. Current Strategic Green Network extent
2. Strategic Green Network gaps
3. Quality of provision (where data allowed)

From the analysis, Green Network components which have been identified as comprising the East Dunbartonshire's Strategic Green Network should be promoted in the Strategy as areas worthy of protection.

The analysis also identifies a series of locations where opportunities exist to expand and/or enhance the Strategic Green Network and these should be translated into the Strategy and supporting Action Plan.

The approach to, and findings for, the analysis in relation to access, habitat and recreation is set out below.

3 Strategic Access Network

Given this analysis is intended to inform the development of an East Dunbartonshire wide Green Network Strategy it isn't feasible or desirable to consider all access provision but rather those components which contribute to a "strategic" network of paths. SNH has collated data on Long Distance Routes across the Central Scotland Green Network (CSGN) which is a useful starting point. The dataset shows not just paths within East Dunbartonshire but also cross boundary connections and was used as the base framework for East Dunbartonshire's Strategic Access Network.

Long Distance Routes, however, are not the only strategically important access routes within ED. The Council compiled a dataset of local authority wide Strategic Access Routes to build on the network of LDRs. Additionally, rural core paths (identified through the statutory Core Path Planning process) were added to the analysis and collectively these three datasets provide a much more complete understanding of the Strategic Access Network across rural East Dunbartonshire. **Note:** some paths such as the Strathkelvin Railway Walkway appear in all three datasets.

Figure 1 below shows East Dunbartonshire's rural Strategic Access Network.

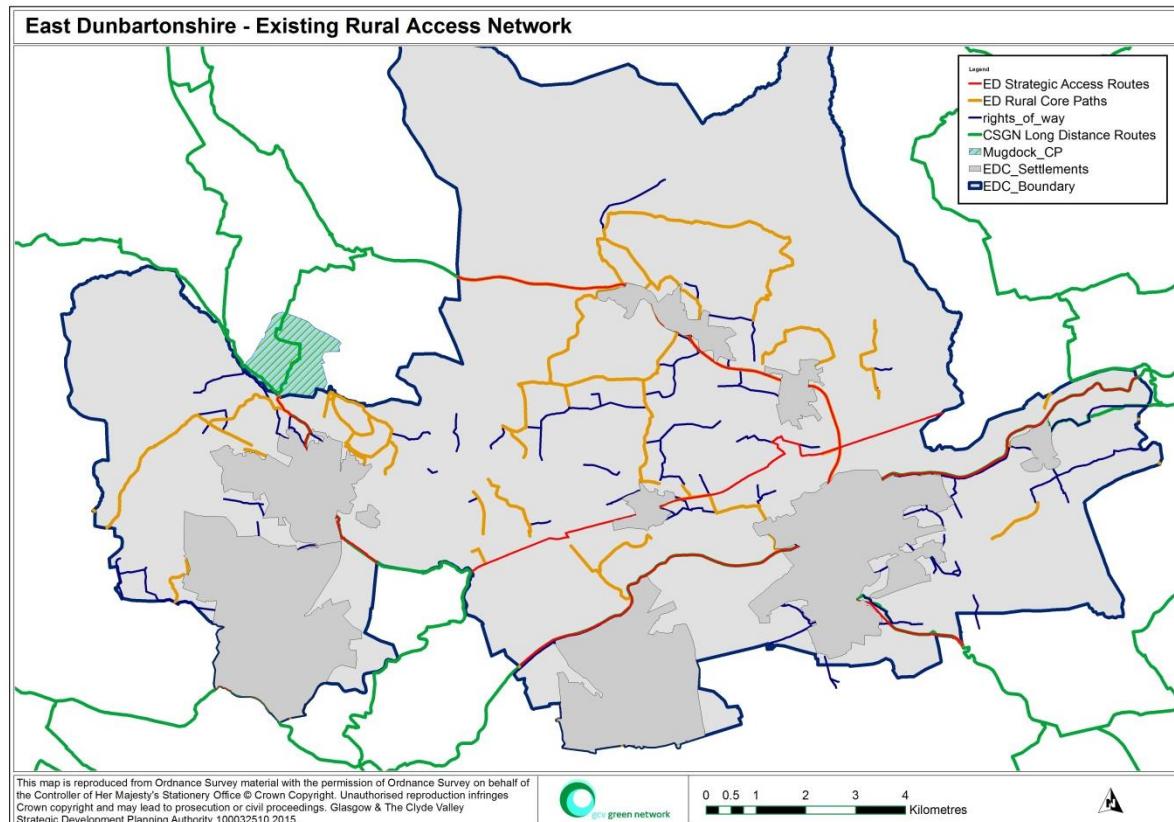


Figure 1- Existing Rural Access Network

In addition to analysis of access data, a workshop, including internal and external stakeholders, was held in June and great deal of useful information was gathered, particularly in relation to priorities for neighbouring authorities, cross boundary links and quantitative and qualitative gaps in the network. East Dunbartonshire Council has also recently commissioned an Active Travel Strategy which highlights opportunities to provide new and enhance existing access links. Since this an Active Travel Strategy, some of the opportunities are on-road routes and aren't therefore pertinent to the

Green Network however, some are off-road and these can provide a valuable additional facet to the Green Network.

Considering the information from the workshop in conjunction with the Active Travel Strategy and analysis of the above data, twelve Strategic Access Opportunities were identified for further detailed investigation. These are show in Figure 2 and detailed in Table 2 below.

