

Theme Site No.	Site Name	County	Sheet No. 6 inch	Sheet No. 1:50,000	Easting	Northing	Principal characteristics Critical feature(s) key words	Townland(s)/district	Ex-ASI site?	Summary description	Definite CGS	NHA?	Definite NHA	Key references	IGH Theme - Primary	IGH Theme - Secondary	IGH Theme- Tertiary
IGH2	Glen Lodge Stream	Longford	9	34	622940E	782310N	The sole exposure of late Silurian age sedimentary rocks in the Longford-Down zone	Kiltyclogh, Aghaward		This site is unique in Ireland as it is the sole exposure of late Silurian age sedimentary rocks in the Longford-Down zone of rocks. A fault bound section of rocks in the stream section bounding Kiltyclogh Townland has yielded an assemblage of microfossils which provides definite evidence of some of the youngest Silurian rocks in Ireland. These rocks represent slivers of the ocean floor stacked together in fault bound blocks, exposed from Longford through County Down and through the Southern Uplands of Scotland. They tell part of the story of the closure of the Iapetus Ocean in the Ordovician and Silurian Periods and the amalgamation of two 'halves' of Ireland. The microfossils were of several different types but the spores were diagnostic of age, being comparable to Ludlow age ones from Wales.			NHA	MORRIS, J.H. 1983. The Stratigraphy of the Lower Palaeozoic Rocks in the western end of the Longford Down Inlier, Ireland. Journal of Earth Sciences of the Royal Dublin Society 5, 201-218.	IGH 2 Precambrian to Devonian Palaeontology	IGH4 Cambrian-Silurian	
IGH3	Ardagullion Quarry	Longford	15	41	630480E	776730N	Carboniferous limestone quarry with Lucan Formation (Calp)	Ardagullion / Granard	Longford #5	This disused quarry exposes over 17m thickness of dark grey thinly-bedded cherty, laminated limestones and thick beds of laminated limestone, some of which show slumping. Recorded details of the detailed sedimentology of these beds indicate they were formed on the margin of the deep sea basin that existed eastward. This basin was filled in the Dublin region by the Lucan Formation limestones, which extended this far west. There are microfossils found here that indicate the limestone beds are of an early-mid Viséan age from the Arundian, of the Irish Carboniferous stratigraphy.	CGS			MORRIS, J.H., SOMERVILLE, I. and MacDERMOT, C.V. 2003. Geology of Longford-Roscommon. Bedrock Geology 1:100,000 Map Series, Sheet 12, Longford-Roscommon. Geological Survey of Ireland.	IGH8 Lower Carboniferous	IGH 3 Carboniferous to Pliocene Palaeontology	
IGH3	Carrickboy Quarry	Longford	19, 23	41	621350E	764400N (new quarry)	Waulsortian limestone older quarry rich in fossils, new quarry with filled dolines	Carrickboy, Tennalough		Bedrock comprises massive and bedded Waulsortian limestone and shale. The fossiliferous deepwater limestones and shales formed topographic highs (reefs) on the Carboniferous seafloor around 340 million years ago. Three main banks of rocks have been described in the old quarry. Fossils are relatively abundant throughout, with several limestone beds are rich in crinoid fossils. Blastoids, an extinct type of stemmed echinoderm ( <i>Ellipticoblastus ellipticus</i> ) occur in shales near the top of the reef exposed at the older Carrickboy Quarry. The type specimen of an extinct genus of mollusc, <i>Conocardium inflatum</i> , was described at the old quarry at Carrickboy. The northeast face of the new quarry exhibits two dolines, which would have been plugged with glacial till. Much of the unconsolidated debris has since collapsed into the quarry and quarry lake-floor as the doline walls were removed.	CGS			WATERS, J.A. and SEVASTOPULO, G.D. 1984. The Stratigraphical Distribution and Palaeoecology of Irish Lower Carboniferous Blastoids, Irish Journal of Earth Sciences, Vol. 6, No. 2, pp. 137-154 LEES, A. 1964. The structure and origin of the Waulsortian (Lower Carboniferous) 'reefs' of west-central Eire. Philosophical Transactions of the Royal Society London 247B, 483-531.	IGH8 Lower Carboniferous	IGH 3 Carboniferous to Pliocene Palaeontology	
IGH3	Mullawornia Quarry	Longford	22, 26	41	613000E	759040N	Waulsortian carbonate mudmound with nautiloids used for bathymetry	Mullawornia / Ballymahon		Massive and bedded limestone of Waulsortian carbonate, fossiliferous mudmounds that formed on the seafloor around 340 million years ago. Waulsortian carbonate mud banks occupied large areas of Ireland in the Lower Carboniferous (358-323 Ma). The quarry is excavated in a large, elongate, knoll-form bank. Stromatactid cavities and sheet spars are well represented in the quarry rocks. Fossilised nautiloids identified at Mullawornia have provided an independent means of accessing the bathymetry and depth of formation of carbonate mudmounds, compared to conventional sedimentological studies. The results of these palaeontological studies indicate sea water depths of 65m-170m at the time the mounds were formed.	