



LEITRIM COUNTY DEVELOPMENT PLAN 2023 – 2029 – APPENDIX XII  
COUNTY LEITRIM GEOLOGICAL SITES



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**Leitrim County Council**



Theme Site No.	Site Name	IGH Theme - Primary	Principal Characteristics	Summary Description
IGH8	Aghagrania stream section	IGH8 Lower Carboniferous	Stream section	The site is geologically important as the type, or representative, section exemplifying the Meenymore Formation. The rocks succeed the Bricklieve Limestone Formation and represent a change in the broad environment at the time, related to a period of uplift.
IGH1	Arroo Mountain Caves	IGH1 Karst	Caves, karst landscape	The County Geological Site defined on Arroo Mountain includes a number of named potholes that have been explored and surveyed, such as Polldingdang, No Name Pot, Ramsons Pot, Waterfall Pot, Sulphur Pot and Sheepfold Cave, amongst others. There are also very numerous small, enclosed depressions (also called dolines or shake holes) without streams disappearing into them. These indicate the extensive karstification of the limestone below. Some exposed limestone pavement areas, which are sculpted into linear blocks of limestone, are also included.
IGH5	Benbo	IGH5 Precambrian	High temperature metamorphism, deformation	The paragneisses at Benbo contain numerous metabasite pods, and abundant intrusions of later veins of granite and granitic pegmatite cut the foliation / bedding of the paragneisses. The paragneisses display an intense tectonic foliation that reflects a history of extreme high-pressure and high-temperature metamorphism and deformation. The gneisses were derived from original quartz-feldspar sediments deposited after c. 1700 Ma.
IGH9	Bencroy	IGH9 Upper Carboniferous	Coal mining	This site contains the most extensive remains of 20th-century coal mining activity in County Leitrim, including adits, an opencast, waste heaps and screening plant. In addition, the presence of an outcrop of coal in the form of a 0.4 m+ thick seam overlain by a thick bed of sandstone is unusual and allows fuller appreciation of the geological setting.

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IGH8	Carrickbaun Quarry	IGH8 Lower Carboniferous	Arundian mudbanks	Carrickbaun is possibly the sole example remaining in Ireland of a quarry with accessible exposures of this rare Arundian Mudbank facies (rock unit). Owing to this, and despite relatively poor exposure, it is most deserving of County Geological Site status.
IGH3	Corry Shore	IGH3 Carboniferous to Pliocene Palaeontology	Palaeoecology	A detailed study in 2000 by James Buckman and Alastair Ruffell of that 10-15 cm thick bed which makes up the Carraun Shale Formation at Corry Shore showed it is an important palaeoecological resource. It represents a condensed deposit, with borings, encrusting organisms, reworked fossils and much biogenic reworking of the bed (animal burrows and trails). A condensed section occurs where clastic sedimentation rates are low during a marine transgression, resulting in preferential accumulation of the shells of fauna.
IGH1	County River Natural Bridge	IGH1 Karst	Natural karstic bridge	The County River Natural Bridge is a relatively rare feature that developed in response to karstification of the fine-grained limestone bedrock. Dissolution of bedrock led to the formation of an underground void or cave that formed part of the river channel. Continued dissolution followed by almost complete collapse of the walls and roof of the cave has resulted in the small remaining part of the roof forming a natural bridge over the river. In the immediate vicinity of the bridge, near-vertical limestone cliffs are the remains of the walls of the cave.
IGH15	Creevelea	IGH15 Economic Geology	Historical iron works	The local rocks in the immediate vicinity of the iron works site are part of the Dergvone Shale Formation. These shales include siderite (iron carbonate mineral) nodules which can be up to 60cm in diameter. The rocks are hard, but become loose from their host