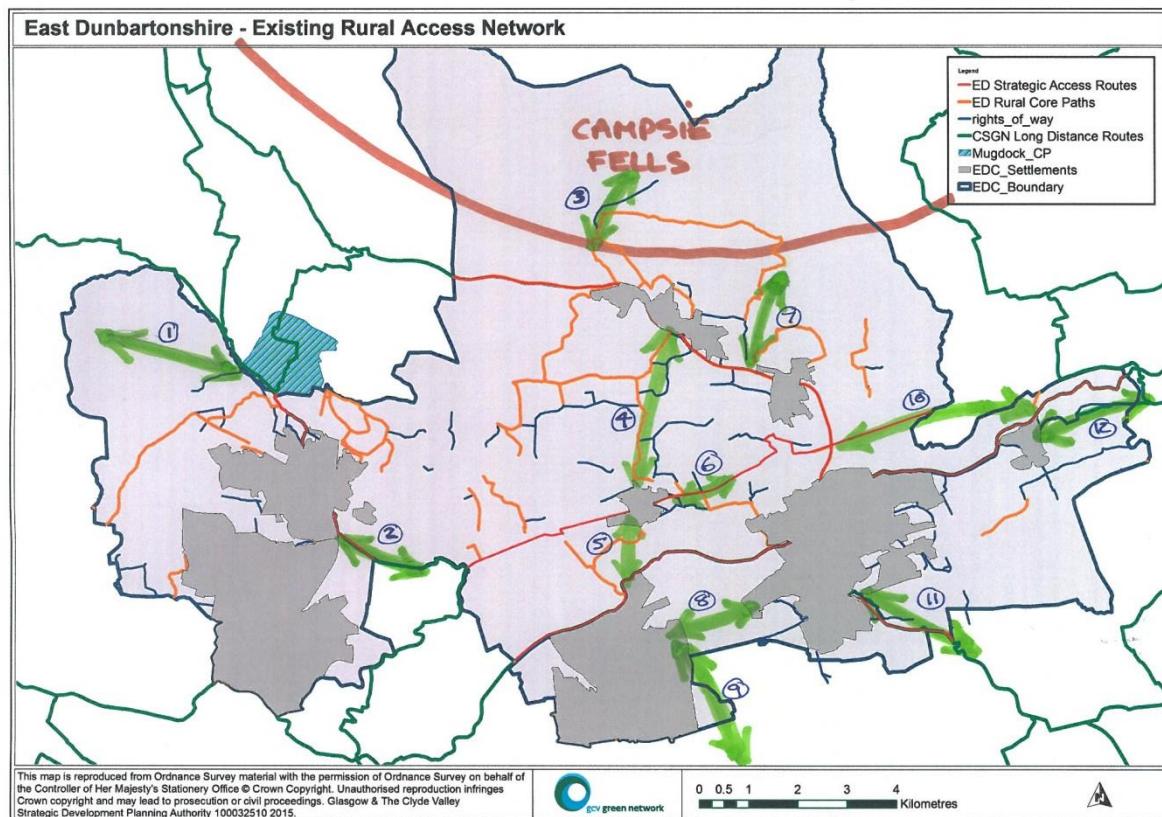


Figure 2- Strategic Access Network Gaps/Opportunities

Table 2 - Strategic Access Network Gaps/Opportunities

No.	Location	Opportunity
1	Craigton/Kilpatrick Hills	Cross boundary connection to WD/Clyde Coastal Path
2	Allander/Kelvin link	Cross boundary link which is currently poor quality
3	Campsie Glen	Enhanced access via Clachan "gateway" to wider Campsie Fells
4	Lennoxtown to Torrance/Balmore	Enhancement of north/south links across central ED
5	Torrance/Balmore to Bishopbriggs	Enhancement of north/south links across central ED
6	Campsie Road/Torrance link	Completion of missing link
7	Milton of Campsie	Enhanced access via Milton of Campsie "gateway" to wider Campsie Fells
8	Bishopbriggs/Lenzie link	Creation of new link between settlements
9	Bishopbriggs /Auchinairn to Glasgow	Enhancement of cross boundary links to assets and resources in Glasgow e.g. retail park, Robroyston LNR

10	Birdston/Twechar link	Creation of new east/west link connecting to canal/JMW
11	Kirkintilloch to North Lanarkshire	Enhancement of cross boundary links to assets and resources in North Lanarkshire e.g. 7 Lochs Wetlands Park
12	Twechar/Barhill to North Lanarkshire	Enhancement of access to World Heritage site and cross boundary links to North Lanarkshire

4 Strategic Recreation Assets

East Dunbartonshire's largely rural nature and proximity to Glasgow and other population centres means that it is ideally suited to providing recreational opportunities for residents and visitors alike. Statistics are difficult to measure but anecdotally it is clear that large numbers of people already visit East Dunbartonshire regularly to walk and cycle and, to a lesser degree, horse ride.

The Strategic Access Network discussed above is likely to be one of the main attractors for people but there also a series of key strategic recreation locations which also act as attractors. Through analysis of the datasets set out in Table 1 above, and in discussion with ED Council, 5 Strategic Recreation Assets have been identified and broadly categorised according to the functions they provide and whether the opportunity associated with them is maintenance of their current high quality or the enhancement of their recreational value.

The Strategic Recreation Assets are shown in Figure 3 and Table 3 below.

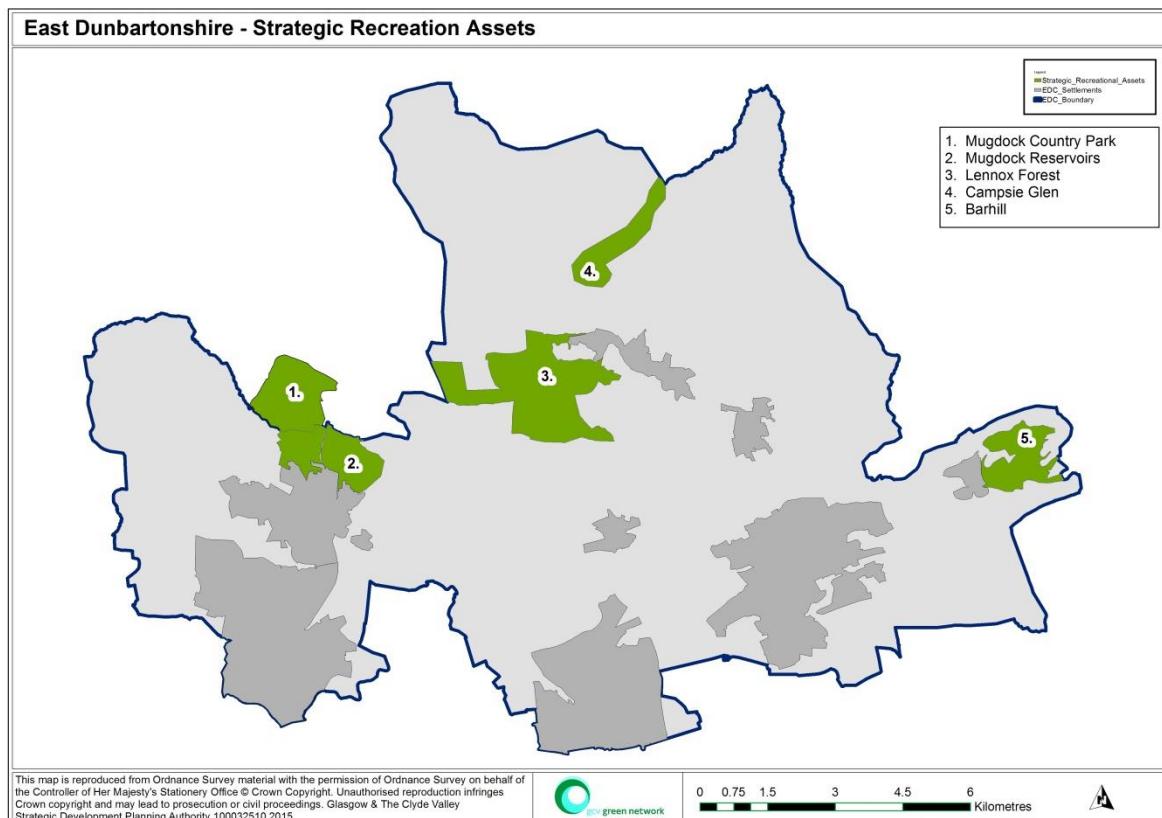


Figure 3 - Strategic Recreation Assets

Table 3 - ED Strategic Recreation Assets

No.	Asset	Functions	Opportunity	Management
1	Mugdock CP	walking, cycling, horse riding, informal recreation, nature	Maintain high quality	Joint Committee
2	Mugdock Reservoirs	walking, cycling, informal recreation, nature	Maintain high quality	Scottish Water
3	Lennox Forest	walking, cycling, horse riding,	Enhance	FCS

		informal recreation, nature	provision, link to network	
4	Campsie Glen	walking, informal recreation, nature	Enhance provision	EDC
5	Barhill	walking, cycling, horse riding, informal recreation, nature, cultural heritage	Enhance provision, link to network	FCS?

