












Gazetteer Penny Rigg




ID No	Type	NGR	Date	Source	Conditions Risks/Issues	Description	Image
2000	Slate Quarry	330537, 500853	18 th – 20 th century	Site Survey First Edition OS Cameron 1986	Good -Vegetation Cracking rock face; climbing routes drilled into face.	Large slate quarry first appearing on the 1st edition OS but dating to the early 18th or late 17th century. Known to be already producing over 600 tons by 1752. Measures approx. 220 x 20m and obviously worked in various phases progressing probably north to south with various stages of backfill evident. A number of structures and retaining walls preserved on various levels across the site.	
2001	Sheep enclosure	330675, 500990	18th Century	Site Survey First Edition OS	Good -Stands 1.80 high and coping stones in place (or replaced). Today part of modern sculpture.	Square sheep enclosure measuring approx. 20m across. Formerly associated with a small building or sub-enclosure in the SE corner (shown on 3rd edition map) but no longer extant. Today, forms part of a sculpture by Andrew Goldsworthy.	




ID No	Type	NGR	Date	Source	Conditions Risks/Issues	Description	Image
2002	Quarry access track	330484, 500844. 330488 500841 330343, 500686	18th Century	Site Survey First Edition OS	Good - Stable	Access track serving main quarry. Measures 3m wide and winds round contour of hill coming up from road. Runs as a broad transport route till the Quarry Cutting and then narrows down to a track, leading to footbridge over the river.	
2003	Stone feature at top of steps	330632, 500960	Unknown, possibly modern	Site Survey	Good - Stable	Section of stone wall at the top of the modern access steps leading from the car park. Structure is L-shaped, measuring 2 x 2m and 0.5m deep and may be just a junction at the top of the wall, but seems unnecessary and therefore could be associated with the riving sheds further up the bank. Maybe a winch or balance pit for hauling the slate.	



ID No	Type	NGR	Date	Source	Conditions Risks/Issues	Description	Image
2004	Rectangular depression at the top of spoil tip	330628, 500968	19th century?	Site Survey	Poor Overall site seems stable but some cracks observed on the outer edge above the car park. Cracks denote slippage of slate spoil heap which is an urgent issue.	Rectangular, flat area at the top of spoil tip, surrounded by a slight bank, measuring approx. 0.5m high. Could be evidence of a processing area or last episode of spreading/leveling the spoil	
2005	Retaining wall	330599, 500962	19th Century?	Site Survey	Good - stable	Curved pack retaining wall measuring approx. 4m across and stands 2m high	
2006	Slate Closehead	330590, 500910	19th Century	Site Survey	Good Potential issue with large sycamore (trunk 30cm in diameter) growing through rock just above the head entrance could threaten long term maintenance – needs assessing.	Slate Closehead sunk to access slate from below the open quarry. Entrance measures approx. 3m x 2m and is square in shape. Larger than the Copper mines level to accommodate larger size of pre-worked slate.	
2007	Riving Sheds	330589, 500943	19th Century	Site Survey Second Edition	Moderate Some collapse on southern	A three/four cell structure, probably a riving shed. Slate	




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				OS	side but seem relatively stable but need recording to monitor any decline.	<p>blocks would be transported from the quarry or closehead and split by hand in the sheds. Along the back wall is a stone bench, 0.30m wide, where the slate splitter would have sat and rested a slate block between his knees and hit it along the plain with a wooden hammer. The rear wall of the structure is built into the hillside and stands 1.50m high. Each cell is 2m across, although the third cell is smaller and has a curved wall. There seems to be a vent or drain running between the rooms. Each cell was entered from the east, but the wall on this side is in bad repair. Building in this area appears on First edition OS but current structure seems to be first shown on 2nd edition (1898)</p>	



ID No	Type	NGR	Date	Source	Conditions Risks/Issues	Description	Image
2008	Platform	330546, 500903	19th Century	Site Survey	Good - Stable	Raised stone platform measuring approx. 5m wide and running for 7m before disappearing under a spoil heap. Constructed of stone facing walls in-filled with slate rubble. Seems to follow on from a linear feature shown on 3rd edition OS (now under spoil). Stands approx. 0.5m high. Might be a track for lifting gear of some form, does not look like a building	
2009	Cutting	330541, 500875	19th century	Site Survey Third Edition OS	Moderate - some danger from tree growth undermining the quarry face.	Access cutting measuring approx. 6m across. Probably an access route similar to that further north (2013), but part of an earlier phase of operation, the working floor level now being substantially lower.	
2010	Retaining wall	330505, 500857	19th Century? Modern?	Site Survey	Good/Stable	Pack wall along quarry path	



ID No	Type	NGR	Date	Source	Conditions Risks/Issues	Description	Image
2011	Retaining wall	330501, 500849	19th Century?	Site Survey	Good/Stable	Retaining wall or part of a buried structure (seems rather too well made to be a pack wall) stands 1m high and measures 3m across, with a fragment of a return wall running south into the bank. Runs along edge of modern path.	
2012	Closehead	330582, 500943	19th Century?	Third Edition OS	Blocked Not visible from the surface	Closehead level shown on Third edition OS map as being located to the rear of the Riving Sheds. Now completely blocked by later rid.	
2013	Cutting (Level Drain)	330506, 500840	19th Century	First edition OS Site Survey	Moderate Stability is again threatened by trees growing up through the fissures in the rock.	Primary access cutting measuring approx. 6m across. Providing access to quarry track and riving sheds and associated with various buildings just outside the quarry. Not shown on first edition OS.	




ID No	Type	NGR	Date	Source	Conditions Risks/Issues	Description	Image
2014	Building	330496, 500844	19th Century	Site Survey Second Edition OS	Good - but slowly deteriorating.	Stone building orientated SE to NW standing just at entrance to quarry cutting. Rear wall stands 0.80m high and doorway preserved in SE wall but other walls largely stand only a few courses high. Unknown function. A second building is shown in this location on the second edition OS but no evidence of this survives.	
2015	Building Footprint	330490, 500853	19th Century	Site Survey Second Edition OS	Poor - may soon be lost as almost completely grassed over and only visible as a few stones	Building shown on second edition OS. Shown in detail on the third edition OS as a two celled building, possibly a riving shed. Today only survives as a footprint just visible poking through the grass.	
2016	Building	330445, 500781 330452, 500784	18th Century	Site Survey Second edition OS	Good but slowly deteriorating.	Small square building measuring 3 x 3m. Entrance on the south side, standing 1.30m high in places. Includes an aperture in the west wall. Function unknown but might be a small quarryman's dwelling. Associated with a small 3 sided	




ID No	Type	NGR	Date	Source	Conditions Risks/Issues	Description	Image
						enclosure shown on third edition OS but now destroyed, this may have been a riving shed.	
2017	Bridge	330328, 500688	18th Century	First edition OS Site Survey	Good - Bridge modern replacement but abutments earlier	Bridge across Gill, originally provided access to woodland on north bank which provided pit props amongst other things.	
2018	Closehead	330479, 500760	19th Century	Third Edition OS Site Survey	Poor – timber lintel needs attention and there is a risk from imminent collapse and in-filling	Closehead or access level at the far SW end of the quarry. Entrance is partially blocked but timber lintel still survives in-situ. Associated with a stone bordered track (2020) running down to Quarry Cutting. This is the 'level drain' mentioned in Corry's History of Lancashire " <i>the slate is conveyed on trucks through a level drain into the side of the rock, at some height above the bottom of the pit</i> ".	




ID No	Type	NGR	Date	Source	Conditions Risks/Issues	Description	Image
2019	Quarry Cutting	330467, 500774	19th Century	Second edition OS Site Survey	Good	A third cutting providing access into the quarry and allowing slate to be transported to the riving sheds on this side and eventually out to the Tilberthwaite Road.	
2020	Track leading from level	330481, 500761 330479, 500760.	19th Century	Second edition OS Site Survey	Moderate – track still visible but in danger of being hidden by quarry chipping and rid	Track leading from quarry adit and mentioned in Corry's History of Lancashire. Today, track is visible as a clear line of edging stones leading from the adit (2018). Feature first shown on	
2021	Structure	330574, 500669	19th Century?	Site Survey	Moderate – slow deterioration	Remains of a stone structure, rear wall only surviving standing to a height of 1.60m. Fragments of a return wall also visible.	




ID No	Type	NGR	Date	Source	Conditions Risks/Issues	Description	Image
2022	Building – Riving sheds?	330463. 500673	19th Century?	Site Survey	Good - Remarkably well preserved by deteriorating and needs stabilisation and consolidation.	Rectangular stone building orientated NS. Divided into two main cells with a small third cell at the SW. Third cell still has its slab slate roof and is enclosed by a curving south wall: function of this area is unknown but seems specialist. Each cell approx 2m across and features a rear stone Cupboard. Could be a riving shed but seems very small internally. Shows at least two phases of use.	
2023	Level	330608, 500809	19th Century	Second edition OS Site Survey	Good	Open level in rock cutting.	



ID No	Type	NGR	Date	Source	Conditions Risks/Issues	Description	Image
2024	Slate Rid Tip	330608, 500809	19th Century	Third Edition OS Site Survey	Good - Mature tree growing on tip but poses no obvious threat.	Large slate tip derived from underground level (2023). Accessed from south by track (2030) and overlies track (2027). Main wheel leat (2026) culverted under the tip.	
2025	Leat Overflow	330608, 500743 330652, 500785 330719, 500830	19th Century	Site Survey	Moderate, south side disturbed and eroded.	Overflow or spillway on leat (2026). Stone in-turn on N side with wooden boarding surviving on floor. Overflow channel runs NE down slope to join Yewdale Beck.	




ID No	Type	NGR	Date	Source	Conditions Risks/Issues	Description	Image
2026	Leat for mill wheel	330612, 500768 330612, 500743	19 th century	Site Survey	Moderate but some recent disturbance and cleaning out at southern end.	Open trench leat running N-S with stone embankment on E side. At N end the leat is culverted under slate tip (2024). The S end has been re-cut to take water draining from Deep Level and the association with the holding pond and wheel pit is now unclear.	
2027	Access Track	330662, 500824 330618, 500745	19 th century	Site Survey	Moderate	Track, embanked and revetted in places, running SW from road to Deep Level entrance and the area above the wheel pit and crushing house. Leat overflow (2025) is culverted beneath the track and the central section of the track is overlain by slate tip (2024).	
2028	Water Course	330655, 500774 330653, 500739.	19 th century	Site Survey	Moderate.	Short length of water course leading N-S from wheel pit. Southern section is culverted. Appears to run under a track (2029) but cannot be traced further to North. Presumably associated with water supply to/from the dressing floors.	


