
East Dunbartonshire geodiversity audit: 1 Introduction

The British Geological Survey (BGS) was commissioned by East Dunbartonshire Council (EDC) to carry out a review of sites of geological and geomorphological significance within the local authority area. The study has taken the form of a geodiversity audit to assist in future planning, development and conservation issues.

This work was undertaken during Spring 2009 and combined a desk-top review of published literature and records with new information collected from field visits carried out during March and April 2009. This report describes, illustrates and scores 36 sites in East Dunbartonshire of which 34 are recommended as Local Geodiversity Sites and together represent the geological diversity of the area.

In addition to this report the study has produced a GIS database containing key spatial and attribute information relating to each site, which has been provided to EDC.

1.1 Background

In its recent Local Plan, EDC identified a number of strategic aims for all services. One of these is enhancement of the quality of life and protection of the local environment. More specifically, the Council is dedicated to furthering the cause of geodiversity by protecting landscape features, in particular those geological features that are designated as Local Geodiversity Sites (formerly termed Regionally Important Geological and Geomorphological Sites or RIGS) and those protected in East Dunbartonshire's Greenspace Strategy.

Nationally designated sites such as SSSIs protect only a limited part of the area's geodiversity. With the aid of Scottish Natural Heritage (SNH), EDC wish to evaluate their Local Nature Conservation Sites (LNCS). These are non-statutory sites selected for their local geodiversity (LGS) or biodiversity and ecological importance (LBS or formerly SINCS). EDC also wish to explore the potential for enhancing the quality and quantity of their geological sites, particularly those of educational value. A survey of these sites will assist EDC with writing Local Plan 2 and form the basis of a Local Geodiversity Action Plan (LGAP).

1.2 Aims and objectives

The principal aim of the study is to identify a network of key sites across East Dunbartonshire, supported by formal assessment, which represent the diverse geology and geomorphology of the area.

To achieve these aims, the objectives of the study are as follows:

1. Undertake a review of existing sites of geological/geomorphological significance.
2. Identify additional sites to ensure as full a representation as practical of the geology and geomorphology in the area with a good geographical spread.
3. Recommend site boundaries and where appropriate make suggestions for the future management of the site, following assessment of the current site condition.
4. Establish the geodiversity value for each site, based on a series of criteria including scientific, educational, cultural and community merits.
5. Use assessment criteria suitable for repeatable, consistent valuation of the sites.
6. Provide information that will enable the integration of geology with the area's landscape, biodiversity, cultural and economic heritage.
7. Identify key geological sites which may be appropriate for conservation and/or enhancement with respect to education and public enjoyment.

1.3 Methodology

Three key stages:

1. Inception and desktop study (review of published literature and BGS archive records; identification of potential sites from various sources). See (Table 2) for list of potential sites.
2. Field-based study (assessment of potential sites to identify key representative localities; documentation/recording of principal features of geological/geomorphological significance).
3. Analysis, recommendations and reporting.

1.4 Structure of the report

Following the background and introduction to the study in chapter 1, chapter 2 describes the geology present in East Dunbartonshire, summarising the underlying bedrock (solid) geology and the overlying Quaternary (superficial) deposits. This information is based on the published geological maps of the area; BGS map sheets 30E (Glasgow) and 31W (Airdrie). Chapter 3 describes how the local geodiversity sites were selected and evaluated, the methodology for collection of the field data, and information on the scoring system used.

Chapter 4 provides detailed site assessments for each of the 35 individual sites visited, and forms the main part of the report. The information is presented as a set of pro-forma sheets containing information including:

- Location and general information
- Location map
- Summary description
- Access and safety
- Culture, heritage and economic
- Geoscientific merit
- Current site value
- Geodiversity value

Chapter 5 summarises information about the sites in two tables: (Table 7) brings together the scores given for Geoscientific merit, Community Value, Education Value and Cultural/Heritage/ Economic Value for each site. Added together these give a total score upon which an ultimate Geodiversity Value is based. (Table 8) highlights which geological units and features are visible at each site.

The appendices include a representative collection of photographs with descriptive captions illustrating and explaining the main geological features present at each site (Appendix 1). Other appendices contain typical descriptions of the different geological rock units which underlie East Dunbartonshire (Appendix 2); the SIGMA (System for Integrated Geoscience MApping) Mobile system used to digitally record data in the field (Appendix 3).

1.5 What is geodiversity?

Geodiversity has many definitions, but essentially describes the variety of rocks, minerals and fossils, landforms and landscapes, active geological processes and soils and subsoils (Quaternary deposits) of an area. It links people, places, rocks, soils, landforms, landscape and ecosystems, and the past through the present to the future.