Mugdock Country Park, while located in Stirling, is a significant Green Network asset for East Dunbartonshire. It attracts large visitor numbers from across the city region and is well connected to other Green Network assets and to adjacent communities by Strategic Access Routes. Mugdock offers a wide range of recreational opportunity and is managed to a high standard. While not an issue within the scope of the Green Network Strategy, continued investment, both in terms of staff and resources, will be crucial in continuing to meet high visitor expectations and the park's role within the Green Network.

Mugdock Reservoirs, Lennox Forest and Barrhill are owned and managed by third parties and will require further investigation and discussion to determine future management aspirations and whether these present an opportunity or ,potentially, a threat to their Green Network contribution.

The Council should seek to engage with Scottish Water and in particular, FCS, at the earliest opportunity to more fully understand the future restructuring of the woodland assets and what opportunities can be derived from those plans and operations.

Campsie Glen has been the subject of substantial investment over the years both for woodland expansion/habitat management and for access provision. However, the Right of Way identified as connecting Clachan of Campsie to Alnwick Bridge in reality only exists as a useable path as far as the Crow Road car park and waterfalls. While the lower section of path is well used it is suffering from lack of maintenance. The useable section of the Right of Way does act as an access point to the wider Campsie Fells via the tops of Lairs and Cort-ma-law, however, an opportunity exists to connect with a much greater area if access was improved to the Alnwick Bridge.

Currently, the vast majority of visits to Mugdock Reservoirs and Campsie Glen from out with the local authority area are likely to be by car. These assets should therefore be considered in the context of the Strategic Access Network to identify potent improvements in off-road access to the locations. Barrhill and Lennox Forest are likely to be used predominantly by local people with those who do visit from further afield likely to come by car. Further work is required to understand how both these assets can attract more non-local visitors and how they could get there without use of a car.

5 Strategically Important Habitat and Habitat Creation Opportunities

The analysis to inform the habitat aspects of the Green Network Strategy has two distinct strands.

The first strand uses East Dunbartonshire's Local Nature Conservation Sites as the starting point to understand the composition and quality of the network of protected sites.

The second strand uses a range of data to help understand the degree of habitat connectivity across 5 habitat types, where there are constraints to new habitat creation and key locations for habitat creation which would connect existing networks.

5.1 Local Nature Conservation Sites

Valuable wildlife sites in East Dunbartonshire which aren't of Site of Special Scientific Interest (SSSI) standard, or suitable for other statutory designations such as Local Nature Reserve or Country Park, are given the Local Development Plan designation Local Nature Conservation Sites (LNCS). This accords them a degree of protection and ensures they are a "material consideration" in the planning process.

EDC has recently undertaken a review of its Local Nature Conservation Sites (LNCS) including a qualitative assessment following the East Dunbartonshire LNCS Assessment methodology where sites can score between 19 and 0. This methodology is based on the SNH guidance *Establishing and Managing Local Nature Conservation Site Systems in Scotland* (2000). Sites are assessed and their value scored against six criteria: rarity of habitats; diversity of species; habitat naturalness; habitat extent and connectivity. Thresholds can then be applied to the scores to help inform decisions about management requirements and to help prioritise and target action effectively.

In discussion with the Council score thresholds were set which translate into broad management action categories. These are set out Table 4 and Figure 4 below.

Table 4 - Score banding for LNCS qualitative assessments

Score banding	Condition	Management
13+	Good condition	May need management to maintain condition
9-12	Moderate condition	Usually in need of management to improve condition
6-8	Poor condition	In need of management to improve condition
0-5	Fail	Review case for site designation

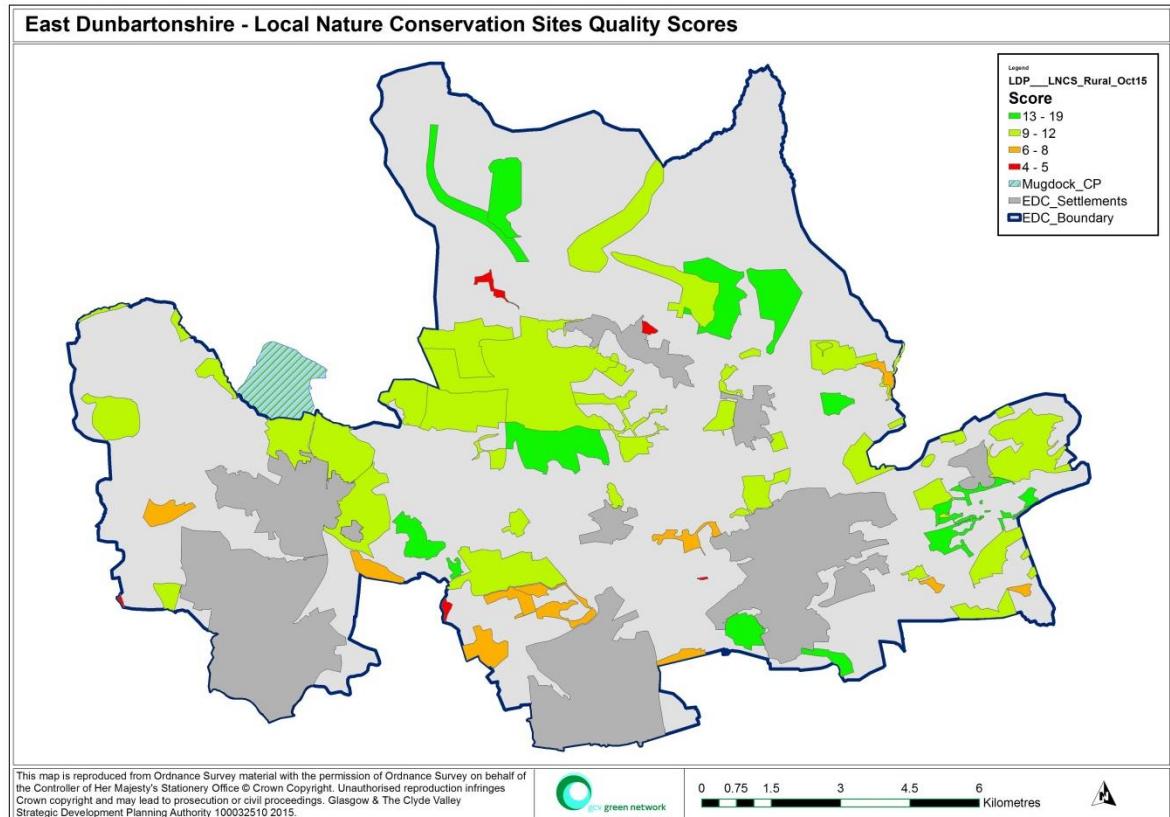


Figure 4- Local Nature Conservation Sites Grouped by Quality Scores

The accompanying Report to the qualitative assessments details which aspects of sites require enhancement and management and what specific management actions are required. This information should be used to inform a prioritised Action Plan. The Green Network Strategy should specifically recommend this as an action to be undertaken in the short term.