ID No	Type	NGR	Date	Source	Conditions Risks/Issues	Description	Image
2029	Access Track	330653, 500739 330637, 500753 330670, 500801 330614 500722	19 th century	Site Survey Third edition OS	Moderate - SE section cut and damaged by recent erosion gullies.	Grassed track running NW then W from road to area outside Deep Level entrance.	
2030	Access Track	330608, 500786 330610, 500722	19 th century	Site Survey	Moderate	Track with stone revetment on east side running from smithy (2041) to level entrance (2023).	
2031	Building, Smithy or workshop?	330479, 500637	19 th century	Site Survey	Moderate – building seems stable but bracken is an issue and could undermine structure gradually.	On slope above track (2030), a square, gabled structure with single entrance; roofless. Orientated N-S, approx. 6m in length and built against hillbank. Rear wall stands 2m high, east wall missing (or building may have been open on this side). 4 square apertures set in walls. Small	



ID No	Type	NGR	Date	Source	Conditions Risks/Issues	Description	Image
						square feature in SW corner, probably a forge.	
2032	Building	330636, 500667	19 th century	Site Survey	Moderate - Window lintel cracked and stone work above slumping. Building has modern roof and is used as some form of temp. accommodation - chimney etc added to structure by recent occupants	Rectangular quarry building with angle pitched roof. Buttressed on SE face. Single door and window in NE face.	
2033	Building	330570, 500693	19 th century	Site Survey	Good, stable – no immediate threats except people have tried to dig out adjacent ironwork (2034)	Square building built against the quarry face above and SW of Deep Level entrance. Majority only survives as footing but section of west wall stands 1m high – entrance probably on this side.	
2034	Fragments of ironwork	330567, 500689 330578, 500689	19 th century	Site Survey	Moderate - Attempts have been made to dig out the possible winch plate.	Adjoining building (2033) to the S are the remains of ironwork – possible winch side plate. In addition, immediately NE are two iron bars (one is reused rail) set horizontally in ground.	


ID No	Type	NGR	Date	Source	Conditions Risks/Issues	Description	Image
2035	Structure	330550, 500681	19 th century	Site Survey	Moderate but in fragile condition.	Stone built flat topped ramp structure within highest section of Horse Crag Quarry.	
2036	Wall	330580, 500677	19 th century	Site Survey	Moderate	Two revetment walls in slate spoil either side of track to top workings in Horse Crag Quarry	
2037	Level /Closehead	330452, 500651	19 th century	Site Survey	Good /Moderate - Collapse into the cutting has partially blocked entrance but area seems stable now.	Open level in rock cutting. Charge holes visible around entrance	



ID No	Type	NGR	Date	Source	Conditions Risks/Issues	Description	Image
2038	Closehead cutting	330475, 500662	19 th century	Site Survey	Small trees growing in fissures may cause problems in the future, also bracken undermining the stonework.	Cutting for level Entrance flanked by stone pack revetment walls.	
2039	Tilberthwaite Deep Adit or Horse Crag Level	330572, 500704	19 th Century	Site Survey	Good, Stable. Continuing research and recreational access use by CATMHS provides regular condition monitoring and ensures short term survival.	Rock cut portal of mine adit. Level open and accessible via slate closehead – underground slate working – to area of backfill and collapse which is currently being removed by members of CATMHS	
2040	Entrance cutting to Horse Crag Level	330592, 500705	19 th Century	Site Survey	Good, Stable. Low risk of slate tip to south slumping into the cutting.	Access cutting to Deep Level entrance. Rock cut on N side and lined with retained slate spoil to S. Open drain on N side taking water from level; also remains of iron compressor piping, some still attached to rock face.	As above


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2041	Building – smithy	330611, 500719	19 th century	Site Survey	Poor - Mature tree growing from hearth. Tree is undermining building but removal would cause more damage – record.	Two celled building, roofless, with entrances on east side. Possible raised hearth against south side of central dividing wall.	
2042	Powder Magazine	330596, 500737	19 th century	Site Survey	Good - Roofless but otherwise complete and in good condition. Consolidation of wall-heads would help conservation.	On slope above track (2030) a square, gabled structure with single entrance; roofless. Small extension to the west.	
2043	Building	330611, 500790	19 th century	Site Survey	Poor - foundations only surviving. No direct risk.	Rectangular building, foundations only, with central division. Constructed on slate rid tip.	




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2044	Wheel Pit	330648, 500725	19 th century	Site Survey Second/Third Edition OS	<p>Moderate – Needs stabilising. The structure is substantially complete but some of the coping stones are missing and this is letting water permeate the stonework. The stonework has partially collapsed at the NW and SE corners and there is a structural crack in the centre of the east face. According to CATMHS some of the coping stones have been damaged and thrown down during the last two or three years.</p> <p>The wheel pit is central to the site's interpretation. CATMHS members have indicated that this structure should be a priority for management and consolidation</p>	<p>Raised rectangular structure butting against holding pond (2045) to west and with recessed and lintelled outflow channel at east end. Some of the coping stones on the north and south sides retain massive iron bolts.</p>	



ID No	Type	NGR	Date	Source	Conditions Risks/Issues	Description	Image
2045	Holding Pond	330629, 500725	19 th century	Site Survey Second/Third Edition OS	<p>Moderate - North and south faces in good condition. East face partially collapsed – danger of stone facing/revetting falling into wheel pit below.</p> <p>Any consolidation here should be carried out in conjunction with the stabilisation of the wheel pit (2044).</p>	<p>Rectangular stone walled structure built against the slope to the west; butting against and raised above wheel pit (2044) to east. Surface is turfed with well preserved linear depression marking course of the former water channel.</p>	
2046	Crushing House	330643, 500720.	19 th century	Site Survey Second/Third Edition OS	<p>Moderate condition and substantially complete. The structure would benefit from a structural assessment with particular attention being given to the wall head and door lintel of the south gable.</p> <p>The crusher house and wheel pit (2044) should be regarded as a single structural element in any future stabilization and interpretative project.</p>	<p>A three sided structure comprising two high retaining walls and incorporating the south wall of water wheel pit (2045). The west wall is a retaining wall built against the slope and overlaps the SW corner of waterwheel housing (2044). The south wall bonds with the west wall. The west end of the south wall is also built into the slope and at wall top level there is an entrance leading from the bank into the building. This entrance</p>	




ID No	Type	NGR	Date	Source	Conditions Risks/Issues	Description	Image
						relates to a recessed floor line in the south wall and a line of joist holes in the west wall. The east end of the south wall comprises a free standing gable with a single partly blocked door.	
2047	Retaining walls south of Crushing House	330647, 500712	19 th century	Site Survey Second/Third Edition OS	Moderate. Risk of future flooding undercutting the base of the walls.	Two retaining walls built against the slope and joining with crushing house (2046). The west wall retains the access way, the wall top opening in (2046). The east wall is on the same alignment and retains the access way to the low level entrance in (2046). The top of the east wall is covered with copper spoil. Wall shown on earlier OS maps to continue South but now covered by Slate rid.	




ID No	Type	NGR	Date	Source	Conditions Risks/Issues	Description	Image
2048	Retaining wall	330634, 500714	19 th century	Site Survey Second/Third Edition OS	Blocked - Hidden by spoil – no longer extant	Retaining wall similar to (2047) shown on third edition OS map but no longer extant.	
2049	Terrace walling	330634, 500714 330659, 500711	19 th century	Site Survey Second/Third Edition OS	Blocked - Hidden by spoil – no longer extant	Terrace walling above processing floors. Southern section, shown on third edition OS map, is concealed under spoil tip. Runs north to south.	As above
2050	Sunken Chamber	330658, 500712	19 th century	Site Survey Second/Third Edition OS	Moderate. Some risk of future flood damage with water running down slope from retaining walls (2047).	Open stone walled pit. The overflow culvert from wheelpit (2044) enters at the north end and resumes a culvert at the SE end. The area between this and retaining walls (2047) is paved.	




ID No	Type	NGR	Date	Source	Conditions Risks/Issues	Description	Image
2051	Dressing Mill	330667, 500722	19 th century	Site Survey Second/Third Edition OS	<p>Poor/Moderate - Against the SE corner are the remains of a second structure associated with a terraced wall (2049) running N-S parallel to and below the east wall of the main building. This structure is in poor condition (damaged door lintel, massive structural crack in South, unstable wall heads) and suffered considerable damage during the 2009 floods. A structural assessment is recommended as a matter of urgency.</p>	<p>Long rectangular structure terraced into the slope below the wheel pit and crusher house. The southern end is free-standing and gabled with a single window. Against the external face of the south wall is a culverted feature adjoining a flight of stone steps. The west side comprises two retaining walls separated by an area of collapse or, more likely, terracing; the southern end of the west wall survives to original wall height and incorporates two high level openings or hoppers. The east wall survives at foundation level only. The northern half of the building is divided by an internal N-S wall. Against the SE corner are the remains of a second structure associated with a terraced wall (2049) running N-S parallel to and below the east wall of the main</p>	 <p>The image column contains three photographs of the Dressing Mill. The top photo shows a close-up of a stone wall with a small, dark, gabled window opening. A red survey pole is visible next to the wall. The middle photo shows a wider view of the stone structure, highlighting the terraced walls and a culverted feature. A red survey pole is also present. The bottom photo shows the structure from a different angle, showing the terraced walls and the surrounding landscape. A red survey pole is visible in the foreground.</p>




ID No	Type	NGR	Date	Source	Conditions Risks/Issues	Description	Image
						building.	
2052	Rectangular pits and terrace walling	330674, 500715	19 th century	Site Survey Second/Third Edition OS	Moderate condition. No direct threat.	Two conjoined rectangular pits, turfed walls, with low stone retaining bank to east. Possible settling or tailings ponds.	
2053	Raised area drainage gully	330680, 500708	19 th century	Site Survey	Moderate condition. Damage to South side during recent flood and serious risk of damage or destruction from future flooding. Detailed recording recommended.	Rectangular mound, stone revetted to east, with rectangular central hollow. Associated with gully running to beck.	
2054	Copper spoil tip	330668, 500639	19 th century	Site Survey Second/Third Edition OS	Moderate - Erosion gully on NE slope, probably from recent bike/motor bike activities. Monitoring suggested.	Copper tip at southern end of site. Flat topped. Overlain with slate waste to NW.	
2055	Copper Spoil tip	330667,	19 th	Site Survey	Moderate.	Small area of copper spoil overlain	