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				<p>shales very easily, and can be found in streambeds. They were scavenged as iron ores from historical times, with iron working in the district dating back to the 16th century at least. Smelting was achieved using charcoal made from local forests, but these were exhausted by around 1770.</p> <p>The discovery of coal in the district provided a new fuel source and iron working at Creevelea began in around 1853 and lasted a few years.</p>
IGH1	Dough Mountain	IGH1 Karst	Caves, swallow holes, dolines, upland ribbed moraines, stream gullies	<p>Perhaps the most striking features across the mountain top are deep depressions on the western side, where karstic cavities underground in the limestone have opened up at surface, as a result of the ground above them sinking, and forming enclosed depressions (dolines). Some of these are up to 30 m across and 20 m deep, and some in turn have developed into swallow holes. Springs emerge from the mountain side in this general area also, and one of the depression features has become a vertical pothole shaft, at the base of which is a recently-explored cave, Polldough. This cave has a waterfall at its entrance, and is deep and dangerous, with the floor up to 50 m below the surface.</p> <p>Leitrim is one of the few localities in the world where upland ribbed moraines occur, and they are particularly well expressed on the southwestern side of Dough Mountain, in Boleyboy Townland.</p>
IGH7	Eagle's Rock	IGH7 Quaternary	Rock pillar, collapse	Eagle's Rock is a 330 m-high, free-standing rock pillar, a prominent, iconic feature in the U-shaped Glenade Valley. The valley was formed during the last ice age as a consequence of glaciation. On

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				either side of Eagle's Rock the valley walls are recessed owing to weathering under glacial conditions. Eagle's Rock formed after the glacier that occupied the valley had retreated. The glacier had provided support for the steep walls of the U-shaped valley but when it melted the lack of support led to localized collapse. Eagle's Rock is thus a former part of the valley wall that has broken away to become a free-standing pillar. Similar collapse features are visible at Peakadaw to the south, also a County Geological Site, and at Swiss Valley in Glencar.
IGH4	Finnalaghta Quarry	IGH4 Lower Palaeozoic	Greywackes	Finnalaghta Quarry is notable for two particular reasons. Firstly, it comprises the type of section for the Finnalaghta Formation, part of the Northern Belt of the Longford-Down inlier, and secondly it contains the type example of an unusual structural feature, termed a transected monocline. The Finnalaghta Formation comprises fine-medium-grained greywackes with minor intercalated shale horizons, deposited as turbidites. These are well exposed in the remaining quarry faces, particularly on the more accessible western side. The transected monocline comprises a monoclinal fold or flexure that is cut by the regional cleavage such that bedding is right-way up on both long limbs of the monocline but inverted on the intervening short limb.
IGH14	Fowley's Falls	IGH14 Fluvial and Lacustrine Geomorphology	Waterfalls	The outcrops along the Glenaniff River, between 1 and 2 kilometres west of Rossinver, expose a section through the Glencar Limestone Formation of the Lower Carboniferous succession, and its contact with the Benbulbin Shale Formation. The river has eroded the limestone to form a deep river gully and forms a spectacular torrent of water rushing through the steep valley towards Lough Melvin. These rocks, form a set of discrete cliffs, each several metres high,

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				and the river cascades over them to form a series of cliffed waterfalls
IGH8	Glenade Cliffs	IGH8 Lower Carboniferous	Cliffs, scree slopes, stratigraphy	The Glenade Cliffs are 220 m to 250 m high limestone cliffs, which are prominent, iconic features at the northern end of the U-shaped Glenade Valley. The valley was formed during the last ice age as a consequence of glaciation. The cliffs emerged after the glacier that occupied the valley had retreated. The glacier had provided support for the steep walls of the U-shaped valley but when it melted the lack of support led to some localized collapse. Extensive accumulations of land slipped boulder and cobble-sized blocks of Dartry Limestone have fallen off the escarpment in parts of this section of the north western side of Glenade. They have either dropped in steps on the underlying Glencar Limestone Formation or rolled on the Benbulbin Shale Formation below that.
IGH1	Glenboy Cave	IGH1 Karst	Cave, river gorge	Glenboy cave is a 37 m-long remnant of what was formerly a more extensive cave system, but which, through erosion and collapse, has largely developed into a shallow river gorge. The river passes over dipping beds in a waterfall a short distance south of the cave, then flows in a shallow, rock-walled gorge for about 100 m, before entering a triangular cave mouth nearly 8 m wide by 3.5 m high. From the entrance the cave exit downstream can be seen. At the downstream cave mouth, it is clear that the water actually flows eastward into a shallow pool to continue as the river, by-passing the cave mouth.
IGH7	Glencar Waterfall	IGH7 Quaternary	Waterfalls	The Glencar Valley is a fine example of glacial erosion, where accumulated ice has scoured out a deep valley, with steep, cliffed sidewalls. The waterfall along the edge of the valley flows over