Appendix 1 sets out the sites which were surveyed and their qualitative score based on site assessments carried out in 2009 and 2015.

5.2 Habitat and networks

The Integrated Habitat Network Model can be an extremely useful tool in informing decisions about habitat protection, enhancement and creation however, it is generally acknowledged that data for some of the habitat types on which it is based is more robust than for others. Generally, the woodland data is good and the wetland and acid grassland data is reasonably robust although incomplete. Heathland data is likely to be under-recorded with neutral grassland data the poorest and much less robust or comprehensive.

For the purposes of this analysis, the IHN data has therefore been supplemented with EUNIS Landcover data which uses, where available, newer and better data sources and will form the basis of the next version of the IHN Model. The addition of the Scottish Detailed River Network to the IHN and EUNIS data gives a reasonably comprehensive understanding on which to make strategic level judgements about habitat connectivity and where the targeting of new habitat may yield the greatest returns in terms of reversing fragmentation.

Given the woodland and wetland data is reasonably complete and robust a methodology has been developed and applied to identify priority areas for new habitat creation for these two habitat types. The methodology has three stages:

Stage 1: Collate habitat and network data

Stage 2: Add constraints

Stage 3: Identify locations for new habitat creation which have the greatest potential to link existing networks

The data used in Stages 1 and 2 is detailed below:

Habitat and networks

- Integrated Habitat Network (IHN) Model outputs (SNH, 2013)
 - Woodland
 - Wetland
 - Heathland
 - Acid Grassland
 - Neutral grassland
- EUNIS Landcover data (SNH, 2015. This will be used as the basis for the next iteration of the Integrated Habitat Network Model outputs)
 - Grasslands and lands dominated by forbs, mosses or lichens
 - Heathland, scrub and tundra
 - Inland surface water
 - Mires, bogs and fens
 - Woodland, forest and other wooded land
- Scottish Detailed River Network (SEPA, 2014)

Constraints

- Carbon Rich Soils (James Hutton Institute, 2013)
- Land Capability – Agriculture (James Hutton Institute, 2013)

- EUNIS Landcover data
 - Regularly or recently cultivated agricultural land

Note: A 1km buffer was created around all data to ensure cross-boundary networks were captured.

Each of the three analytical stages for woodland and wetland is described in more detail below.

5.3 Woodland Creation Opportunities

Stage 1 - The IHN woodland data is generally of good quality and provides a sound basis on which to make strategic decisions about locations for new woodland planting. The first stage of the methodology for identifying woodland opportunities therefore uses the 2013 iteration of the IHN model to identify broadleaved woodland habitat and associated networks.

Figure 5 below shows the woodland habitat and networks.

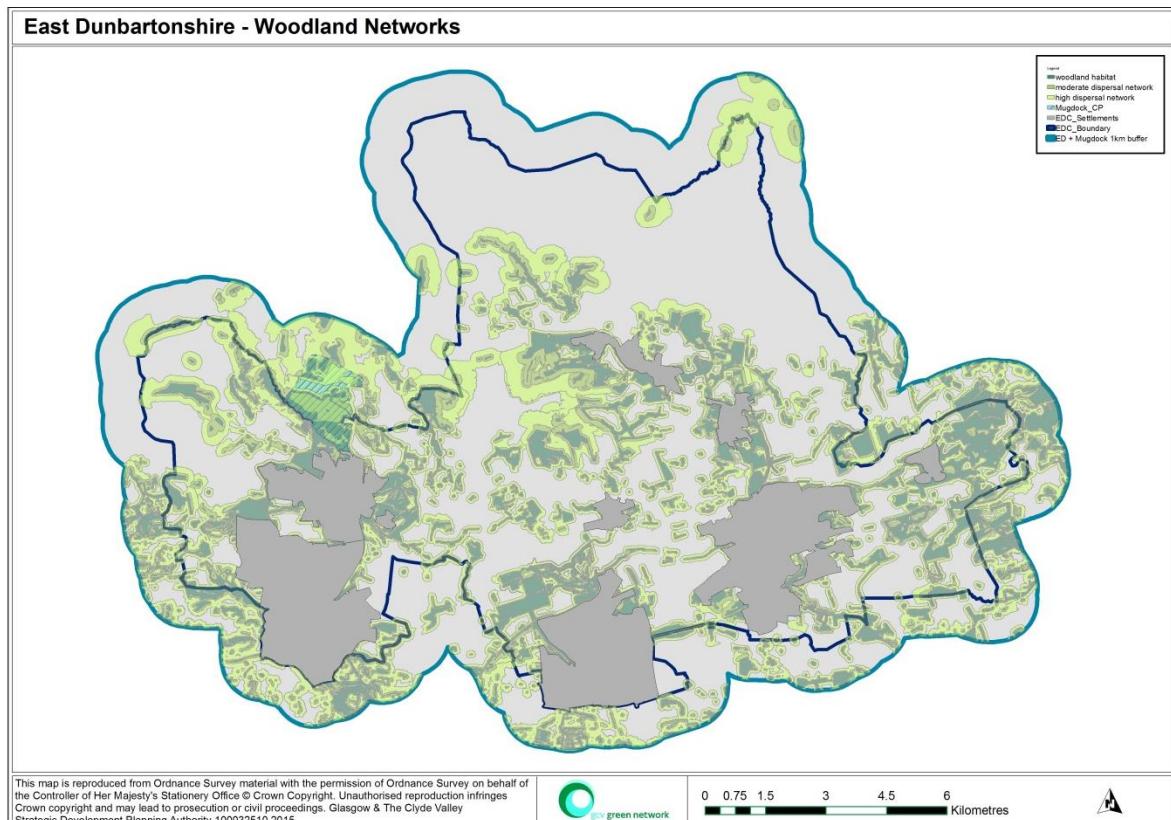


Figure 5 - ED Broadleaved Woodland Habitat and Networks

Stage 2 - For the purposes of the woodland analysis constraints were defined as areas where woodland physically can't be created e.g. open water, existing built areas, or areas where the existing land use makes woodland planting undesirable e.g. peatlands, high value agricultural land.

Figure 6 below shows woodland habitat and networks with constraints.