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		500694	century	Second/Third Edition OS		to west by slate tip (2056)	
2056	Slate Rid tips	330652, 500683.	19 th century	Site Survey	Moderate. Top of tip is turfed which aids stability.	Large slate tip with single flat topped spoil extension to east. Covers part of copper spoil tips (2054) and (2055) and southern range of the copper mill buildings	
2057	Slate Rid tips	330619, 500688	19 th century	Site Survey	Moderate	Principal tip for Horse Crag Quarry.	
2058	Access Track	330631, 500690	19 th century	Site Survey	Moderate	Inclined track terraced into N side of slate tip (2057) Provides access from area outside Deep Level cutting to Horse Crag Quarry	

ID No	Type	NGR	Date	Source	Conditions Risks/Issues	Description	Image
2059	Quarry	330512, 500696	19 th century	Site Survey Third Edition OS	Moderate	Small quarry cutting above Deep Level	
2060	Main Quarry rid tip	330588, 500979 330443, 500820	18 th century onwards	Site Survey	Good - Majority of the tip seems stable although the edges are slowly eroding. Only area of concern is the cracks along the edge above the car park. Spoil may also be a health and safety risk but no more than natural scree.	Slate spoil tip which extends for approx 250m along the north facing ridge above Tilberthwaite Gill evidence. Shows numerous episodes of dumping as well as several phases of pack wall revetment. Flat topped tip with top being occupied with buildings and phases of later dump.	
2061	Beck side wall	330742, 500749 330745, 500707.	19 th century	Site Survey	Poor - Cut by recent storm gullies in the area of the tailings ponds and wall core now exposed to erosion and further damage.	Earth core wall running parallel with west bank of Yewdale Beck, stone revetted on beck side. Runs N-S and intersected by a turfed wall running west to form a right angle. Marks the extent of the tailings area.	

ID No	Type	NGR	Date	Source	Conditions Risks/Issues	Description	Image
2062	Tailing tanks	330738, 500719	19 th century	Site Survey	Poor - Area cut by storm gullies. Severe risk of further erosion. There is a possibility of heavy metal pollution if tailings material is carried down Yewdale Beck in future flood episodes. Chemical sampling and assessment may be required.	Below road, and west of Yewdale Beck, a flat, low lying area. Storm gullies cutting across the site have exposed multi-layered clay and sand deposits (settling and tailing deposits from the copper mill).	
2063	Trail Quarry	330415, 500707	19 th century?	Site Survey OS Map Holland 1981	Not seen	Small area of trial quarrying	
2064	Quarry Building	330517, 500829	19 th century	Site Survey	Moderate - Survives only as wall footings. Seems stable enough, although slowly deteriorating.	Building located on upper terrace of quarry. Measures approx 6 x 6m square and associated with a small yard area to the NE. Two sockets in the rock face would indicate some form of wooden structure, maybe a lifting derrick. Probably a riving shed for	

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						preparation of slates coming up from the closehead, via the rail track.	
2065	Quarry platform	330549, 500866	19th Century	Site Survey	Good/Moderate	Revetment wall running EW and extending west into quarry bank. Remains stand 1.40m high. Possibly a loading platform.	
2066	Revetment wall	330545, 500869	19th century	Site Survey	Moderate - overgrown in places	Section of pack wall to the north, measuring 3m long and running SW-NE. May relate to platform (2065)	
2067	Quarry building	330547, 500854	19th century	Site Survey	Good	Three-sided stone structure, within lower terrace of quarry. Measures 4.5 x 4.5m, with walls to 1.7m high. Slate splitting or riving shed	
2068	Adit entrance?	330571, 500970	19th century?	Site Survey	Poor - Blocked by slate and debris	Possible blocked adit, maybe that shown on earlier OS maps but	

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						<p>indicated further up hill (2012). Series of pack walls which seem to be at the right angle to suggest an adit cutting, but majority of structure covered by later slate rid. Series of related pack walls arranged up the slope.</p>	
2069	Building?	330558, 500968	19 th century?		Moderate – grassed over in places	To north of quarry spoil tips, and on edge of slope dropping down to beck, are the foundations of a building measuring 5 x 4m. Only south and west walls survive.	
2070	Level (Closehead)	330557, 500864	19 th Century	Site Survey Third Edition Os	Destroyed	Level indicated on third edition OS but no longer visible. Quarry face undercut here and looks as if the level was opened out later for surface quarrying.	

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2071	Horse Crag Quarry	330451, 500526	19 th Century	Site Survey Third Edition Os	Moderate, but buildings in a poor state. Tips are stable	Quarry and close head – includes ridd tips extending down the hill. Some of the debris threatens the associated building (2072)	
2072	Horse Crag Quarry Building	330465, 500508	19 th Century	Site Survey Third Edition Os	Very Poor Condition. The slate roof has collapsed in and undermined the gable wall making it lean alarmingly. The debris from surround ridd tip is also slipping into the interior and damaging what remains of the walls. Needs immediate attention.	Rectangular building measuring approx. 5m NW-SE and 4m wide. Gable currently stands 2.5m high but in danger of collapse. A number of hand driven shot holed found in the stonework across the building. Riving shed?	
2073	Gunpowder store	33068 50058	19 th century	Ian Matheson pers comm	Poor condition, but surprisingly complete apart from much of its roof, and has a wooden door and part of the original wooden lining. Repair to the roof would protect the building and its fabric	Horse Crag powder house is located behind a mound and out of site of the rest of the mill, presumably due to its potentially explosive nature.	

APPENDIX 2: A GLOSSARY OF COPPER MINING AND QUARRY TERMS¹

ADIT	A level tunnel (usually driven into a hillside) in order to give access to a mine, and used for drainage or the hauling of broken ore. Deeper adits did not necessarily connect to surface, and were used to carry water back from distant workings to a pumping shaft.
BALANCE BOB	A large counterweighted lever attached to the shaft pump rods and used to offset their weight and thus reduce the work of a pumping engine to lifting water alone. A surface balance bob would be mounted adjacent to the shaft on a pair of plinths or on a masonry support at ground level (balance bob mounting), the attached counterweight - a large box filled with scrap iron or rocks - working in an adjacent stone-lined pit. Other balance bobs would be installed in chambers cut into the rock adjacent to the shaft wall as needed to counterbalance the weight of the pump rods, especially on a deep shaft.
BAL-MAID	A woman or girl employed at surface on a mine, generally in the dressing of ore.
BARRACKS	Accommodation block used by quarrymen during the week
BUCKING	The breaking down of copper ore on an anvil to about 10mm in diameter by bal-maids using small hammers, after which the ore was separated from the waste by hand. This process followed cobbing, in which it had been broken down to about 25mm in diameter, the waste again being hand removed. These processes, through which the majority of the highest quality copper ore was recovered, took place within roofed structures called bucking houses.
BUDDLE	A device for concentrating tin ore. In the mid-19th century these most usually took the form of a circular pit with rotating brushes; the tin from the stamps was fed into the centre or side of the pit and was graded by gravity, concentrating the heavy ore near the inlet point. These were often mechanically worked. Earlier buddles were trapezoidal in shape, and manually operated. A variation used in tailings works to treat sands and slimes was the ROUND FRAME: a free-standing, all wooden, mechanically-actuated buddle, whilst a further variation was the dumb buddle or dumb pit, which were not mechanically operated.

¹ Glossary adapted from 'A short Glossary of Cornish Mining Terms' citing online reference <http://www.cornish-mining.org.uk/story/glossary.htm>, accessed 10/09/10

CLOD	Large piece of quarried slate
CLOSE HEAD	Underground Slate Quarry
COFFIN LEVEL	The narrow excavation resulting from stoping on a lode being carried to or from surface on part or all of a lode.
CONDENSER	The cast-iron cylinder set in a tank of cold water immediately in front of the bob wall of an engine house in which the exhaust steam was condensed, creating a vacuum which greatly increased the efficiency of a steam engine. For a pumping engine this equipment was often contained within a pair of masonry walls projecting from the bob wall towards the shaft.
CULVERT	A small tunnel constructed to carry a channel of water.
DOCKING	The first stages of dressing slate, pairing the quarried block (CLOD) down into workable pieces to be sent for riving.
DRESSING	The concentration of the tin (copper or other ores) contained in the rock excavated from the stopes of a mine. Carried out on DRESSING FLOORS.
DRESSING FLOORS	An (often extensive) surface area on a mine where the various processes of concentration of ore took place - these consisted of crushing or stamping to attain a uniform size range, sizing (particularly on later mines), separation of waste rock, concentration (generally mechanically and hydraulically on tin mines, manually on copper mines), the removal of contaminant minerals (by calcination, flotation, magnetic separation), and finally drying and bagging for transportation to the smelter. Tin floors in particular were generally laid out down a slope to reduce mechanical or manual handling between stages in the process.
DRIVE	(alternatively lode drive or heading). A tunnel excavated on the line of a lode as the first stage of the development of a STOPE.
DUMP or BURROW (alternatively spoil dump, spoil tip).	A pile of waste material, usually from a mine or quarry. May contain primary waste (where this could not be disposed of underground) or waste from various stages in the dressing process. TAILINGS LAGOONS stored the extensive slimes from the final stages in the process; in earlier mines these were flushed over cliffs or allowed to wash away in streams or rivers.