All these elements interlink and together determine not only the character of our natural environment and where the range of local wildlife habitats have formed, but have influenced, for example, where mineral workings have taken place and the history of settlement in the area. Geology, as the foundations of our landscape, influences and links much of an area's local 'character'.

1.6 Why conserve geological features

Considering the impact of geology on our local landscapes and heritage, few geological and landscape features in Scotland have any protection other than those designated as SSSIs. Geodiversity is an important environmental asset but is one of the least recognised and appreciated.

The geodiversity of an area is vulnerable to a wide range of threats, quarries can be infilled, natural overgrowing by vegetation can completely obscure an exposure, features within an urban environment may be built over.

The general public, Local Authorities, industries and schools have for many years been made aware of the importance of conserving archaeological and wildlife sites for future generations; it equally important that geodiversity sites are understood, protected and explained to others.

[Bibliography](#)

Table 2							Table 2 (continued)							Table 2 (continued)										
No	Site	Eastng	Northng	Source of Information	Priority to visit	Notes	Geodiversity Site No.	No	Site	Eastng	Northng	Source of Information	Priority to visit	Notes	Geodiversity Site No.	No	Site	Eastng	Northng	Source of Information	Priority to visit	Notes	Geodiversity Site No.	
1	Priggen	NS 6930	8150	BOG map/memor P		Might need further investigation		21	Wester Castle Wester & Baley	NS 6420	7540	BOG map/memor P		Might need further investigation		41	East end of Lermonth	NS 640	270	Geostyle RGS			Matched with BOG site	
2	Cruggleton Quarry area	NS 5250	7690	BOG map/memor P			EDC 26	22	Harroch Farm, Glenwald, Glenapplegie area	NS 6050	7540	BOG map/memor P			EDC 12 EDC 25	42	Strathclyde Kilmarnock	NS 549	728	Geostyle RGS	P		EDC 5	
3	Maghwick Quarry	NS 6930	7690	BOG map/memor P			EDC 27	23	Finavon Hill	NS 3115	3885	BOG map/memor P			EDC 18	43	St Germans	NS 544	714	Geostyle RGS			Not priority site	
4	Maghwick Quarry	NS 3755	8655	BOG map/memor P			EDC 11	24	Burnside Farm, Craigholm	NS 4580	7730	BOG map/memor P			EDC 20	44	Lermonth	NS 623	768	Geostyle RGS			Matched with BOG site	
5	Maghwick Quarry	NS 3755	8655	BOG map/memor P			EDC 13	25	Strathclyde Quarry	NS 6575	7845	BOG map/memor P			EDC 21	45	Loch Ardning	NS 584	279	Geostyle RGS			Outside EDC	
6	Maghwick Quarry	NS 3755	8655	BOG map/memor P			EDC 25	26	Spittalhead Burn	NS 3285	3840	BOG map/memor P			EDC 22	46	Douglas Mill Quarry	NS 610	340	Geostyle RGS			Matched with BOG site	
7	Maghwick Quarry	NS 3755	8655	BOG map/memor P			EDC 14	27	Maghwick Quarry	NS 3105	3640	BOG map/memor P			Not priority site	47	Auld Mill Quarry	NS 543	764	Geostyle RGS			Matched with BOG site	
8	Maghwick Quarry	NS 3755	8655	BOG map/memor P			EDC 17	28	Old Quarry	NS 3285	3840	BOG map/memor P			Not priority site	48	Comrie Glen	NS 611	787	Geostyle RGS			Matched with BOG site	
9	Maghwick Quarry	NS 3755	8655	BOG map/memor P			EDC 23	29	Wester Quarry	NS 6740	7180	BOG map/memor P			EDC 4	49	Line of Balmuccie	NS 591	758	Geostyle RGS			Matched with BOG site	
10	Maghwick Quarry	NS 3755	8655	BOG map/memor P			EDC 9	30	Wester Quarry	NS 6950	6950	BOG map/memor P			Not priority site	50	Line of Balmuccie	NS 634	769	Geostyle RGS			Not priority site	
11	Maghwick Quarry	NS 3755	8655	BOG map/memor P			EDC 28	31	Wester Quarry	NS 3545	3805	BOG map/memor P			EDC 2	51	Lermonth	NS 599	888	Geostyle RGS			Outside EDC	
12	Maghwick Quarry	NS 3755	8655	BOG map/memor P			Not priority site	32	Wester Quarry	NS 3505	3785	BOG map/memor P			EDC 1	52	Mingosa waterworks	NS 657	760	Geostyle RGS			Matched with BOG site	
13	Maghwick Quarry	NS 3755	8655	BOG map/memor P			EDC 6	33	Wester Quarry	NS 3505	3785	BOG map/memor P			EDC 3	53	Wester Quarry	NS 710	799	Geostyle RGS			Matched with BOG site	
14	Maghwick Quarry	NS 3755	8655	BOG map/memor P			EDC 31	34	Wester Quarry	NS 3290	3840	BOG map/memor P			EDC 15	54	Wester Quarry	NS 595	752	Geostyle RGS			Matched with BOG site	
15	Maghwick Quarry	NS 3755	8655	BOG map/memor P			EDC 19	35	Wester Quarry	NS 3320	3750	BOG map/memor P			EDC 28	55	Wester Quarry	NS 710	799	Geostyle RGS			Matched with BOG site	
16	Maghwick Quarry	NS 3755	8655	BOG map/memor P			Not priority site	36	Wester Quarry	NS 3125	3675	BOG map/memor P			EDC 33	56	Wester Quarry	NS 592	798	Geostyle RGS			Not priority site	
17	Maghwick Quarry	NS 3755	8655	BOG map/memor P			Might need further investigation	37	Wester Quarry	NS 3090	3900	BOG map/memor P			EDC 32	57	Wester Quarry	NS 604	798	Geostyle RGS			Matched with BOG site	
18	Maghwick Quarry	NS 3755	8655	BOG map/memor P			Might need further investigation	38	Wester Quarry	NS 3150	3635	BOG map/memor P			EDC 5	58	Wester Quarry	NS 623	768	Geostyle RGS			Matched with BOG site	
19	Maghwick Quarry	NS 3755	8655	BOG map/memor P			EDC 16	39	Wester Quarry	NS 625	755	Geostyle RGS			Matched with BOG site	59	Wester Quarry	NS 623	768	Geostyle RGS			EDC 38	
20	Maghwick Quarry	NS 3755	8655	BOG map/memor P			Might need further investigation	40	Wester Quarry	NS 554	755	Geostyle RGS			EDC 7	60	Wester Quarry	NS 529	733	OS P			EDC 10	
								41	Wester Quarry	NS 554	755	Geostyle RGS			EDC 7	61	Wester Quarry	NS 549	721	OS P			EDC 29	