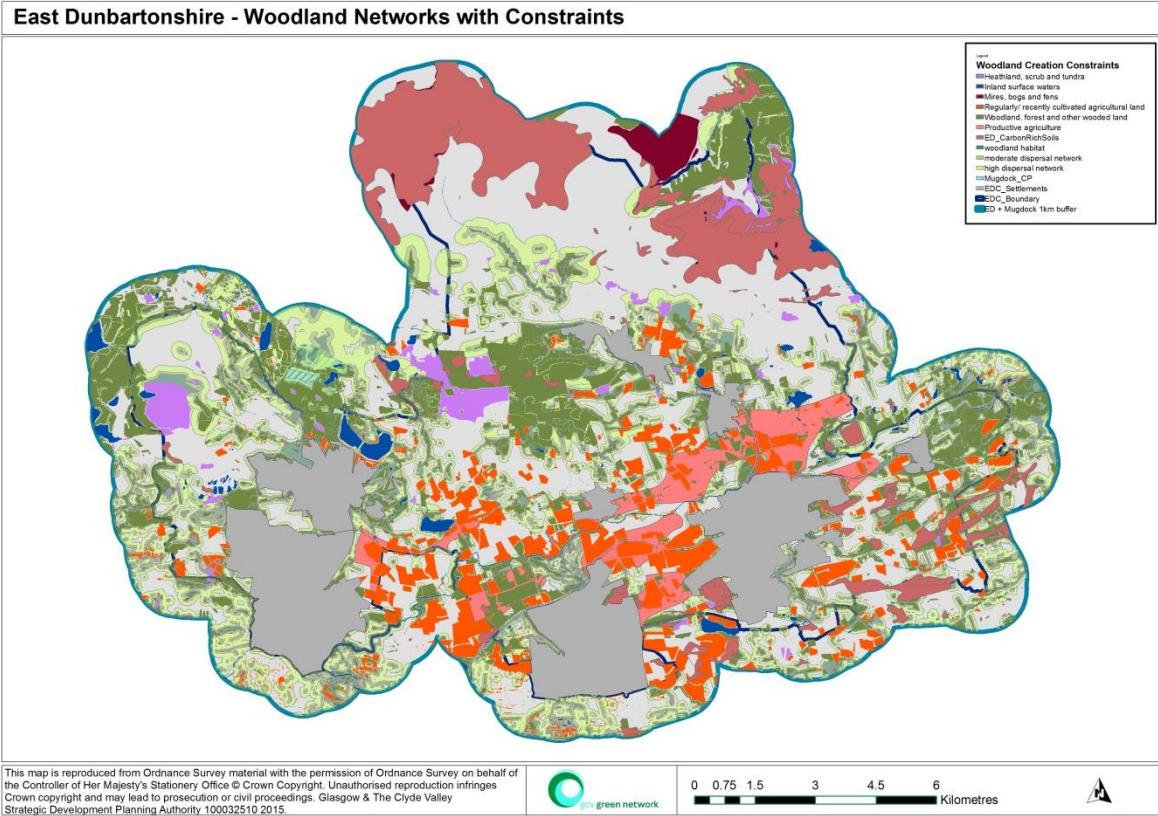


Figure 6 - ED Woodland Habitat and Networks with Constraints

Stage 3 - In the final stage the ENUIS dataset “Grasslands and land dominated by forbs, mosses and lichens” is added as an opportunity layer as these habitats are often of low quality rank grassland or abandoned agricultural land.

Note: That is not to say that some of these areas won't be valuable habitat in their own right and/or have valuable or protected species. Any habitat creation project should be subject to more detailed site surveys to check and safeguard against unintentional destruction of one habitat for another.

Figure 7 below shows the areas identified as opportunities for woodland creation based on the process described above.

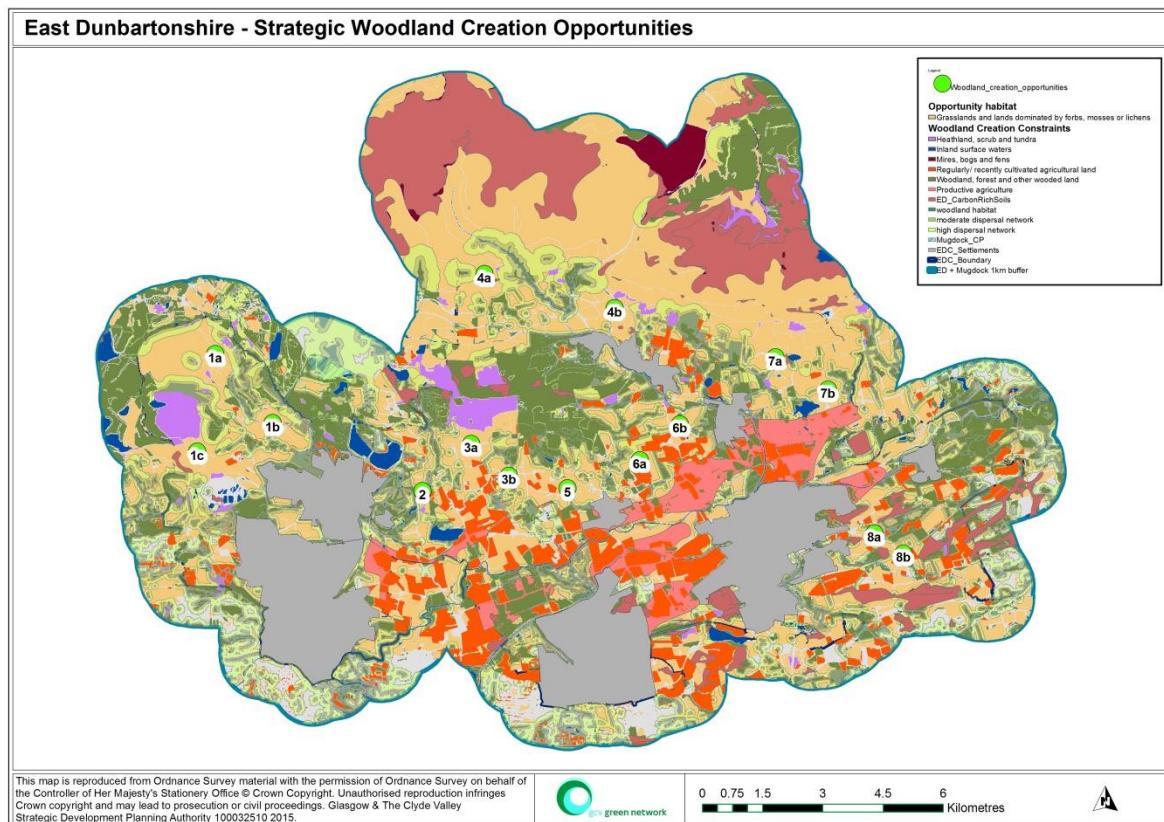


Figure 7 - ED Strategic Woodland Creation Opportunity Areas

The locations identified above as strategic opportunities for woodland creation were cross-referenced with the forthcoming GCV Forestry and Woodland Strategy (FWS) to ensure the two strategies were compatible. All the East Dunbartonshire locations identified fall within either “preferred” or “potential” areas for woodland creation as defined in the GCV FWS. These are set out in Table 5 below.

Table 5 - Woodland creation locations and GCV Forestry and Woodland Strategy Categories

Location	GCV FWS Category
1a	Potential
1b	Preferred
1c	Potential
2	Potential
3a	Preferred/potential
3b	Potential
4a	Potential
4b	Potential
5	Potential
6a	Potential
6b	Potential
7a	Preferred/potential
7b	Preferred
8a	Preferred
8b	Preferred/potential

5.4 Wetland Creation Opportunities

Stage 1 - The IHN wetland data is generally of reasonable quality although incomplete in places. When supplemented with wetland data from the EUNIS dataset and SEPA's Scottish Detailed River Network data, it provides a good basis on which to make strategic decisions about locations for wetland creation. The first stage of the methodology for identifying wetland opportunities therefore uses these three datasets to identify open water and wetland habitat and associated networks.

Figure 8 below shows the woodland habitat and networks.