FINGER DUMP	A linear dump of waste material from a mine or quarry, flat-topped to allow material to be barrowed or trammed along it, and often equipped with a temporary tramway track.
FLAT RODS	Reciprocating (or very occasionally rotative) iron rods used to transfer power from a steam-engine or water-wheel to a remote location.
FLUE	A masonry-constructed tunnel or conduit connecting a furnace to a chimney stack
GIRDER	The massive timber beam set across an engine house just below top floor level to which the parallel motion was attached and on which the spring beams sat.
HEADFRAME	The tall construction set over a winding shaft which carried the sheave wheels over which the winding ropes ran. Headframes usually contained ore bins or ore chutes to allow the broken rock in the skips or kibbles to be tipped into trams at surface.
HORSE GIN	Power supplied by a horse walking around a circular platform was applied to an overhead winding drum; frequently used for winding from small shafts, especially during exploratory work and shaft sinking.
JIG	A large mechanically or hand-operated sieve set in a tank of water using which ore could be separated by waste. Sometimes constructed in groups within jiggling houses.
KIBBLE	A large, strongly-constructed, egg-shaped, iron container used for ore and rock haulage in earlier shafts. Superseded by SKIPS.
LAUNDER	A wooden or steel trough used to carry water or other liquids; often used to feed water or finely-divided material in suspension around a dressing floor.
LEAT	An artificial water-course, built to carry a supply of water to a mine.
LODE	A linear area of mineralisation underground. Sometimes referred to as a VEIN, or SEAM. Generally vertical or near-vertical, and often extending for considerable distances along its strike.
MAGAZINE	Small strongly built store containing explosives (gunpowder or dynamite); often circular, sometimes with additional enclosing walls to

	contain the blast of an accidental explosion.
OPENWORK	A mineral extraction site open to the surface, and similar to a quarry but usually distinguished by its elongated shape, and steep sides.
OVERBURDEN	The topsoil and subsoil removed in the process of opening or extending a quarry, streamworks or mine.
PELTON WHEEL	A small enclosed water turbine, working at high pressure and rotational speeds. In use from the later 19th century.
PILLAR	Column of slate or rock left underground to support the area above it
PILLAR-ROBBING	Thinning of the pillars to get "free" slate (see also cupboarding)
PITWORK	The term used to describe the pump rods, rising main, shaft guides (buntings) etc. within a shaft.
PROSPECTING PIT OR FOSSICKING PIT	A small pit dug in search of minerals, and almost always found in linear groups, often arranged cross-contour, or at right angles to the projected strike of known lodes.
RID	Waste rock from the quarrying process
RIVING SHED	Buildings where slates were split to form tiles
SHAFT	A vertical or near-vertical tunnel sunk to give access to the extractive areas of a mine.
SKIP	A (generally elongated) iron or steel container equipped with small wheels or brackets running on the shaft guides (buntings) and used for rock and ore haulage in later mines.
STAMPS	A mechanical device for crushing ore-bearing rock to a fine sand. Heavy vertically-mounted beams (or later iron rods) carrying cast or forged iron heads were sequentially lifted and dropped onto the prepared ore beneath them by a series of cams mounted on a rotating drum; this usually being driven by a water-wheel or rotative steam engine.
STOCKWORKS	A complex system of structurally controlled or randomly oriented veins. Stockworks are common in many ore deposit type; they are also referred to as stringer zones

STOPE	Excavated area produced during the extraction of ore-bearing rock. Often narrow, deep and elongated, reflecting the former position of the lode. Where open to the surface, these are termed OPENWORK
STRIKE	A tunnel bored horizontally into the slate vein
TAILINGS	The waste sand and slime from a mine dressing floor, not containing workable quantities of mineral.
TAILRACE	The channel along which water flows after having passed over or under a water-wheel and is then generally returned to the water course.
TERRACE	Working level of an open quarry, usually numbered or lettered
TRIBUTE	A system of payment in which groups of miners bid against one another for contracts to work sections of the mine for a percentage of the value of the ore raised from that area.
WATER-BALANCE	Type of incline where the weight of water is used to raise wagons
WATER-WHEEL	Wheel fitted with buckets or paddles around its periphery, and driven by the weight or force of a stream of water directed onto them.
WHEELPIT	A structure built to house a water-wheel, often excavated and stone-lined, but sometimes free-standing.

APPENDIX 3: CONISTON AND PENNY RIGG QUESTIONNAIRE

Coniston Copper Mines Questionnaire

Please complete and return to us by the **31st of August 2010**

Q1: How often do you visit the copper mines?	
Never been	
I have been once	
I have been two or three times	
I visit a number of times a year	
I visit regularly (ie. every month)	

Q2: How far have you come?	
I live near the site (within 10 miles)	
I live in Cumbria	
I live in the North West	
I am on holiday in the area	
I am visiting for the day/weekend	

Q3: Why do you visit Coniston?	
To see the copper mines.	
I go there to get access up onto the fells	
It is a great place to walk and get some exercise	
I go to enjoy the natural environment.	
It is a good place to have a picnic and bring the family	
I take part in underground mines exploration	
I stay in the holiday accommodation	
I stay in the youth hostel	

Are there any other reasons you visit the site?

--

Q4: What do you think makes the site important	Agree strongly	Agree	Disagree	Disagree strongly	Don't know
The archaeology and history of the Copper mines					
The below ground archaeology of the mines					
The wildness of the fells					
Access to great walks					
The flora, fauna and/or geology					
The youth hostel					
It is a good educational resource					

Are there any other things which make the site important to you?

Q5: What do you think are the most important issues facing the mines?	Agree strongly	Agree	Disagree	Disagree strongly	Don't know
Poor access road and parking					
Condition of the standing remains					
Lack of information on the mines					
Poor footpaths and routes					
Limited access to some areas of the site					
Threats to the setting and views around the site					
Health and safety issues					
Flood damage					
Vandalism and litter					

Is there anything which we have left out which you consider an issue, or potential threat, to the site:

Q6: What do you think are the three most important improvements that could be made to enhance and protect the copper mines

1.

2.

3.

Anything other improvements you would like to see?

Penny Rigg Quarry and Copper Mill

As part of a related project we are also looking at the Penny Rigg copper mill and slate quarries over at Tilberthwaite.

Q1: Have you ever visited the Penny Rigg site?	
Never been	
Yes, once	
I have been two or three times	
I visit a number of times a year	
I visit regularly (ie. every month)	

Q2: What prompted your visit?	
To see the copper mill and quarry	
I go there to go climbing	
It is a great place to walk and get some exercise	
I go to enjoy the natural environment.	
It is a good place to have a picnic and bring the family	
I take part in underground mines exploration	

Are there any other reasons you visit the site?

Q3: What do you think makes the site important	Agree strongly	Agree	Disagree	Disagree strongly	Don't know
The archaeology and history of the mill and quarry					
The below ground archaeology of the mine/quarry					
The wildness of the area					
Access to great walks					
The flora, fauna and geology					
It is a good educational resource					

Are there any other things which make the site important to you?

Q4: What do you think are the most important issues facing the mines?	Agree strongly	Agree	Disagree	Disagree strongly	Don't know
Condition of the standing remains					
Lack of information on the mill/quarry					
Poor footpaths and routes					
Health and safety concerns					
Threats to the setting and views around the site					
Flood damage					
Vandalism and litter					

Is there anything which we have left out which you would consider an issue or potential threat to the site:

Q4: What do you think are the three most important improvements that could be made to enhance and protect the copper mines

1.
2.
3.

Anything other improvements you would like to see?

--

Please complete your details if you would like to stay involved with project and be informed of any updates; neither Archaeo-Environment nor the LPNPA will not pass on your details to anyone else:

Name: Email address:

Address:

..... Tel:.....

Thanks for your help

PLEASE RETURN ALL COMPLETED FORMS BY THE 31ST OF AUGUST 2010.

APPENDIX 4 – CONDITIONS SUMMARY - PENNY RIGG

Ordered by priority

Priority - 1: 1 to 3 years; 2: 3 -7 years; 3: 7-10 years

ID No	Type	NGR	Date	Condition	Risks/Issues	Priority
2072	Old Quarry Building	330465, 500508	19 th Century	Poor	Very Poor Condition. The slate roof has collapsed in and undermined the gable wall making it lean alarmingly. The debris from surround rid tip is also slipping into the interior and damaging what remains of the walls. Needs immediate attention.	1
2018	Closehead	330479, 500760	19 th Century	Poor	Timber lintel needs attention and there is a risk from imminent collapse and in-filling.	1
2050	Sunken Chamber	330658, 500712	19 th century	Moderate	Some risk of future flood damage with water running down slope from retaining walls (2047).	1
2047	Retaining walls south of Crushing House	330647, 500712	19 th century	Moderate	Risk of future flooding undercutting the base of the walls.	1
2022	Building – Riving sheds?	330463, 500673	19 th Century?	Good	Remarkably well preserved by deteriorating and needs stabilisation and consolidation.	1
2051	Dressing Mill	330667, 500722	19 th century	Poor	Poor/Moderate - Against the SE corner are the remains of a second structure associated with a terraced wall (2049) running N-S parallel to and below the east wall of the main building. This structure is in poor condition (damaged door lintel, massive structural crack in South, unstable wall heads) and suffered considerable damage during the 2009 floods. A structural assessment recommended as a matter of urgency.	1
2041	Building – smithy	330611, 500719	19 th century	Poor	Poor - Mature tree growing from hearth. Tree should be cut of at base and poisoned as long as felling can be safely achieved without causing any severe damage to the structure.	1
2061	Beck side wall	330742, 500749	19 th century	Poor	Poor - Cut by recent storm gullies in the area of the tailings ponds and wall core now exposed to erosion and further damage.	1
2062	Tailing tanks	330738,	19 th	Poor	Poor - Area cut by storm gullies. Severe risk of further erosion. There is a possibility of	1

Conservation Management Plan – Penny Rigg Copper Mill, Cumbria – Appendix 4: Conditions Summary

ID No	Type	NGR	Date	Condition	Risks/Issues	Priority
		500719	century		heavy metal pollution if tailings material is carried down Yewdale Beck in future flood episodes. Chemical sampling and assessment may be required, should consult Environment Agency as a matter of urgency.	
2004	Rectangular depression at the top of spoil tip	330628, 500968	19th century?	Poor	Overall site seems stable but some cracks observed on the outer edge above the car park. Cracks denote slippage of slate spoil heap which is an urgent issue.	1
2045	Holding Pond	330629, 500725	19 th century	Moderate	North and south faces in good condition. East face partially collapsed – danger of stone facing/revetment falling into wheel pit below. Any consolidation here should be carried out in conjunction with the stabilisation of the wheel pit (2044).	1
2044	Wheel Pit	330648, 500725	19 th century	Moderate	Needs stabilising. The structure is substantially complete but some of the coping stones are missing and this is letting water permeate the stonework. The stonework has partially collapsed at the NW and SE corners and there is a structural crack in the centre of the east face. According to CATMHS some of the coping stones have been damaged and thrown down during the last two or three years. The wheel pit is central to the site's interpretation. CATMHS members have indicated that this structure should be a priority for management and consolidation	1
2046	Crushing House	330643, 500720.	19 th century	Moderate	Moderate condition and substantially complete. The structure would benefit from a structural assessment with particular attention being given to the wall head and door lintel of the south gable. The crusher house and wheel pit (2044) should be regarded as a single structural element in any future stabilization and interpretative project.	1
2032	Building	330636, 500667	19 th century	Moderate	Moderate - Window lintel cracked and stone work above slumping. Building has modern roof and is used as some form of temp. accommodation - chimney etc added to structure by recent occupants	1
2054	Copper spoil tip	330668, 500639	19 th century	Moderate	Moderate - Erosion gully on NE slope, probably from recent bike/motor bike activities. Monitoring suggested.	1
2042	Powder Magazine	330596,	19 th	Good	Good - Roofless but otherwise complete and in good condition. Consolidation of wall-	1