CGS			HISTON, K. and SEVASTOPULO, G.D. 1993. Carboniferous nautiloids and the bathymetry of Waulsortian limestones in Ireland. Proceedings of the Geologists' Association 102, 149-154. LEES, A. 1964. The structure and origin of the Waulsortian (Lower Carboniferous) 'reefs' of west-central Eire. Philosophical Transactions of the Royal Society London 247B, 483-531. LEES, A. 1994. Are There Tabular-Form Waulsortian Banks in the Dublin Basin?. Irish Journal of Earth Sciences, 13, 49-57. SOMERVILLE, I. D. 2003. Review of Irish Lower Carboniferous (Mississippian) mud-mounds: depositional setting, biota, facies and evolution. In: Permo-Carboniferous Carbonate Platforms and Reefs (eds Ahr, W., Harris, A.P., Morgan, W.A. and Somerville, I.D.). Society for Economic Paleontologists and Mineralogists, Special	IGH 8 Lower Carboniferous	IGH 3 Carboniferous to Pliocene Palaeontology	
IGH4	Drumlish Quarry	Longford	5	34	619340E	787250N	Ordovician greywacke rocks, part of the Northern Belt in Longford-Down Terrane	Lettergullion, Lettergeeragh / Drumlish		This is a good representative site for the Ordovician greywacke rocks comprising the south western end of the Longford-Down inlier. Structurally this is a part of the Northern Belt, the most northerly of three main belts of ocean floor rocks that have been steeply tilted and stacked together on a very large scale. The rocks form part of the story of the closure of the Iapetus Ocean through the Ordovician and Silurian Periods and the joining of the two 'halves' of Ireland. The greywacke rocks are all sedimentary rocks eroded off the land and deposited in the ocean basin as turbidites (mass flows from shallow to deep water), and hence are mixed compositions of sand and different types of rock fragments, with associated red mudstones and cherts.	CGS				IGH 4 Cambrian-Silurian		
IGH6	Keel Mine	Longford	19	41	617540E	766380N	Uneconomic lead-zinc deposit explored for production in 1960s	Keel / Longford		This mineral deposit was explored by boreholes and then by a shaft sunk in the mid-1960s to 585 feet depth with three exploratory levels at 200 feet, 400 feet and 500 feet depth. The deposit was proven, but at 1.85 million tons at 7.71% zinc it was too small for economic production compared to Silvermines in Tipperary and Tara Mine in Meath which were beginning around the same time. So no production of ore really took place at Keel, and in 1968 Rio Tinto closed it down. The mineralogy is of honey coloured sphalerite (zinc sulphide) primarily within a pebble conglomerate, but other minerals such as lead, silver (as the mineral jalpaite) and cadmium occur also. Some examples can be found in the small amounts of spoil heap or abandoned drill core on the site.	CGS			SLOWEY, E. 1986. The zinc-lead and barite deposits at Keel, County Longford. In: Geology and Genesis of Mineral Deposits in Ireland (eds C.J. Andrew, R. W.A. Crowe, S. Finlay, WM. Pennell and J.F. Pyne), Irish Association for Economic Geology, Dublin, 319-330.	IGH 15 Economic Geology	IGH 6 Mineralogy	
IGH7	Ballymahon Esker	Longford	22, 26	40	617770E	752410N	Long esker and associated fan	Keel, Calliaghstown, Carricknagower, Milltown, Harrystown, Dungolman, Ballynacorra / Ballymahon		Ballymahon esker comprises 12 kilometres of ridge segments (beads); each a narrow, sharp-crested ridge of coarse-grained sediments which trends southeast (down-ice direction) from Ballymahon town, and gently uphill, terminating in a wide, flat-topped, fan-shaped area. The esker runs east of and parallel to the Dungolman River. The esker lies along the western edge of a hummocky moraine that spreads over 10 km east-northeast from Lough Ree.	CGS			DELANEY, C., 2002. Esker formation and the nature of deglaciation: the Ballymahon esker, Central Ireland., North West Geography 1, 23-33.	IGH 7 Quaternary		

IGH7	Cloghchurnel Esker and Fan	Longford	7, 11	34	634640E	784280N	Significant esker and associated fans	Cloonbeen, Cloghchurnel, Ballywillin	The Cloghchurnel Esker and Fan are formed within an area dominated by bedrock of Silurian Metasediments and Volcanics, with some Lower Carboniferous limestone bedrock at the southeastern end of the feature. The esker itself is Quaternary in age, having been deposited either under or at the edge of the northwestward-retreating ice sheet during deglaciation, approximately 14,000 years ago. The esker feature is important in that it records the ice movement across this area of northeast Longford which is along its orientation, i.e. northwest to southeast. Associated sands and gravels in Cloghchurnel and Ballywillin Townlands, flanking the esker, are probably part of an associated ice marginal fan.	CGS				IGH 7 Quaternary		