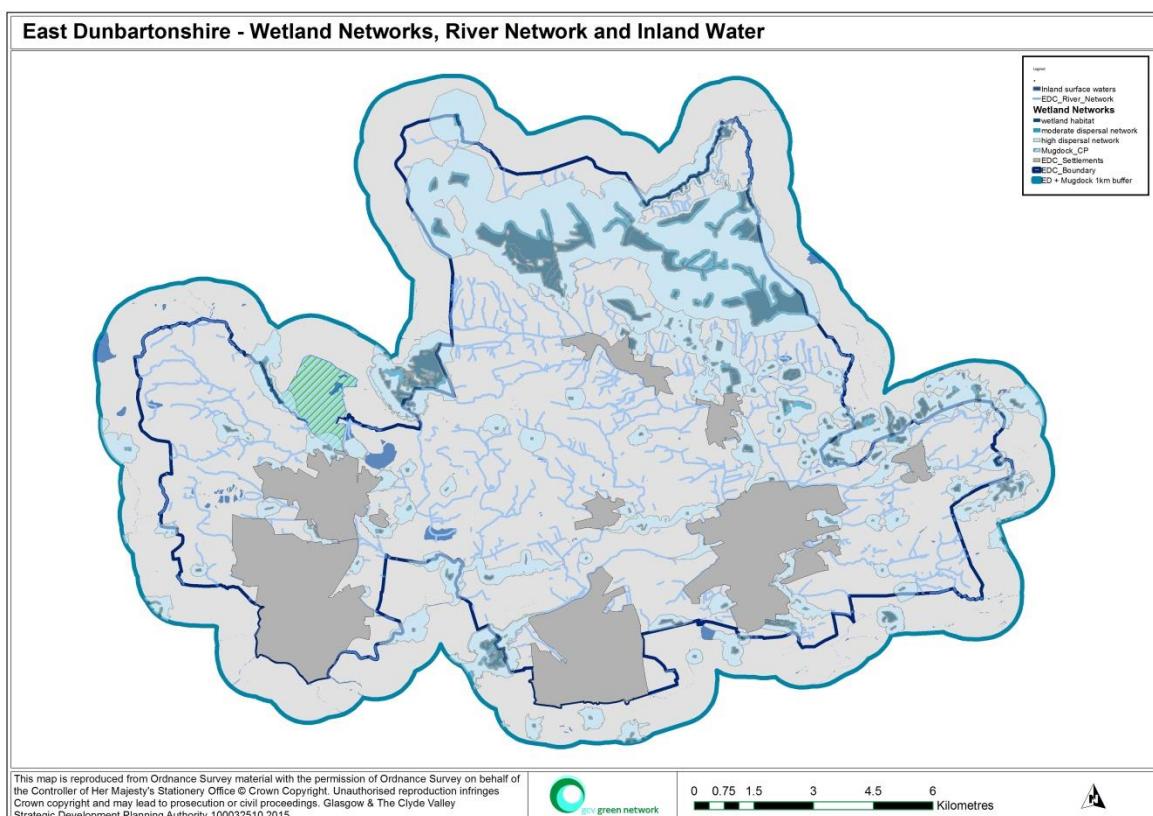


Figure 8 - Wetland Habitat and Networks

Stage 2 - For the purposes of the wetland analysis constraints are defined as areas where the existing land use makes wetland creation undesirable. The data used for the constraints layer was: high value agricultural land, regularly or recently cultivated agricultural land and woodland.

Figure 9 below shows open water and wetland habitat and networks with constraints.

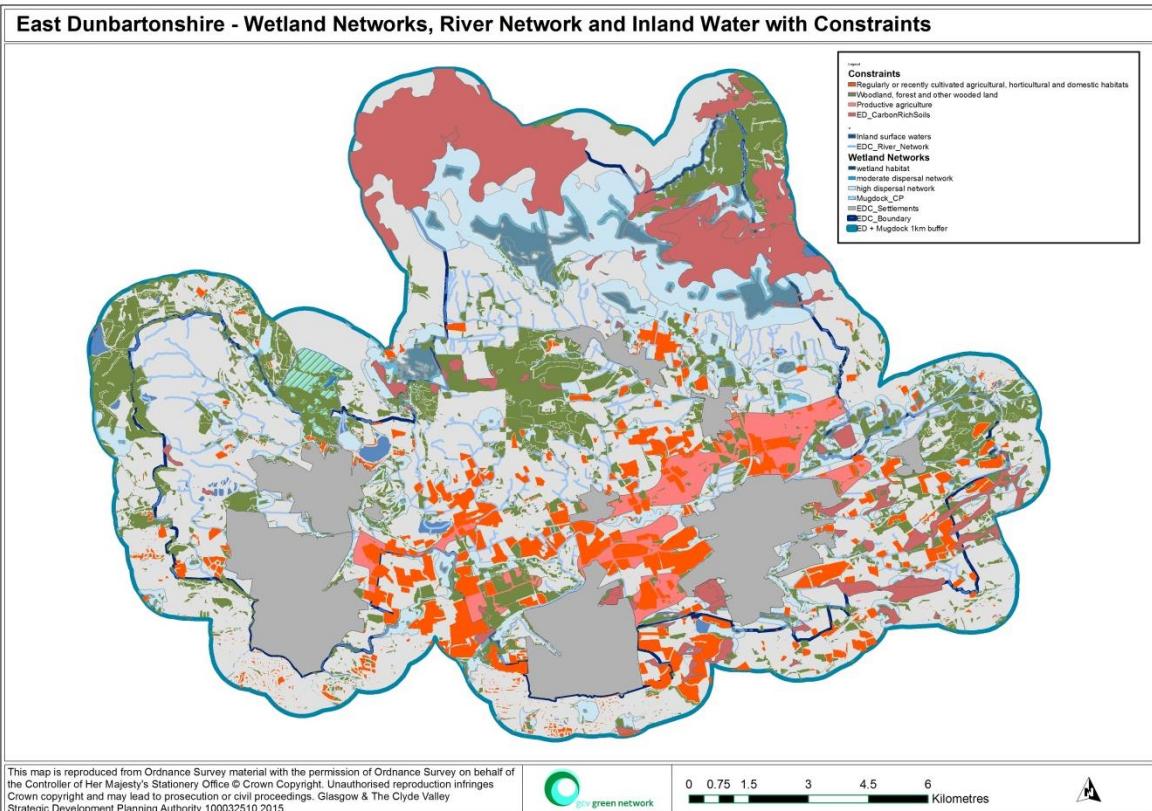


Figure 9 - ED Wetland Habitat and Networks with Constraints

Stage 3 - In the final stage the ENUIS dataset “Grasslands and land dominated by forbs, mosses and lichens” is added as an opportunity layer as these habitats are often of low quality rank grassland or abandoned agricultural land.

Note: As with woodland, that is not to say that some of these areas won't be valuable habitat in their own right and/or have valuable or protected species. Any habitat creation project should be subject to more detailed site surveys to check and safeguard against unintentional destruction of one habitat for another.

Figure 10 below shows the areas identified as opportunities for wetland creation based on the process described above.