Conservation Management Plan – Penny Rigg Copper Mill, Cumbria – Appendix 4: Conditions Summary

ID No	Type	NGR	Date	Condition	Risks/Issues	Priority
		500737	century		heads would help conservation.	
2060	Main Quarry rid tip	330588, 500979 330443, 500820	18th century onwards	Good	Good - Majority of the tip seems stable although the edges are slowly eroding. Only area of concern is the cracks along the edge above the car park. Spoil may also be a health and safety risk but no more than natural scree.	1
2053	Raised area drainage gully	330680, 500708	19 th century	Moderate	Damage to South side during recent flood and serious risk of damage or destruction from future flooding. Detailed recording recommended.	1
2031	Building, Smithy or workshop?	330479, 500637	19 th century	Moderate	Building seems stable but bracken is an issue and could undermine structure gradually.	1
2006	Slate Closehead	330590, 500910	19th Century	Good	Potential issue with large sycamore (trunk 30cm in diameter) growing through rock just above the head entrance could threaten long term maintenance. Tree should be cut back and poisoned but could be a problem in terms of ecology, although outside any designated area.	2
2013	Cutting (Level Drain)	330506, 500840	19th Century	Moderate	Stability is again threatened by trees growing up through the fissures in the rock.	2
2009	Cutting	330541, 500875	19th century	Moderate	Some danger from tree growth undermining the quarry face.	2
2029	Access Track	330653, 500739	19 th century	Moderate	SE section cut and damaged by recent erosion gullies.	2
2015	Building Footprint	330490, 500853	19th Century	Poor	Poor - may soon be lost as almost completely grassed over and only visible as a few stones But stable at the moment. Grass should be kept close cropped and building monitored.	2
2043	Building	330611, 500790	19 th century	Poor	Poor - foundations only surviving. No direct risk.	2
2071	Old Quarry	330451, 500526	19 th Century	Moderate	Moderate, but buildings in a poor state. Tips are stable	2
2035	Structure	330550,	19 th	Moderate	Moderate but in fragile condition.	2

Conservation Management Plan – Penny Rigg Copper Mill, Cumbria – Appendix 4: Conditions Summary

ID No	Type	NGR	Date	Condition	Risks/Issues	Priority
		500681	century			
2000	Slate Quarry	330537, 500853	18 th – 20 th century	Good	Vegetation cracking rock face; climbing routes drilled into face	3
2038	Closehead cutting	330475, 500662	19 th century	Moderate	Small trees growing in fissures may cause problems in the future, also bracken undermining the stonework.	3
2024	Slate Rid Tip	330608, 500809	19 th Century	Good	Mature tree growing on tip but poses no obvious threat.	3
2068	Adit entrance?	330571, 500970	19 th century?	Poor	Blocked by slate and debris	3
2001	Sheep enclosure	330675, 500990	18 th Century	Good	Stands 1.80 high and coping stones in place (or replaced). Today part of modern sculpture.	
2020	Track leading from level	330481, 500761	19 th Century	Moderate	Track still visible but in danger of being hidden by quarry chipping and rid	
2056	Slate Rid tips	330652, 500683.	19 th century	Moderate	Top of tip is turfed which aids stability.	
2007	Riving Sheds	330589, 500943	19 th Century	Moderate	Some collapse on southern side but seem relatively stable but need recording to monitor any decline.	
2025	Leat Overflow	330608, 500743	19 th Century	Moderate	Moderate, south side disturbed and eroded.	
2052	Rectangular pits and terrace walling	330674, 500715	19 th century	Moderate	Moderate condition. No direct threat.	
2026	Leat for mill wheel	330612, 500768	19 th century	Moderate	Moderate but some recent disturbance and cleaning out at southern end.	
2064	Quarry Building	330517, 500829	19 th century	Moderate	Moderate - Survives only as wall footings. Seems stable enough, although slowly deteriorating.	
2021	Structure	330574, 500669	19 th Century?	Moderate	Moderate – slow deterioration	

Conservation Management Plan – Penny Rigg Copper Mill, Cumbria – Appendix 4: Conditions Summary

ID No	Type	NGR	Date	Condition	Risks/Issues	Priority
2066	Revetment wall	330545, 500869	19th century	Moderate	Moderate - overgrown in places	
2069	Building?	330558, 500968	19 th century?	Moderate	Grassed over in places	
2010	Retaining wall	330505, 500857	19th Century? Modern?	Good	Good/Stable	
2011	Retaining wall	330501, 500849	19th Century?	Good	Good/Stable	
2065	Quarry platform	330549. 500866	19th Century	Good	Good/Moderate	
2040	Entrance cutting to Horse Crag Level	330592, 500705	19th Century	Good	Good, Stable. Low risk of slate tip to south slumping into the cutting.	
2039	Tilberthwaite Deep Adit or Horse Crag Level	330572, 500704	19th Century	Good	Good, Stable. Continuing research and recreational access use by CATMHS provides regular condition monitoring and ensures short term survival.	
2033	Building	330570, 500693	19 th century	Good	Good, stable – no immediate threats except people have tried to dig out adjacent ironwork (2034)	
2016	Building	330445, 500781	18th Century	Good	Good but slowly deteriorating.	
2037	Level /Closehead	330452, 500651	19 th century	Good	Good /Moderate - Collapse into the cutting has partially blocked entrance but area seems stable now.	
2002	Quarry access track	330484, 500844.	18th Century	Good	Good - Stable	
2003	Stone feature at top of steps	330632, 500960	Unknown, possibly modern	Good	Good - Stable	

Conservation Management Plan – Penny Rigg Copper Mill, Cumbria – Appendix 4: Conditions Summary

ID No	Type	NGR	Date	Condition	Risks/Issues	Priority
2005	Retaining wall	330599, 500962	19th Century?	Good	Good - stable	
2008	Platform	330546, 500903	19th Century	Good	Good - Stable	
2014	Building	330496, 500844	19th Century	Good	Good - but slowly deteriorating.	
2017	Bridge	330328, 500688	18th Century	Good	Bridge modern replacement but abutments earlier	
2034	Fragments of ironwork	330567, 500689	19 th century	Moderate	Attempts have been made to dig out the possible winch plate.	
2059	Quarry	330512, 500696	19 th century	Moderate`		
2027	Access Track	330662, 500824	19 th century	Moderate		
2028	Water Course	330655, 500774	19 th century	Moderate		
2030	Access Track	330608, 500786	19 th century	Moderate		
2036	Wall	330580, 500677	19 th century	Moderate		
2055	Copper Spoil tip	330667, 500694	19 th century	Moderate		
2057	Slate Rid tips	330619, 500688	19 th century	Moderate		
2058	Access Track	330631, 500690	19 th century	Moderate		
2019	Quarry Cutting	330467, 500774	19th Century	Good		

Conservation Management Plan – Penny Rigg Copper Mill, Cumbria – Appendix 4: Conditions Summary

ID No	Type	NGR	Date	Condition	Risks/Issues	Priority
2023	Level	330608, 500809	19th Century	Good		
2067	Quarry building	330547, 500854	19 th century	Good		
2012	Closehead	330582, 500943	19th Century?	Not Found	Blocked Not visible from the surface	
2048	Retaining wall	330634, 500714	19 th century	Not Found	Blocked - Hidden by spoil – no longer extant	
2049	Terrace walling	330634, 500714	19 th century	Not Found	Blocked - Hidden by spoil – no longer extant	
2063	Trail Quarry	330415, 500707	19 th century?	Not Found	Not seen	
2070	Level (Closehead)	330557, 500864	19th Century	Not Found	Believed destroyed	

Ordered by Condition

ID No	Type	NGR	Date	Condition	Risks/Issues	Priority
2022	Building – Riving sheds?	330463. 500673	19th Century?	Good	Remarkably well preserved by deteriorating and needs stabilisation and consolidation.	1
2042	Powder Magazine	330596, 500737	19 th century	Good	Good - Roofless but otherwise complete and in good condition. Consolidation of wall-heads would help conservation.	1
2060	Main Quarry rid tip	330588, 500979 330443, 500820	18th century onwards	Good	Good - Majority of the tip seems stable although the edges are slowly eroding. Only area of concern is the cracks along the edge above the car park. Spoil may also be a health and safety risk but no more than natural scree.	1
2006	Slate Closehead	330590, 500910	19th Century	Good	Potential issue with large sycamore (trunk 30cm in diameter) growing through rock just above the head entrance could threaten long term maintenance. Tree should be cut back and poisoned but could be a problem in terms of ecology, although outside any designated area.	2
2000	Slate Quarry	330537, 500853	18 th – 20 th century	Good	Vegetation cracking rock face; climbing routes drilled into face	3
2024	Slate Rid Tip	330608, 500809	19th Century	Good	Mature tree growing on tip but poses no obvious threat.	3
2001	Sheep enclosure	330675, 500990	18th Century	Good	Stands 1.80 high and coping stones in place (or replaced). Today part of modern sculpture.	
2010	Retaining wall	330505, 500857	19th Century? Modern?	Good	Good/Stable	
2011	Retaining wall	330501, 500849	19th Century?	Good	Good/Stable	
2065	Quarry platform	330549.	19th	Good	Good/Moderate	

Conservation Management Plan – Penny Rigg Copper Mill, Cumbria – Appendix 4: Conditions Summary

ID No	Type	NGR	Date	Condition	Risks/Issues	Priority
		500866	Century			
2040	Entrance cutting to Horse Crag Level	330592, 500705	19th Century	Good	Good, Stable. Low risk of slate tip to south slumping into the cutting.	
2039	Tilberthwaite Deep Adit or Horse Crag Level	330572, 500704	19th Century	Good	Good, Stable. Continuing research and recreational access use by CATMHS provides regular condition monitoring and ensures short term survival.	
2033	Building	330570, 500693	19 th century	Good	Good, stable – no immediate threats except people have tried to dig out adjacent ironwork (2034)	
2016	Building	330445, 500781	18th Century	Good	Good but slowly deteriorating.	
2037	Level /Closehead	330452, 500651	19 th century	Good	Good /Moderate - Collapse into the cutting has partially blocked entrance but area seems stable now.	
2002	Quarry access track	330484, 500844.	18th Century	Good	Good - Stable	
2003	Stone feature at top of steps	330632, 500960	Unknown, possibly modern	Good	Good - Stable	
2005	Retaining wall	330599, 500962	19th Century?	Good	Good - stable	
2008	Platform	330546, 500903	19th Century	Good	Good - Stable	
2014	Building	330496, 500844	19th Century	Good	Good - but slowly deteriorating.	
2017	Bridge	330328, 500688	18th Century	Good	Bridge modern replacement but abutments earlier	
2019	Quarry Cutting	330467, 500774	19th Century	Good		