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				alternating layers of shale and limestone, and the interbedded rock types are clearly seen in the rock behind the waterfall. As the water in the waterfall is highly calcareous, a tufa curtain has formed across a portion of the waterfall area. Tufa is usually formed via the precipitation of calcium carbonate and is spongy or porous in nature. The tufa curtain is vegetated, with much of the vegetation calcified.
IGH1	Good Friday Cave	IGH1 Karst	Cave	Good Friday Cave is formed within the Dartry Limestone Formation, which is relatively free of chert beds and nodules, compared to the underlying Glencar Limestone Formation. Hence Good Friday Cave is a near horizontal stream cave, unusual compared to most Leitrim caves which are primarily vertical potholes. The cave was discovered in 1990, but not surveyed until 2017. The entrance is a very narrow slot beside the Sriff River, and the cave passes underneath the river. It ends in a sump upstream, and there are fine calcite formations (stalactites and flowstone) in the inner sections. The water in the cave is assumed to come from Sriff Swallett, which is a swallow hole where water sinks underground less than 150 m away from the sump end of the cave.
IGH8 Lower Carboniferous	Keshcarrigan Quarries	IGH8 Lower Carboniferous	Limestone quarry	Some steeply-dipping limestone beds, as well as intensely folded and almost vertical beds of limestone, are seen throughout both quarries set into Carrick Hill, at the western end of Keshcarrigan Village. These quarries provide a deep window into the limestone bedrock which is normally only exposed at the surface in a few localities in mid- to south County Leitrim. Thick and massive beds are visible across the quarries. Some of the western faces in particular, but also faces elsewhere in the quarries, display some

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				karstic solution, with caves, pipes and clay-filled cavities, as well as walls of narrow fissures lined by brown-stained calcite.
IGH9 Upper Carboniferous	Lackagh Sandstone Quarry	IGH9 Upper Carboniferous	Sandstone quarry	The Lackagh Sandstone Formation comprises interbedded sandstones, siltstones and mudstones overlain by thick-bedded channel sandstone units that include coal-bearing cyclothem. The hard channel sandstones have resisted erosion to form the summits of the flat-topped hills that surround Lough Allen: Sliabh an Iarainn (Slieve Anierin), Kilronan, Corry Mountain and the Lackagh Hills. The variably-coloured sandstones (white, cream, yellow, brown) have long been quarried for use as building stones and, in more recent years, as decorative pebbles and building sand.
IGH7 Quaternary	Largy - Gorteenaguinnell	IGH7 Quaternary	Enclosed depressions, plateau karst	Largy – Gorteenaguinnell is the most extensive field of enclosed depressions formed on plateau karst in Ireland. As well as this, the site area has probably the densest and most extensive development of enclosed depressions, or dolines, and pothole type shafts in the country. The numerous potholes mapped by cavers are known, but there are countless more shallow dolines that do not lead into potholes and which were not mapped until recently. The plateau has a fairly flat and featureless terrain so locating these features was not easy before the advent of Global Positioning Systems.
IGH8 Lower Carboniferous	Larkfield and Meenymore	IGH8 Lower Carboniferous	Stream gullies	Geologically, the site is a good representative section of the stratigraphy of the Lough Allen area, and specifically the Leitrim Group. The stratigraphy exposed in the streams effectively starts with the Dergvone Shale Formation, although the Bellavalley Formation and Carraun Shale Formation are present beneath the lower section of the streams. There is a lower Lagoon Flagstone