(Table 2) Initial list of potential geodiversity sites compiled from a variety of sources (see 3.1).

Table 7: Geological Scores For The Geodiversity Sites	Locality	Geoscientific Merit	Community Value	Education Value	Culture, Heritage & Economic Value	Total Score	Geodiversity Value	Local Geodiversity Site
Twechar Quarry	EDC 1	41	10	6	5	62	6	Yes
Castle Hill Quarry	EDC 2	22	10	4	16	52	5	Yes
Board Craig Quarry	EDC 3	22	8	4	4	38	3	Yes
Lenzie-Torphichen Dyke	EDC 4	29	9	6	3	47	4	Yes
Meltwater Channel	EDC 5	11	5	5	2	23	3	Yes
Bardowie Loch	EDC 6	12	9	5	4	30	3	Yes
R Kelvin Meanders	EDC 7	11	10	4	3	28	3	Yes
Kilmardinny Loch	EDC 8	10	10	5	3	28	3	Yes
Craigdhu Burn	EDC 9	0	10	2	2	14	0	No
Manse Burn SSSI	EDC 10	74	9	10	2	95	8	Yes
West Mugdock Quarry	EDC 11	24	9	4	6	43	4	Yes
Barraston Quarry	EDC 12	24	6	3	5	38	4	Yes
Blairskaithe Quarry	EDC 13	46	6	8	8	68	7	Yes
Auld Wives' Lifts	EDC 14	34	7	5	13	59	6	Yes
Gallow Hill	EDC 15	16	10	3	3	32	3	Yes
Finniescroft Wood	EDC 16	31	5	4	8	48	5	Yes
Pattie's Bught	EDC 17	30	5	5	9	49	5	Yes
Table 7: Geological Scores For The Geodiversity Sites	Locality	Geoscientific Merit	Community Value	Education Value	Culture, Heritage & Economic Value	Total Score	Geodiversity Value	Local Geodiversity Site
Crow Road	EDC 18	40	10	6	4	60	7	Yes
Campsie Glen	EDC 19	59	10	6	10	85	8	Yes
Cowies Glen	EDC 20	52	2	5	4	63	6	Yes
Burniebrae Burn	EDC 21	55	4	5	5	69	7	Yes
Spouthead Burn	EDC 22	25	3	4	3	35	4	Yes
Douglas Muir Quarry	EDC 23	37	2	6	7	52	6	Yes
Roman Baths	EDC 24	5	9	5	11	30	6	Yes
Linn of Baldernock	EDC 25	50	6	8	8	72	8	Yes
Craigangawn Quarry	EDC 26	31	5	7	6	49	6	Yes
East Mugdock Quarry	EDC 27	45	10	6	8	69	7	Yes
Baldernock Mill	EDC 28	45	6	6	7	64	6	Yes
Inchbelle Quarry	EDC 29	25	0	4	6	35	4	Yes
Craiglen Glen	EDC 30	27	9	5	8	49	5	Yes
Wilderness Plantation	EDC 31	32	5	6	7	50	6	Yes
Cawder Quarry	EDC 32	9	10	2	6	27	2	No
Bishopbriggs No2 Gravel Pit	EDC 33	43	5	2	5	55	5	Yes
Baldow Glen	EDC 34	45	8	3	6	62	6	Yes
Glenwynd	EDC 35	36	9	2	8	55	5	Yes
Torrance Meanders	EDC 36	11	3	5	11	30	3	Yes