Conservation Management Plan – Penny Rigg Copper Mill, Cumbria – Appendix 4: Conditions Summary

ID No	Type	NGR	Date	Condition	Risks/Issues	Priority
2023	Level	330608, 500809	19th Century	Good		
2067	Quarry building	330547, 500854	19 th century	Good		
2050	Sunken Chamber	330658, 500712	19 th century	Moderate	Some risk of future flood damage with water running down slope from retaining walls (2047).	1
2047	Retaining walls south of Crushing House	330647, 500712	19 th century	Moderate	Risk of future flooding undercutting the base of the walls.	1
2045	Holding Pond	330629, 500725	19 th century	Moderate	North and south faces in good condition. East face partially collapsed – danger of stone facing/revetment falling into wheel pit below. Any consolidation here should be carried out in conjunction with the stabilisation of the wheel pit (2044).	1
2044	Wheel Pit	330648, 500725	19 th century	Moderate	Needs stabilising. The structure is substantially complete but some of the coping stones are missing and this is letting water permeate the stonework. The stonework has partially collapsed at the NW and SE corners and there is a structural crack in the centre of the east face. According to CATMHS some of the coping stones have been damaged and thrown down during the last two or three years. The wheel pit is central to the site's interpretation. CATMHS members have indicated that this structure should be a priority for management and consolidation	1
2046	Crushing House	330643, 500720.	19 th century	Moderate	Moderate condition and substantially complete. The structure would benefit from a structural assessment with particular attention being given to the wall head and door lintel of the south gable. The crusher house and wheel pit (2044) should be regarded as a single structural element in any future stabilization and interpretative project.	1
2032	Building	330636, 500667	19 th century	Moderate	Moderate - Window lintel cracked and stone work above slumping. Building has modern roof and is used as some form of temp. accommodation - chimney etc added to structure by recent occupants	1

Conservation Management Plan – Penny Rigg Copper Mill, Cumbria – Appendix 4: Conditions Summary

ID No	Type	NGR	Date	Condition	Risks/Issues	Priority
2054	Copper spoil tip	330668, 500639	19 th century	Moderate	Moderate - Erosion gully on NE slope, probably from recent bike/motor bike activities. Monitoring suggested.	1
2053	Raised area drainage gully	330680, 500708	19 th century	Moderate	Damage to South side during recent flood and serious risk of damage or destruction from future flooding. Detailed recording recommended.	1
2031	Building, Smithy or workshop?	330479, 500637	19 th century	Moderate	Building seems stable but bracken is an issue and could undermine structure gradually.	1
2013	Cutting (Level Drain)	330506, 500840	19 th Century	Moderate	Stability is again threatened by trees growing up through the fissures in the rock.	2
2009	Cutting	330541, 500875	19 th century	Moderate	Some danger from tree growth undermining the quarry face.	2
2029	Access Track	330653, 500739	19 th century	Moderate	SE section cut and damaged by recent erosion gullies.	2
2071	Old Quarry	330451, 500526	19 th Century	Moderate	Moderate, but buildings in a poor state. Tips are stable	2
2035	Structure	330550, 500681	19 th century	Moderate	Moderate but in fragile condition.	2
2038	Closehead cutting	330475, 500662	19 th century	Moderate	Small trees growing in fissures may cause problems in the future, also bracken undermining the stonework.	3
2020	Track leading from level	330481, 500761	19 th Century	Moderate	Track still visible but in danger of being hidden by quarry chipping and rid	
2056	Slate Rid tips	330652, 500683.	19 th century	Moderate	Top of tip is turfed which aids stability.	
2007	Riving Sheds	330589, 500943	19 th Century	Moderate	Some collapse on southern side but seem relatively stable but need recording to monitor any decline.	
2025	Leat Overflow	330608, 500743	19 th Century	Moderate	Moderate, south side disturbed and eroded.	
2052	Rectangular pits	330674,	19 th	Moderate	Moderate condition. No direct threat.	

Conservation Management Plan – Penny Rigg Copper Mill, Cumbria – Appendix 4: Conditions Summary

ID No	Type	NGR	Date	Condition	Risks/Issues	Priority
	and terrace walling	500715	century			
2026	Leat for mill wheel	330612, 500768	19 th century	Moderate	Moderate but some recent disturbance and cleaning out at southern end.	
2064	Quarry Building	330517, 500829	19 th century	Moderate	Moderate - Survives only as wall footings. Seems stable enough, although slowly deteriorating.	
2021	Structure	330574, 500669	19 th Century?	Moderate	Moderate – slow deterioration	
2066	Revetment wall	330545, 500869	19 th century	Moderate	Moderate - overgrown in places	
2069	Building?	330558, 500968	19 th century?	Moderate	Grassed over in places	
2034	Fragments of ironwork	330567, 500689	19 th century	Moderate	Attempts have been made to dig out the possible winch plate.	
2027	Access Track	330662, 500824	19 th century	Moderate		
2028	Water Course	330655, 500774.	19 th century	Moderate		
2030	Access Track	330608, 500786	19 th century	Moderate		
2036	Wall	330580, 500677	19 th century	Moderate		
2055	Copper Spoil tip	330667, 500694	19 th century	Moderate		
2057	Slate Rid tips	330619, 500688	19 th century	Moderate		
2058	Access Track	330631, 500690	19 th century	Moderate		

Conservation Management Plan – Penny Rigg Copper Mill, Cumbria – Appendix 4: Conditions Summary

ID No	Type	NGR	Date	Condition	Risks/Issues	Priority
2059	Quarry	330512, 500696	19 th century	Moderate`		
2012	Closehead	330582, 500943	19 th Century?	Not Found	Blocked Not visible from the surface	
2048	Retaining wall	330634, 500714	19 th century	Not Found	Blocked - Hidden by spoil – no longer extant	
2049	Terrace walling	330634, 500714	19 th century	Not Found	Blocked - Hidden by spoil – no longer extant	
2063	Trail Quarry	330415, 500707	19 th century?	Not Found	Not seen	
2070	Level (Closehead)	330557, 500864	19 th Century	Not Found	Believed destroyed	
2072	Old Quarry Building	330465, 500508	19 th Century	Poor	Very Poor Condition. The slate roof has collapsed in and undermined the gable wall making it lean alarmingly. The debris from surround rid tip is also slipping into the interior and damaging what remains of the walls. Needs immediate attention.	1
2018	Closehead	330479, 500760	19 th Century	Poor	Timber lintel needs attention and there is a risk from imminent collapse and in-filling.	1
2051	Dressing Mill	330667, 500722	19 th century	Poor	Poor/Moderate - Against the SE corner are the remains of a second structure associated with a terraced wall (2049) running N-S parallel to and below the east wall of the main building. This structure is in poor condition (damaged door lintel, massive structural crack in South, unstable wall heads) and suffered considerable damage during the 2009 floods. A structural assessment recommended as a matter of urgency.	1
2041	Building – smithy	330611, 500719	19 th century	Poor	Poor - Mature tree growing from hearth. Tree should be cut of at base and poisoned as long as felling can be safely achieved without causing any severe damage to the structure.	1
2061	Beck side wall	330742, 500749	19 th century	Poor	Poor - Cut by recent storm gullies in the area of the tailings ponds and wall core now exposed to erosion and further damage.	1
2062	Tailing tanks	330738,	19 th	Poor	Poor - Area cut by storm gullies. Severe risk of further erosion. There is a possibility of	1

Conservation Management Plan – Penny Rigg Copper Mill, Cumbria – Appendix 4: Conditions Summary

ID No	Type	NGR	Date	Condition	Risks/Issues	Priority
		500719	century		heavy metal pollution if tailings material is carried down Yewdale Beck in future flood episodes. Chemical sampling and assessment may be required, should consult Environment Agency as a matter of urgency.	
2004	Rectangular depression at the top of spoil tip	330628, 500968	19th century?	Poor	Overall site seems stable but some cracks observed on the outer edge above the car park. Cracks denote slippage of slate spoil heap which is an urgent issue.	1
2015	Building Footprint	330490, 500853	19th Century	Poor	Poor - may soon be lost as almost completely grassed over and only visible as a few stones But stable at the moment. Grass should be kept close cropped and building monitored.	2
2043	Building	330611, 500790	19 th century	Poor	Poor - foundations only surviving. No direct risk.	2
2068	Adit entrance?	330571, 500970	19 th century?	Poor	Blocked by slate and debris	3
2012	Closehead	330582, 500943	19th Century?	Not Found	Blocked Not visible from the surface	
2048	Retaining wall	330634, 500714	19 th century	Not Found	Blocked - Hidden by spoil – no longer extant	
2049	Terrace walling	330634, 500714 330659, 500711	19 th century	Not Found	Blocked - Hidden by spoil – no longer extant	
2063	Trail Quarry	330415, 500707	19 th century?	Not Found	Not seen	
2070	Level (Closehead)	330557, 500864	19th Century	Not Found	Believed destroyed	

APPENDIX 5: SSSI CITATION, CONSERVATION OBJECTIVES and DEFINITIONS OF FAVOURABLE CONDITION FOR DESIGNATED FEATURES OF INTEREST

Date Notified: 30th November 1987

File ref: NY 30/10

County: Cumbria **Site Name:** Tilberthwaite Gill

District: South Lakeland

Status: Site of Special Scientific Interest (SSSI) notified under Section 28 of the Wildlife and Countryside Act 1981.

Local Planning Authority: Lake District Special Planning Board

National Grid Reference: NY 302006 **Area:** 6.4 (ha) 15.8 (ac)

Ordnance Survey Sheet 1:50,000: 90 **1:10,000:** NY 20 SE, NY 30 SW

Date Notified (Under 1949 Act): 1965 **Date of Last Revision:** 1975

Date Notified (Under 1981 Act): 1987 **Date of Last Revision:** 1987

Other Information:

1. The site lies within the Lake District National Park.
2. The boundary of the site has been modified by extension and deletion at this revision.

Description and Reasons for Notification:

Tilberthwaite Gill is situated in the Coniston Fells 3 km north of Coniston village. It is a k km stretch of the Yewdale Beck which has cut a deep and impressive ravine through rocks of the Borrowdale volcanic series exposing tuffs of both acid and basic composition.