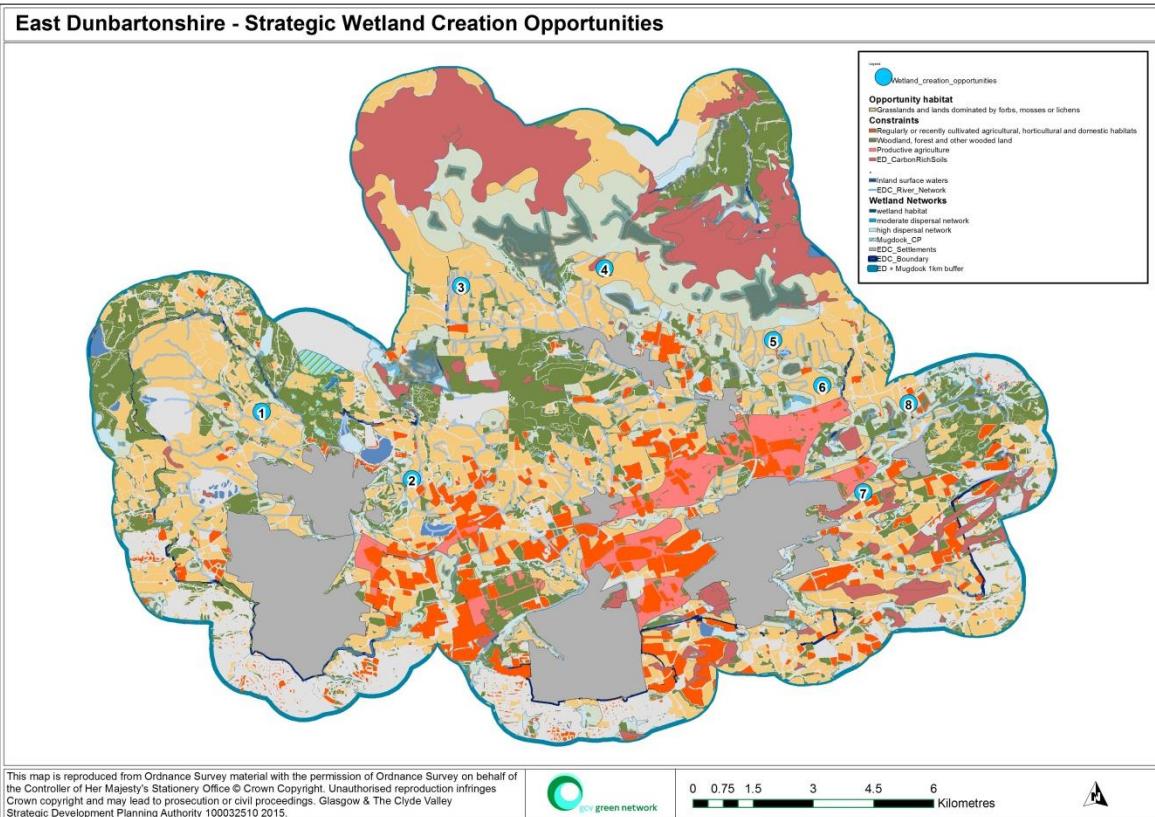


Figure 10 - ED Strategic Wetland Creation Opportunities

5.5 Heathland and Acid Grassland

The data for heathland and acid grassland is likely to be less robust than woodland and wetland data due to the age of the data and under-recording. In addition they differ from woodland and wetland in that they can't be readily recreated due to the specific ground requirements of the species which predominate the habitat types.

The priority for heathland and acid grassland should therefore be to protect existing habitat patches from further fragmentation and to manage them appropriately to enhance the quality of the habitat.

Figure 11 below shows the 2013 IHN data for heathland and acid grassland which should be used as a starting point for identifying habitats for protection and enhancement.

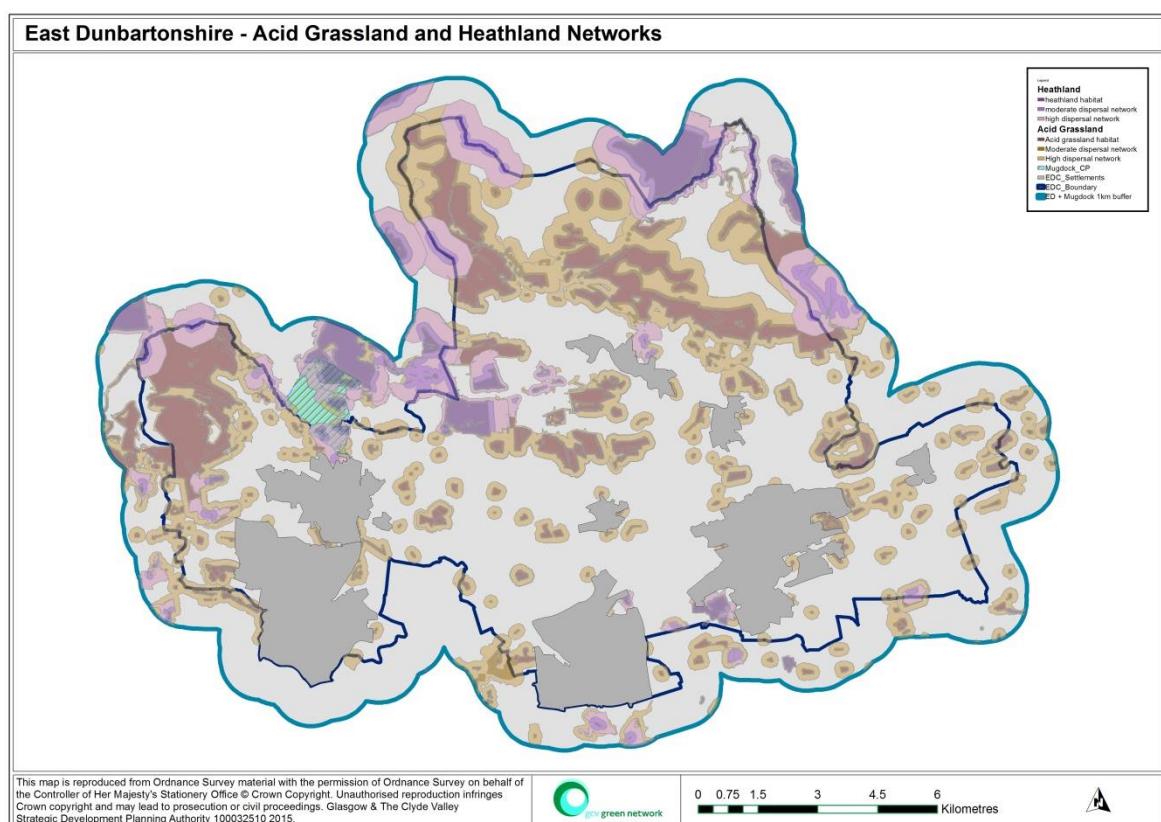


Figure 11 - Acid Grassland and Heathland Habitat and Networks

It's clear from Figure 11 that habitat fragmentation is a particular issue across the central swathe of East Dunbartonshire and this should be seen as a priority as habitat patches are likely to be under more pressure than those in upland areas.

5.6 Neutral Grassland

From the data it would seem that neutral grassland is extremely under-represented in East Dunbartonshire however, this is likely to be a function of the habitat being under-recorded rather than not present. The data as it exists is shown in Figure 12 below.