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				Member to the Briscloonagh Sandstone Formation and the type section for the main formation is in the Larkfield stream, where 59m is exposed. Above this the Gowlaun Shale Formation is exposed and ascending onto the plateau from the steep stream gorges, the Lackagh Sandstone Formation is present but poorly exposed.
IGH8 Lower Carboniferous	Leitrim Coast	IGH8 Lower Carboniferous	Foreshore, bedrock platform	The central part of the four km-long Leitrim coastline, along with Mullaghmore Head itself, forms the type of area for the Mullaghmore Sandstone Formation. This area northwest of the Ox Mountains was the last in Ireland to be inundated by the Carboniferous marine transgression. The early phase of limestone deposition was followed by a sudden influx of mud leading to development of a delta complex fed by rivers flowing from the north. The early mud deposition is represented by the Bundoran Shale Formation to the northeast of the site, and this was followed by the Mullaghmore Sandstone Formation, comprising cyclic units of siltstones and shales topped by thick channel sandstones.
IGH7 Quaternary	Lough Rinn Drumlins	IGH7 Quaternary	Drumlins	<p>The drumlin field is not only unusual in its small size and 'discreteness' but is unusual in that the drumlins are spindle-shaped i.e. they are long and narrow, circular in the middle, and have tapering ends.</p> <p>The features are generally 500m to 1km long and 300m to 400m or so wide. They attain a maximum height of about 30m but are typically 20m or so high.</p>
IGH8 Lower Carboniferous	O'Donnell's Rock	IGH8 Lower Carboniferous	Limestone escarpment	The O'Donnell's Rock site has a trackway through old broadleaf forestry, which climbs slowly along an escarpment, with a cliff rockface at the top. Exposures alongside the track and in small

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				quarries and natural cliff faces, especially at the top of the cliff, give a very good representation of the Glencar Limestone Formation, which is a dominant feature in the shaping of Leitrim's landforms. Exposure of the underlying Mullaghmore Sandstone and Benbulbin Shale Formations is poor, but the top of the plateau and an extension of the site to the south includes representation of the overlying Dartry Limestone Formation, also very significant in Leitrim's upland karst landscapes.
IGH1 Karst	Peakadaw landslips	IGH1 Karst	Landslips	<p>Large land slipped blocks of Dartry Limestone Formation have foundered along the escarpment on this section of the southwestern side of Glenade. They have dropped in steps, either on the underlying Glencar Limestone Formation, or on the Benbulbin Shale Formation below that. The blocks show little rotational movement and thus comprise a series of platforms that have 'stepped down' along the side of the valley. The exception to this is towards the outer, downslope blocks, which have some tilt of the normally flat lying limestone beds.</p> <p>As with the Swiss Valley in Glencar and Eagle's Rock further northwest in Glenade, these landslips probably occurred soon after the glaciers in the Glenade and Glencar valleys melted away around 14,000 years ago.</p>
IGH7 Quaternary	Poll na mBéar	IGH7 Quaternary	Caves, bears, macrofauna	Poll na mBéar was investigated by cavers in 1997 and descending a 6 m deep pitch, they discovered a small chamber 3 m high and 15 m long. This, and other small caves nearby, are likely to have formed under much different hydrogeological regimes prior to the last Ice Age. Valley glaciation during this time probably truncated the underground drainage. The chamber was strewn with numerous

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				bones, which upon excavation by a team including experts from the National Museum of Ireland, the Ulster Museum and Marble Arch Caves, were found to be those of brown bears. As well as well-preserved adult bones, there was a good number of very juvenile bones. Palaeoenvironmental analysis suggests that the cave was a bear nursery, where sadly the juvenile bears were unable to make the climb out, and perished in the den. The bear remains have been dated to the Middle Neolithic (4520 ± 37 BP).
IGH1 Karst	Polticoghlan	IGH1 Karst	Cave	<p>Geologically, the cave is formed on the boundary of impermeable rocks (shales) forming the upland area and the permeable limestone rocks in the lower ground. The stream largely sinks underground into Polticoghlan along a rift opening at the end of a short rocky gorge.</p> <p>The cave has a very large chamber, around 40 m across, with outlet passages, but a further chamber beside it leads downward into a large rift passage which descends, giving a total depth of about 67 m below the surface. The water in the cave rises again at Aghacashel around 1.6 km away to the southeast.</p>
IGH9	Stony River	IGH9 Upper Carboniferous	Cliff exposures, stratigraphy	The Stony River contains a near-continuous exposure of the stratigraphic sequence from the Dergvone Shale Formation to the top of the Gowlaun Shale Formation, just below the overlying Lackagh Sandstone Formation. Excellent exposures of near horizontally-bedded, fossiliferous marine shales have provided an unbroken sequence of faunas comprising mainly goniatites and lamellibranchs.