Gills are important habitats in Lakeland as their inaccessibility to grazing animals, the presence of mineral-rich soils and the variety of rock crevices and ledges present within them, has allowed communities to develop containing plants that have long been lost from the surrounding fells.

Tilberthwaite is particularly important as it has one of the richest floras of any gill in South Cumbria being second only to Dungeon Ghyll SSSI in Great Langdale.

The site consists of two contrasting sections of gill. The upper part, where the stream flows south east through a narrow vertical-sided gorge, and the lower part after the stream has turned sharply north east to flow through a steep-sided V-shaped valley. The lower section has a typical acid grassland community on its slopes with sheep's fescue *Festuca ovina*, common bent *Agrostis capillaris* and heath bedstraw *Galium saxatile*, abundant ferns such as lemonscented

Oreopteris limbosperma, male *Dryopteris filix-mas* and scaly male *D. affinis* and scattered trees and shrubs including birch *Betula* spp., oak *Quercus* spp., ash *Fraxinus excelsior*, larch *Larix decidua*, holly *Ilex aquifolium* and juniper *Juniperus communis*. Areas of stabilising quarry spoil are sparsely vegetated with parsley fern *Cryptogramma crispera*. Crevices and rock faces along the rocky stream edge support yellow saxifrage *Saxifraga aizoides*, common butterwort *Pinguicula vulgaris*, English stonecrop *Sedum anglicum*, common yellow-sedge *Carex demissa*, pale sedge *C. pallescens*, meadowsweet *Filipendula ulmaria*, opposite-leaved golden-saxifrage *Chrysosplenium oppositifolium*, wood anemone *Anemone nemorosa*, wood sorrel *Oxalis acetosella*, soft shield-fern *Polystichum setiferum* and maidenhair spleenwort *Asplenium trichomanes*. A typical moss flora is present with abundant *Marsupella emarginata*, *Scapania undulata*, *Rhacomitrium aciculare* and *Brachythecium plumosum*. The junction of the two sections of gill is marked by an outcrop of base-rich rock identified by the presence of base-loving bryophyte communities of *Ctenidium molluscum*, *Anoetangium aestivum*, *Calliergonella cuspidata*, *Campylium stellatum* and *Fissidens cristatus* and higher plants such as green spleenwort *Asplenium viride* and mountain melick *Melica nutans*.

Above this point is the deep vertical-sided gorge. The hanging canopy of trees and shrubs, the ledges and flushes and the damp and dry north and south-facing walls respectively have encouraged a rich flora to develop here. Oak and birch dominate a mixed woodland of sycamore *Acer pseudoplatanus*, beech *Fagus sylvatica*, rowan *Sorbus aucuparia*, elm *Ulmus glabra*, larch, hazel *Corylus avellana*, aspen *Populus tremula*, yew *Taxus baccata*, holly and bird cherry *Prunus padus*. Lush stands of great woodrush *Luzula sylvatica* dominate the ledges along with a rich variety of ferns such as male, scaly male, lady *Athyrium filix-femina*, broadbuckler

Dryopteris dilatata, oak *Gymnocarpium dryopteris* and beech *Phegopteris connectilis*. Associated species include wall lettuce *Mycelis muralis*, goldenrod *Solidago virgaurea*, tutsan *Hypericum androsaemum*, sanicle *Sanicula europaea*, devil's-bit scabious *Succisa pratensis*, common valerian *Valeriana officinalis*, meadowsweet, wood sage *Teucrium scordonia*, upland enchanter's nightshade *Circaea x intermedia*, bilberry *Vaccinium myrtillus*, wood melick *Melica uniflora* and the rare wood fescue *Festuca altissima*. The most damp and shady areas support the brittle bladder-fern *Cystopteris fragilis* and Wilson's filmy-fern *Hymenophyllum wilsonii*. The moss and liverwort cover is extensive with abundant *Marsupella emarginata* and *Diplophyllum albicans* and more locally frequent species such as *Blindia acuta*, *Hyocomium armoricum* and *Dichodontium pellucidum*.

The gill as a whole contains small populations of several Arctic-Alpine and upland species including starry saxifrage *Saxifraga stellaris*, mossy saxifrage *S. hypnoides*, mountain sorrel *Oxyria digyna*, viviparous fescue *Festuca vivipara* and fir clubmoss *Huperzia selago*.

Conservation objectives and definitions of favourable condition for designated features of interest



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These Conservation Objectives relate to all designated features on the SSSI, whether designated as SSSI, SPA, SAC or Ramsar features.

Name of Site of Special Scientific Interest (SSSI)	
Tilberthwaite Gill	
Names of designated international sites	
Special Area of Conservation (SAC)	N/A
Special Protection Area (SPA)	N/A
Ramsar	N/A
Relationship between site designations	

Version control information	
Status of this Version (Draft, Consultation Draft, Final)	draft 2
Prepared by	Graeme Skelcher
Date of this version	14 January 2009
Date of generic guidance on favourable condition used	Upland habitats, October 2006
Other notes/version history	Draft 1 by Graeme Skelcher, 15 December 2008
Quality assurance information	
Checked by	Name
	Signature
	Date

Conservation Objectives and definitions of Favourable Condition: notes for users

Conservation Objectives

SSSIs are notified because of specific biological or geological features. Conservation Objectives define the desired state for each site in terms of the features for which they have been designated. When these features are being managed in a way which maintains their nature conservation value, then they are said to be in 'favourable condition'. It is a Government target that 95% of the total area of SSSIs should be in favourable condition by 2010.

Definitions of Favourable Condition

The Conservation Objectives are accompanied by one or more habitat extent and quality definitions for the special interest features at this site. These are subject to periodic reassessment and may be updated to reflect new information or knowledge; they will be used by Natural England and other relevant authorities to determine if a site is in favourable condition. The standards for favourable condition have been developed and are applied throughout the UK.

Use under the Habitats Regulations

The Conservation Objectives and definitions of favourable condition for features on the SSSI may inform the scope and nature of any 'appropriate assessment' under the Habitats Regulations. An appropriate assessment will also require consideration of issues specific to the individual plan or project. The habitat quality definitions do not by themselves provide a comprehensive basis on which to assess plans and projects as required under Regulations 20-21, 24, 48-50 and 54 - 85. The scope and content of an appropriate assessment will depend upon the location, size and significance of the proposed project. Natural England will advise on a case by case basis.

Following an appropriate assessment, competent authorities are required to ascertain the effect on the integrity of the site. The integrity of the site is defined in paragraph 20 of ODPM Circular 06/2005 (DEFRA Circular 01/2005) as the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified. The determination of favourable condition is separate from the judgement of effect upon integrity. For example, there may be a time-lag between a plan or project being initiated and a consequent adverse effect upon integrity becoming manifest in the condition assessment. In such cases, a plan or project may have an adverse effect upon integrity even though the site remains in favourable condition.

The formal Conservation Objectives for European Sites under the Habitats Regulations are in accordance with paragraph 17 of ODPM Circular 06/2005 (DEFRA Circular 01/2005), the reasons for which the European Site was classified or designated. The entry on the Register of European Sites gives the reasons for which a European Site was classified or designated.

Explanatory text for Tables 2 and 3

Tables 2, 2a and 3 set out the measures of condition which we will use to provide evidence to support our assessment of whether features are in favourable condition. They are derived from a set of generic guidance on favourable condition prepared by Natural England specialists, and have been tailored by local staff to reflect the particular characteristics and site-specific circumstances of individual sites. Quality Assurance has ensured that such site-specific tailoring remains within a nationally consistent set of standards. The tables include an audit trail

to provide a summary of the reasoning behind any site-specific targets etc. In some cases the requirements of features or designations may conflict; the detailed basis for any reconciliation of conflicts on this site may be recorded elsewhere.

Conservation Objectives

The Conservation Objectives for this site are, subject to natural change, to maintain the following habitats and geological features in favourable condition (*), with particular reference to any dependent component special interest features (habitats, vegetation types, species, species assemblages etc.) for which the land is designated (SSSI, SAC, SPA, Ramsar) as individually listed in Table 1.

Habitat Types represented (Biodiversity Action Plan categories)

Inland rock (Tall-herb ledge vegetation)

Geological features (Geological Site Types)

N/A

(*) or restored to favourable condition if features are judged to be unfavourable.

Standards for favourable condition are defined with particular reference to the specific designated features listed in Table 1, and are based on a selected set of attributes for features which most economically define favourable condition as set out in Table 2, Table 2a and Table

Table 1 Individual designated interest features

BAP Broad Habitat type / Geological Site Type	Specific designated features	Explanatory description of the feature for clarification	SSSI designated interest features	SAC designated interest features	SPA bird populations dependency on specific habitats			Ramsar criteria applicable to specific habitats			
					Annex 1 species	Migratory species	Waterfowl assemblage	1a Wetland characteristics	2a Hosting rare species &c	3a 20000 waterfowl	3c 1% of population
Inland rock	U17 <i>Luzula sylvatica</i> - <i>Geum rivale</i> tall-herb community	Tall herb vegetation: Hydrophilous tall-herb fringe communities of plains and of the montane to alpine levels	*								

NB. Features where asterisks are in brackets (*) indicate habitats which are not notified for specific habitat interest (under the relevant designation) but because they support notified species.

Table 2 Habitat extent objectives

Conservation Objective for habitat extent	To maintain the designated features in favourable condition, which is defined in part in relation to a balance of habitat extents (extent attribute). Favourable condition is defined at this site in terms of the following site-specific standards.
Extent - Dynamic balance	On this site favourable condition requires the maintenance of the extent of each habitat type (either designated habitat or habitat supporting designated species). Maintenance implies restoration if evidence from condition assessment suggests a reduction in extent.

Habitat Feature (BAP Broad Habitat level, or more detailed level if applicable)	Estimated extent (ha) and date of data source/estimate	Site Specific Target range and Measures	Comments
Tall-herb upland ledge community (U17)	724 m	No reduction in area	

Audit Trail
Rationale for habitat extent attribute (Include methods of estimation (measures), and the approximate degree of change which these are capable of detecting).
Total length of gill calculated from 1987 Phase 1 map by Ian Slater, but no record appears to exist of current or past extent of tall-herb ledge vegetation within this length.
Rationale for site-specific targets (including any variations from generic guidance)
Other Notes

Table 3 Site-Specific definitions of Favourable Condition

CONSERVATION OBJECTIVE FOR THIS HABITAT / GEOLOGICAL SITE-TYPE	To maintain the Inland rock (tall-herb ledge vegetation) at Tilberthwaite Gill in favourable condition, with particular reference to relevant specific designated interest features. Favourable condition is defined at this site in terms of the following site-specific standards:
Site-specific details of any geographical variation or limitations (where the favourable condition standards apply)	
Tall-herb ledge vegetation occurs along the length of the gill.	