IGH7	Corlea Trackway	Longford	22	40	610205E	762540N	The Corlea Trackway is an Iron Age trackway, or togher, preserved in peat bog, which was constructed from oak planks in 148–147 BC.	Cloonbreaney / Keenagh	The trackway itself is set in peat which is Quaternary in age, having formed as an extensive envelope of the landscape in the area since deglaciation, and mostly approximately 7,000-10,000 years ago. While today a generally flat and open landscape, the locality was covered by bog, marsh, quicksand, and ponds in the Iron Age, and surrounded by dense woodlands of birch, willow, hazel and alder. Higher ground was underlain by mineral soil, some distance away, and was covered by oak and ash. In 1984, timbers recovered from Corlea were radiocarbon dated to the Iron Age. The Corlea Trackway was approximately 1 kilometre long and ended on a small island, from which a second trackway connected to dry land on the far side of the bog. Whatever its purpose, the roadway was usable for only a few years. This disappearance of the feature gives the site its geological interest, as it was gradually covered by the rising bog, and sank under its own weight into it within a decade. The site has a visitor centre where audio-visual records of the trackway and its archaeological excavation process are shown, along with an actual preserved section of the trackway. Other features of peat interest are included within the site boundary, such as intact and drained peat, industrially-cutover peat, peat cut by locals, wetlands, and recovering peat.	CGS			Caseldine, C. and Hatton, J., 1996. Early land clearance and wooden trackway construction in the third and fourth millennia BC at Corlea, Co. Longford. Biology and Environment: Proceedings of the Royal Irish Academy, 96B, 11.19.	IGH 7 Quaternary	IGH 15 Economic Geology	IGH 16 Hydrogeology
IGH7	Lough Kinale and Derragh Lough	Longford	11	34, 41	638900E	781200N	Well studied lake basins with precision correlation of environmental change since the Mesolithic	Ballywillin, Springtown, Tonymore North, Tonymore South, Derragh (Longford), Finnea, Kilgolagh (Westmeath)	Lough Kinale is a lake covering 250 hectares of open water, with two main basins, almost separated by swamp formations. Derragh Lough is a smaller (35 ha) companion lough to the southeast. They are separated by a peninsular area of well drained land, known as 'Derragh Island'. The lake themselves are Quaternary in age, having been scoured out of the Carboniferous limestone bedrock and pre-existing sediment by ice during the last Ice Age, approximately 20,000 years ago. Detailed studies completed on stratigraphy and geomorphology, as well as pollen, plant macrofossil, diatom, chironomid, testate amoebae and coleopteran analyses, have provided detailed information about the regional and local environmental history of the Lough Kinale-Derragh Lough area since the early Mesolithic. A rise in lake levels during the Mesolithic has been seen from the stratigraphic work, showing that the lake(s) were much more extensive than today. Water levels then fell during the Neolithic, and the retreat of the lakes allowed the development of fen and subsequently moss peat. This multi-stranded approach therefore provides a very comprehensive picture of environmental change.	CGS			FREDENGREN, C., KILFEATHER, A. and STUIJTS, I., 2010. Lough Kinale: Studies of an Irish lake. Lake Settlement Project: Discovery Programme Monograph Number 8, Wordwell, 284 pp	IGH 7 Quaternary	IGH 14 Fluvial and lacustrine geomorphology	
IGH8	Creeve Quarry	Longford	14	41	618270E	776200N	Good representative section of Calp Limestone with Waulsortian above.	Creeve / Longford	The quarry and the adjacent natural knoll show a section of Lower Carboniferous (Viséan) limestone rocks extending upwards from the upper part of the Tober Colleen Formation (basal Calp limestone) into thicker beds of the Lucan Formation, with the basal contact of an overlying Waulsortian mudmound also included. At the base of the quarry face the upper part of the Tober Colleen Formation (basal Calp limestone) is exposed, going up into thicker beds of the Lucan Formation, with a thin yellowish-grey volcanic ash band also recorded in the middle of the stratigraphical section. The basal contact of an overlying Waulsortian mudmound is also included. This is seen in an isolated knoll about 100m north of the quarry, with a face of up to 4m of crinoidal limestone.	CGS				IGH 8 Lower Carboniferous		
IGH8	Killoe Quarry	Longford	9	41	619500E	780000N	Good representative exposure in deep quarry of Lucan Formation (Calp) in Longford	Rhine / Longford	This quarry is a very large one, exposing the Lucan Formation at the western fringes of the basin that extended across to Dublin at the time it was deposited. The beds are relatively thin but there is less shale between the beds than in other parts of the basin. The strata are sub horizontal and little disturbed. Although not easily accessible, the depth of the quarry shows the great thickness of limestone beds. There is very little karstification here with no dolines or significant infilled cave passages apparent. However, on the southeastern side of the quarry there is very thick overburden and the limestone is therefore much deeper below the surface than expected, which curtailed expansion of the quarry in that direction. Production of limestone from here is mostly used as aggregate for concrete, hardcore, roadmaking, fill and similar uses.	CGS			MORRIS, J.H., SOMERVILLE, I. and MacDERMOT, C.V. 2003. Geology of Longford-Roscommon, Bedrock Geology 1:100,000 Map Series, Sheet 12, Longford-Roscommon. Geological Survey of Ireland.	IGH 8 Lower Carboniferous		