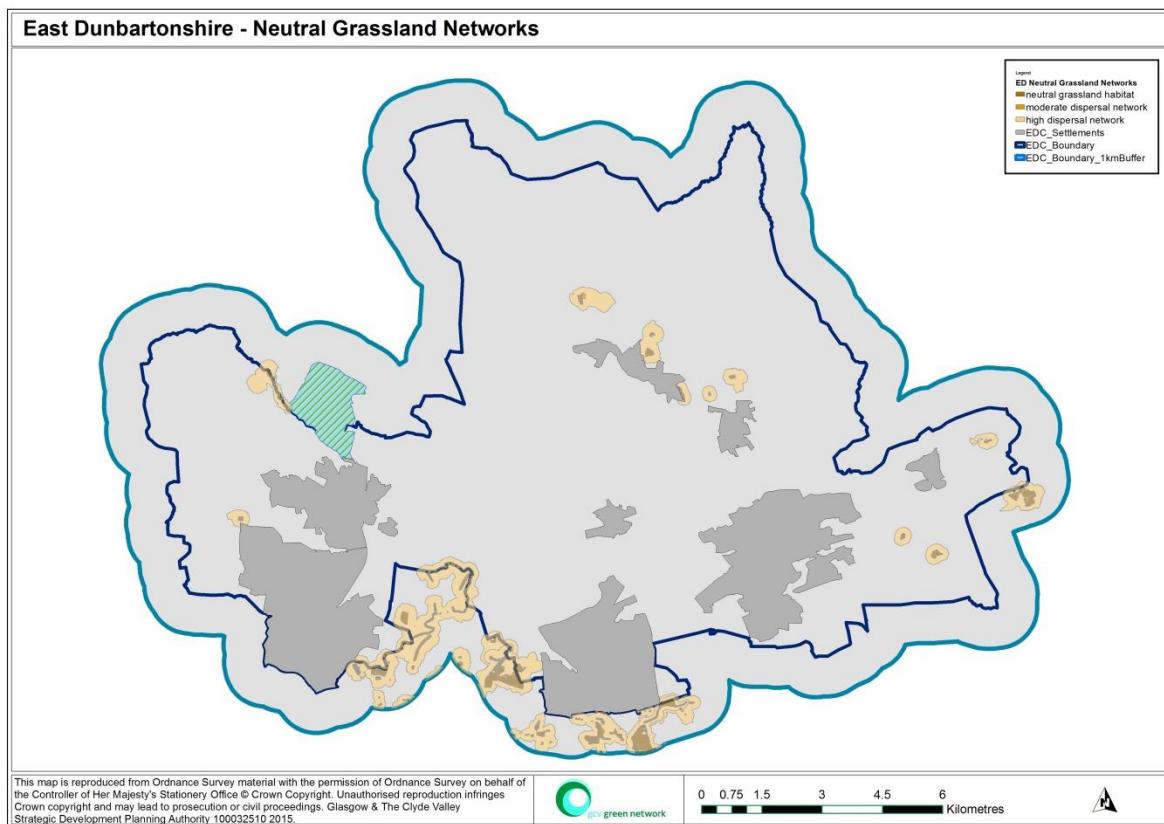


Figure 12 - Neutral Grassland Habitat and Networks

If informed decisions are to be made on the extent, connectivity and future creation and management of neutral grassland then survey works needs to be commissioned to get a much clearer and accurate picture of the current situation. The Green Network Strategy should therefore recommend Phase 1 surveying of selected areas across East Dunbartonshire. Areas which are likely to be under threat from agricultural practices, built development and encroachment from other habitats should be prioritised for surveying. In reality this is likely to mean a band of land running east/west across central East Dunbartonshire.

Appendix 1 – Local Nature Conservation Sites Quality Scores

Name	Habitat_type	Score
Meikle Revie	Grassland/Woodland/Wetland	15
Almeel Burn	Wetland/Grasland	15
Spouthead	Wetland/Grassland	15
Barraston Quarry Grasslands	Grassland/Woodland	15
Antermony Loch	Wetland/Open water	14
Easterton Moss Plantation	Woodland/Grassland	14
Gartshore Woods, Kennel Plantation, Heronyhill	Woodland/Grassland	14
Millersneuk Wetland	Wetland	14
Lenzie Moss	Wetland	14
Fin Glen	Grassland/Woodland	13
Bardowie Woodland	Woodland	13
Bardowie Loch and Wetland	Grassland/Woodland/Open Water	13
Castle Hill Grasslands	Grassland/Woodland	12
Woodburn	Wetland/Open Water	12
Woodburn Reservoir	Open water	12
Campsie Glen Golf course	Grassland	12
Craigmaddie and Mugdock Reservoirs	Woodland/Open water	12
Mugdock Woods and Drumclog	Woodland/Grassland	12
South Brae Marsh	Woodland/Grassland	12
Craigmaddie Plantation	Woodland	12
Barhill	Woodland	12
Gartshore Moss and Grayhill Woods	Woodland/Grassland	12
Waterside Bing	Woodland/Grassland	12
Easterton Woods	Woodland/Grassland	11
Bridgend Marshes	Grassland/Woodland/Wetland	11
Glen Orchard/Blairnile Wood	Woodland/Grassland	11
Twechar Marshes	Wetland	11
Manderston	Woodland/Wetland	11
Ashenwell dams	Woodland/Wetland	11
Campsie Glen	Woodland/Grassland	11
Craigmore Mire	Grassland	11
Auldmurroch Burn and Woods	Woodland	11
Finniescroft	Grassland/Woodland	11
Craigmaddie Muir/Craigend Muir/Blairskaith Muir	Heath/Grassland	11
Balmore Haughs	Agriculture	11
Barraston Grasslands	Grassland/Woodlands	10
Birdston	Woodland/Wetland	10
Dougalston Estate and Loch	Woodland/Open water	10
South east part of Hilton Park golf course	Woodland/Grassland	10
Alloch Dam & Mount Dam	Woodland/Open water	10
Blairskaith Quarry	Woodland/Grassland	10
Springfield Marsh	Agriculture	10
Barbeth Moss	Woodland/Grassland/Wetland	10
Carbeth Wood	Grassland/Woodland	9
Redmoss Grasslands	Grassland/Woodland	9
Lennox Forest	Woodland	9
Wilderness Woods West	Woodland	8
Wilderness Woods East	Woodland	8
Mains Plantation	Woodland	8
Buchley Sand Pit	Woodland/Grassland	8
Hayston Oxbows	Grassland/Open water	8
Waterside Flood Pool & Barbeth Pool	Wetland	8
Kierhill	Woodland	7
Cawder Golf Course Woods	Woodland/Grassland	7
Langbank	Agriculture	6
Cadder Yard	Woodland/Grassland/Wetland	6
Douglas Muir	Grassland/Heath/Open water	6
Hutcheson Hill	Woodland/Grassland	5
Buchley farm	Grassland/Woodland/Open Water	5
Lenzie	Grassland	5
Balgrochan Marsh	Wetland/Grassland	5
Craigbarnett	Woodland	4