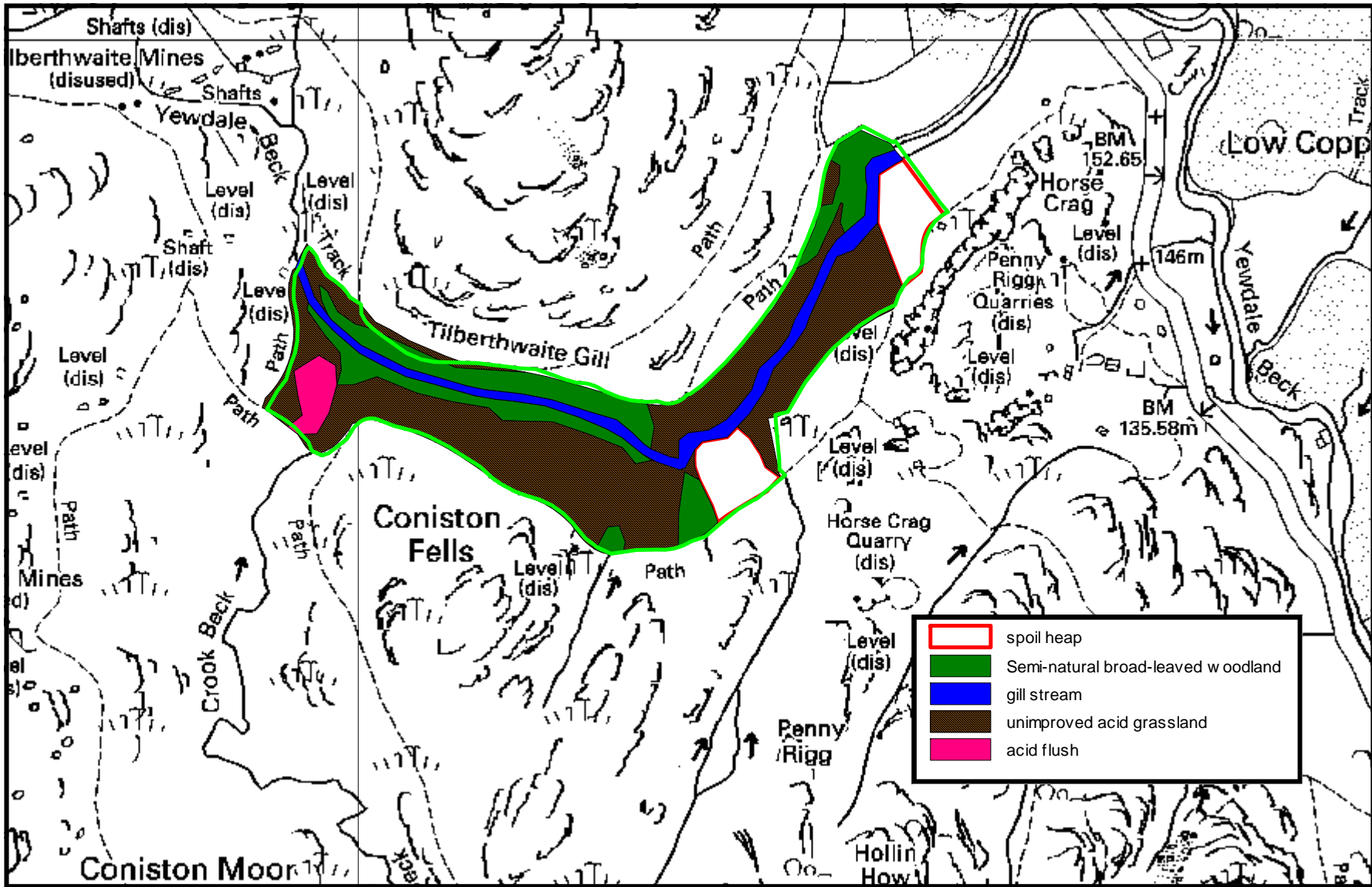
Site-specific standards defining favourable condition
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Criteria feature	Attribute term in guidance	Measure	Site-specific Targets	Comments	Use for CA?
Tall herbs (upland)	Vegetation composition — frequency and cover of indicator species.	Targets assessed against visual estimate at 4 m ² , or individual stand if close observation not possible.	At least two indicator species should be present: <i>Alchemilla</i> spp., <i>Angelica sylvestris</i> , <i>Crepis paludosa</i> , <i>Filipendula ulmaria</i> , <i>Galium boreale</i> , <i>Geranium sylvaticum</i> , <i>Geum rivale</i> , <i>Heracleum sphondylium</i> , <i>Hieracium</i> spp., <i>Hypericum</i> spp., <i>Leucanthemum vulgare</i> , <i>Luzula sylvatica</i> , <i>Meconopsis cambrica</i> , <i>Mercurialis perennis</i> , <i>Oxyria digyna</i> , <i>Pimpinella saxifraga</i> , <i>Potentilla crantzii</i> , <i>Primula vulgaris</i> , <i>Ranunculus acris</i> , <i>Rubus saxatilis</i> , <i>Rumex acetosa</i> , <i>Saussurea alpina</i> , <i>Sedum rosea</i> , <i>Silene dioica</i> , <i>Solidago virgaurea</i> , <i>Succisa pratensis</i> , <i>Trollius europaeus</i> , <i>Valeriana officinalis</i>	Only 1 species per species group (e.g. <i>Alchemilla</i> spp. is a species group) required. Consider increasing the number of indicator species that should be present. A deterioration in the species richness of the site is not acceptable.	Yes
			At least 50% of vegetation cover should be made up of indicator species.	Exclude <i>Luzula sylvatica</i> when assessing this target	Yes
		Target assessed against visual estimate for as much of the feature as is visible while standing at a sample location.	Less than 1% of vegetation cover should be made up of non-native species.		Yes

Criteria feature	Attribute term in guidance	Measure	Site-specific Targets	Comments	Use for CA?
Tall herbs (upland)	Vegetation structure — indicators of current grazing.	Targets assessed against visual estimate at 4 m ² , or individual stand if close observation not possible.	At least 50% of tall herb stems should be more than 20 cm tall, or there should be few observable signs of grazing on tall herbs or ferns, and most tall herb species should be flowering or showing signs of being able to flower.	Include flowering stems, other than those of <i>Luzula sylvatica</i> which can be hard to see clearly from a distance and do not tend to form a distinct stratum.	Yes
			Less than 50% of live flowering shoots of indicator tall herbs should show evidence of grazing.		Yes
Tall herbs (upland)	Physical structure — indicators of ground disturbance due to herbivore and human activity.	Target assessed against visual estimate at individual stand scale. Target assessed against the aggregate of visual estimates for as much of the feature as is visible while standing at all sample locations.	Less than 25% of the ground cover, of each patch or stand, should be disturbed bare ground*.	* Disturbed bare ground is where a substrate of bare humus, bare peat, bare mineral soil, bare gravel, or soil covered only by an algal mat, has its surface broken and imprinted by hoof marks, wallows, human foot prints, or vehicle and machinery tracks. The emphasis is on 'disturbed' rather than 'bare'.	Yes
			Over the whole feature scanned from sample locations, less than 10% of the ground cover should be disturbed bare ground*.		Yes
			No visible evidence of damage to tall herb vegetation as a result of gill scrambling (or other similar) activities.		

Audit Trail
Rationale for limiting standards to specified parts of the site
Rationale for site-specific targets (including any variations from generic guidance)
Rationale for selection of measures of condition (features and attributes for use in condition assessment) (The selected vegetation attributes are those considered to most economically define favourable condition at this site for the broad habitat type and any dependent designated species).
Other Notes

Annex 1 Tilberthwaite Gill Habitat Map (Adapted from Phase 1 map by Ian Slater, 1987)
 Scale - 1:5,000; SSSI unit bounded by green line



APPENDIX 6: OPERATIONS LIKELY TO DAMAGE THE SPECIAL INTEREST (OLDS)

Operations likely to damage the special interest

Site name: Tilberthwaite Gill

OLD1002061

Ref. No. Type of Operation

- 1 Cultivation, including ploughing, rotovating, harrowing, and re-seeding.
- 2 The introduction of grazing and changes in the grazing regime (including type of stock or intensity or seasonal pattern of grazing and cessation of grazing).
- 3 The introduction of stock feeding and changes in stock feeding practice.
- 4 The introduction of mowing or other methods of cutting vegetation and changes in the mowing or cutting regime.
- 5 Application of manure, fertilisers and lime.
- 6 Application of pesticides, including herbicides (weedkillers).
- 7 Dumping, spreading or discharge of any materials.
- 8 Burning and changes in the pattern or frequency of burning.
- 9 The release into the site of any wild, feral or domestic animal*, plant or seed.
- 10 The killing or removal of any wild animal* including pest control.
- 11 The destruction, displacement, removal or cutting of any plant or plant remains, including tree, shrub, herb, dead or decaying wood, moss, lichen, fungus, leafmould and turf.
- 12 The introduction of tree and/or woodland management+ and changes in tree and/or woodland management+.
- 13a Drainage (including moor-gripping and the use of mole, tile, tunnel or other artificial drains).
- 13b Modification of the structure of watercourses (eg streams and springs), including their banks and beds, as by re-alignment, re-grading and dredging.
- 13c Management of aquatic and bank vegetation for drainage purposes.
- 14 The changing of water levels and tables and water utilisation (including irrigation, storage and abstraction from existing water bodies and through boreholes).
- 20 Extraction of minerals, including peat, shingle, sand and gravel, topsoil, subsoil and spoil.
- 21 Construction, removal or destruction of roads, tracks, walls, fences, hardstands, banks, ditches or other earthworks, or the laying, maintenance or removal of pipelines and cables, above or below ground.
- 22 Storage of materials on the site.
- 23 Erection of permanent or temporary structures, or the undertaking of engineering

works, including drilling.

24 Modification of natural or man-made features, clearance of boulders, large stones, loose rock or scree and battering, buttressing or grading rock-faces and cuttings.

26 Use of vehicles likely to damage or disturb the flora and fauna.

27 Recreational, educational or other activities likely to damage the flora and fauna.

28 Introduction of game or waterfowl management and changes in game and waterfowl management and hunting practice.

* 'animal' includes any mammal, reptile, amphibian, bird, fish or invertebrate.

+ including afforestation, planting, clear and selective felling, thinning, coppicing, modification of the stand or underwood, changes in species composition, cessation of management.