IGH8	Newtowncashel	Longford	25	40	604280E	759350N	Disused limestone quarry, source of St. Mel's Cathedral original columns, now a community and sculpture park	Ballyrevagh / Newtowncashel	A disused limestone quarry rehabilitated to a community park after the year 2000, now celebrating the quarry's heritage in sculpture and rock carvings. The limestone quarry face exposures extend to a height of 15 metres. Thick bedding is clearly visible in the disused quarry to the north of Quarry Park. The old quarry (Quarry Park) was operated from the mid-1800's, when the Knight and Farrell families from Lanesborough quarried stone here for the building of St. Mel's Cathedral in Longford, and for general construction in the local area, providing stone for e.g. window sill lintels and gravestones. The original columns supporting the roof of St. Mel's Cathedral were quarried at Newtowncashel. The columns were quarried horizontally, and then were laid/set vertically upon each other (face bedded) as the columns in the cathedral. Stone for St. Mel's Cathedral was quarried here in the mid 1800s.	CGS				IGH 8 Lower Carboniferous		

IGH15	Cleenrah	Longford	6	34	625600E	790550N	Historic iron-manganese mine	Cleenrah / Agnacriff	Cleenrah Mine was apparently operated from the early 16th century up to the 1870s, when haematitic-manganese shale associated with mafic volcanics was mined. The Geological Survey Memoir of the mid-nineteenth century describes the site as having 'three wide beds of a good dark brown haematite'. It is not known how extensive the underground workings are, but a large, 10m deep chasm has been cut out of the steep hillside leading into the main mine area. This can be seen both today in the field and on the historical six-inch maps. Traces of mineralisation observed in boulders in field walls include haematite and manganese-dominated shale. There are a few spoil heaps around the site which are almost entirely vegetated over. The area around the site now consists of pasture, and is accessed via a long, cul-de-sac laneway. Cottages on the way into the site may be old mine buildings/offices.	CGS			MORRIS, J.H., 1984. The Metallic Mineral Deposits of the Lower Palaeozoic Longford-Down Inlier, in the Republic of Ireland. Geological Survey of Ireland Report Series RS 84/1, 72pp.	IGH 15 Economic Geology		
IGH15	St. Mel's Cathedral	Longford	13	41	613440E	775300N	Historic Cathedral illustrating many facets of stone use and different rock types in original construction and in modern renovations following 2009 fire	Townparks / Longford	The Cathedral is built mainly from Carboniferous Limestone, and was constructed from 1840 onwards. Extensive restoration work was completed between 2010 and 2014. This landmark building is proposed as a County Geological Site for its excellent display of rock used as a building material, both in the original edifice and in its recent restoration after a catastrophic fire in 2009. The original building commenced in 1840. Detailed history survives of the construction and local sources of stone and building materials at different times in the 1840s and 1850s, including Newtowncashel. At Christmas 2009 a fire devastated the building, destroying the roof and the floor and generating such heat that much of the stonework including the main pillars were irreparably damaged. A massive restoration project, costing around €30m, replaced significant parts of the building, and required both traditional and modern building skills. Whilst many of the elements of great public interest are the religious iconography, artworks and artists involved, the geological elements are also very significant. In particular the total replacement of 28 massive columns of limestone with stone quarried from Old Leighlin in Carlow is most notable. The high altar is composed of Carrera marble. The portico of great limestone columns from Knockcroghery in Roscommon was only commenced in 1891, and greatly enhances the building's grand façade. The statuary on the tympanum of the façade is in Portland Stone. The copper roof was destroyed in the fire but has been replaced by Bangor Slates, as first built, with stone from the original quarry source. Other chapels and elements inside the Cathedral use a variety of rocks and minerals in the decoration or construction.	CGS			St. Mel's Cathedral...a Glorious Undertaking 1840-2015'. Published 2015. 350pp	IGH 15 Economic Geology		