(Table 7) Geological scores for the Geodiversity Sites.

Table 8: Geological Features Visible at Geodiversity Sites	Locality	Ballagan Formation	Clyde Plateau Volcanic Formation	Kirkwood Formation	Lawmuir Formation	Lower Limestone Formation	Limestone Coal Formation	Upper Limestone Formation	Passage Formation	Early Carboniferous Volcanic Plugs and Vents	Carboniferous to Early Permian Sills	Carboniferous to Early Permian Dykes	Geological Structures	Fossils and Palaeontology	Geomorphology	Quaternary Deposits/Feature	Economic Heritage	Built Heritage
Twechar Quarry	EDC 1							•			•		•				•	
Castle Hill Quarry	EDC 2										•						•	•
Board Craig Quarry	EDC 3										•				•			
Lenzie–Torphichen Dyke	EDC 4											•			•			
Meltwater Channel	EDC 5														•	•		
Bardowie Loch	EDC 6														•	•		
R Kelvin Meanders	EDC 7														•	•		
Kilmardinny Loch	EDC 8														•	•		
Craigdhu Burn	EDC 9																	
Manse Burn SSSI	EDC 10						•							•		•		
West Mugdock Quarry	EDC 11				•											•	•	
Barraston Quarry	EDC 12					•											•	
Blairskaith Quarry	EDC 13					•							•	•			•	•
Auld Wives' Lifts	EDC 14				•										•	•	•	•
Gallow Hill	EDC 15														•	•		
Finniescroft Wood	EDC 16					•								•			•	
Pattie's Bught	EDC 17				•									•			•	•
Crow Road	EDC 18		•												•	•		
Campsie Glen	EDC 19	•	•								•		•		•	•	•	
Cowies Glen	EDC 20					•		•					•	•		•	•	

Table 8: Geological Features Visible at Geodiversity Sites	Locality	Ballagan Formation	Clyde Plateau Volcanic Formation	Kirkwood Formation	Lawmuir Formation	Lower Limestone Formation	Limestone Coal Formation	Upper Limestone Formation	Passage Formation	Early Carboniferous Volcanic Plugs and Vents	Carboniferous to Early Permian Sills	Carboniferous to Early Permian Dykes	Geological Structures	Fossils and Palaeontology	Geomorphology	Quaternary Deposits/Feature	Economic Heritage	Built Heritage
Burniebrae Burn	EDC 21		•			•	•						•	•	•			
Spouthhead Burn	EDC 22	•				•						•			•			
Douglas Muir Quarry	EDC 23				•									•			•	
Roman Baths	EDC 24																	•
Linn of Baldernock	EDC 25				•						•			•	•		•	
Craigangawn Quarry	EDC 26		•							•					•		•	
East Mugdock Quarry	EDC 27				•						•		•	•	•		•	•
Baldernock Mill	EDC 28				•						•		•	•	•		•	•
Inchbelle Quarry	EDC 29														•	•	•	
Craigen Glen	EDC 30				•	•							•	•	•	•	•	
Wilderness Plantation	EDC 31														•	•	•	
Cawder Quarry	EDC 32															•	•	
Bishopbriggs No2 Gravel Pit	EDC 33													•	•	•	•	
Baldow Glen	EDC 34					•							•	•	•	•	•	
Glenwynd	EDC 35				•	•								•	•	•	•	
Torrance Meanders	EDC 36														•	•	•	

(Table 8) Geological features at the Geodiversity Sites.