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IGH1	Teampall Shetric	IGH1 Karst	Caves	Teampall Shetric is one of the larger caves in the Glencar area, with a surveyed length of 1,090 m, and a depth of 63.5 m. It originally carried water from sinks in the Gorteenaguinnell area to the northwest, but these were altered by the glacial downcutting of Glencar. A new stream sinking into the cave from the impermeable rocks of the Meenymore Formation to the north then reactivated it, leaving a dry valley, where the previous cavern was, below the current entrance. New explorations in 2013 revealed much more cave passage than was previously known and provided an accurate survey.
IGH1	The Doons	IGH1 Karst	Karst towers	The Doons are isolated, steep-sided limestone hills that are interpreted as relict, glacially-modified tower karst. They are considered to be the best example of a group of such hills in Ireland, with better exposure and less blanketing glacial sediments than in some other comparable sites. Originally, prior to glacial modification, they may have been similar to the classic tower karst of the Guilin area in China. Whilst the western tower of the main pair is heavily forested by Coillte, and surface features are currently obscured, the open grazing of the eastern tower has revealed features on the flat hilltop that have been interpreted by archaeologists as a hillfort.
IGH9 Upper Carboniferous	Thur Mountain	IGH9 Upper Carboniferous	Gullies, stratigraphy	Although Thur Mountain itself owes its elevation and form largely to the underlying bedrock, this is mostly invisible, having been blanketed by thick Quaternary deposits, left during and since the Ice Age. Excellent exposures into the bedrock are seen in stream gullies, however, which cut through the Quaternary deposits and actually incise the bedrock beneath these also. Exposure is also present on the crest of Thur Mountain itself, both naturally at the summit, and



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				in a number of small quarries. Geologically, the exposures are good representative sections of the stratigraphy of the Lough Allen area, and specifically the Leitrim Group. The stratigraphy exposed in the streams effectively starts with the Dergvone Shale Formation and ends with the Briscloonagh Sandstone Formation.
IGH7	Truskmore	IGH7 Quaternary	Rock weathering, periglacial features	Remnant periglacial features flank the sandstone plateau on Truskmore, and include sorted nets of stones, stone-banked terraces, stone stripes, and a bedrock terrace with an associated debris fan. Sorted nets displaying a fish-net-tights-pattern are exposed close to the summit, and are seen as vegetated centres with stone borders and exhibit varying diameter sizes from approximately 1 m to 5 m. They probably formed due to frost sorting and heave. The stone borders, consisting of stones of the Glenade Sandstone Formation ranging in size from pebble to boulder, are quite angular, indicating that they have not travelled far from their source.
IGH15	Twigspark	IGH15 Economic Geology	Silver mines	Two silver mines are recorded on the old six inch maps (1837-1842) in the townlands of Twigspark and Barrackpark but Twigspark is primarily known as a lead mine that was in operation for several years in the 1840s. Renewed exploration in the early 1950s, involving the digging of several pits and trenches, as well as drilling, demonstrated the occurrence of low-grade patchy zinc and lead mineralization in dolomitized limestone, apparently associated with jointing and faulting. Minor copper has also been recorded here.
IGH1 & IGH7	Glenade and Glencar Valleys	IGH 1 Karst, IGH7 Quaternary	Upland Karst Landscape	The Glenade and Glencar Valleys are deep and wide glacial valleys, while the uplands flanking the valleys are some of the best areas in Ireland to see upland karst features, including potholes, shafts,

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				caves, enclosed depressions and limestone pavement. The significance of the 'upland karst landscape' is heightened by the number and complexity of karst features in a relatively small area.