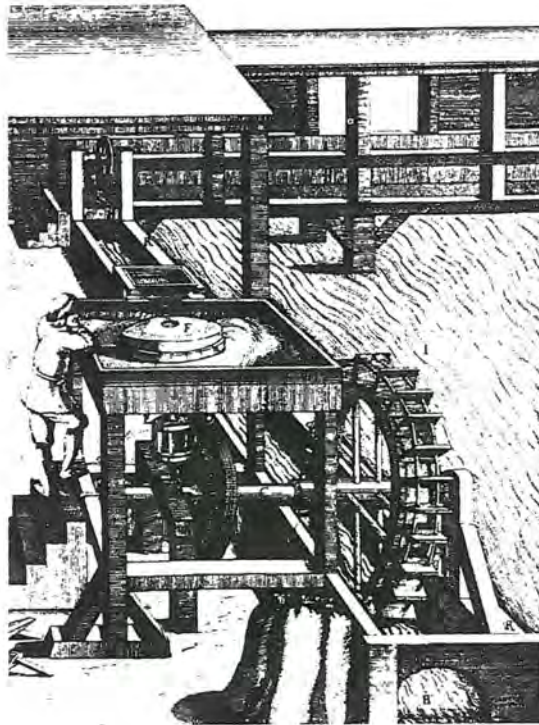


COASTAL EROSION PROJECT
TIDE MILLS SURVEY



REPORT NO. 293

GWYNEDD ARCHAEOLOGICAL TRUST
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COASTAL EROSION PROJECT
TIDE MILLS SURVEY (G1467)

Prepared for Cadw: Welsh Historic Monuments

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Illustrations by A Richards

Gwynedd Archaeological Trust Report No. 293

Frontispiece: A corn mill powered by an undershot wheel, with simple Vitruvian style gearing, from *Theatrum Machinarum Morym* by G Bockler, 1662

COASTAL EROSION PROJECT: MEASURED SURVEY OF TIDE MILLS

Introduction

The remains of five tide mills which lie between Holy Island and Anglesey were recorded during the 1996 Coastal Erosion Survey of Anglesey¹. The history of these, and that of one other destroyed mill, were known from documentary sources². Three of the sites retained remains of both a mill building and associated dam. A search for parallel sites elsewhere in Wales and Britain produced few positive results, which suggested that the Anglesey mills were relatively rare. The sites are vulnerable to erosion, and signs of recent disturbance were visible at the three best preserved ones. The continued threat of disturbance from, among other things, storms and bait diggers, led to the recommendation that the remains be recorded by measured survey. An application to Cadw for grant aid as part of its on-going coastal erosion project was successful.

Methodology

A desktop study was carried out, which involved examining manuscript evidence at the County Archives, Llangefni, and the archives of the University of Wales, Bangor, where the Melville Richards Placename index was also consulted. Good documentary evidence was found for one of the mills, Melin Wen, in the Bodorgan Mss at Bangor, but only sporadic references were found for the other two. However, references were also collected for other tide mills around the coast, for comparative purposes.

The sites were recorded at low tide using a Geodimeter 400 Electronic Distance Measurer, and the data downloaded into SCC software for subsequent processing and modelling. Background data was digitised from the 1:2500 OS maps to serve as a backdrop for the surveyed data.

Photographs were taken of all sites on colour negative film and colour slide film. This included a record of general views and detail shots of features and upstanding masonry. However, a full photographic record has not been undertaken.

Molinological background

The beginning of the modern study of tide mills starts with the paper presented by Rex Wailes to the Institute of Civil Engineers in 1938³. The subject was again examined by W E Minchinton in the 1970's⁴, and the technical aspects were more fully examined by David Jones in 1985⁵, and M J T Lewis in 1996⁶.

Tide mills utilise the energy given by the diurnal rise and fall of the tide by storing water at high tide, and then releasing the stored water through a wheel race. A classic description of the basic working of a tide mill, written by Richard Carew in 1602⁷, states "*Amongst the commodities affoorded by the sea, the Inhabitants make use of divers creekes, for griste mills, by thwarting a bancke from side to side, in which a floud-gate is placed with two leaves: these the flowing tyde openeth, and after full sea, the waight of the ebbe closeth fast, which no other force can doe: and so the imprisoned water payeth the ransom of dryving an under-shoote wheele for his enlargement.*". This is the basic principal used by the Anglesey tide mills, where a dam is built across the entrance to a tidal creek in which there are sluice gates through which the water enters, and which are closed by the pressure of water when the tide turns. The water is then directed through the wheel race, which is usually positioned alongside the sluice gates, where it turns the water wheel to drive the mill stones. Tide mills have been classified

¹ GAT Report No. 251, 1997

² Williams L 1939 and 1945

³ Rex Wailes, Transactions of the Newcomen Society, 1938-9, reprinted as *Tide Mills in England and Wales* by SPAB in 1955.

⁴ Minchinton 1977.

⁵ David Jones 1986

⁶ M J T Lewis 1996

⁷ Richard Carew *Survey of Cornwall* 1602

into four categories⁸ according to water supply: (i) tidal impeded mills, where the mill relies on fresh water for its energy, but is unable to work during high tides; (ii) a tidal assisted mill, where the water supply is provided by both fresh water and tidal water; (iii) a tidal dam and pond mill, which relies on the damming of tidal water in a natural creek; and (iv) a tidal lagoon mill which relies upon the damming of tidal water impounded in an artificial reservoir. The first is not strictly a tide mill, and need not concern us further, although a number of Anglesey mills, e.g. Aberffraw, Llanfachraeth, which are situated within tidal limits fall into this category. None of the Anglesey mills fall into category (iv). The majority are category (iii) mills, although Melin Carnau could just fall into Category (ii). All the mills have fresh water draining into the mill pond, but in cases the size of the millpond would suggest that the fresh water element is incidental, and not necessary for the working of the mill.

The Anglesey tide mills

Topography

Tide mills require a sheltered, indented coastline with a good tidal range. These conditions are admirably met on the narrow strait between Holy Island and Anglesey, where five, and possibly six, tide mills are known to have existed (see fig. 1). The strait, which is known variously as Y Lasinwen, for the centre section, Afon Cymyran, for the south section, and Afon Penrhos for the north section⁹, is now crossed by two bridges, the earlier of which is at Pont Rhyd y Bont, where there has been a bridge and ford from at least 1578¹⁰. The northern bridge, however, is the Stanley Embankment built in 1822-3 to a design by Thomas Telford to carry the London to Holyhead post road, and to which the Chester to Holyhead Railway was added on the south side in 1846-8. The construction of the embankment created a larger body of standing water between it and Rhyd y Bont, and reduced the tidal range by a metre, thus preventing one of the tide mills (Tre Gof) from continuing to work.

The one possible mill site is situated at the southern end of the Strait, at the top end of a sheltered creek by Bryn y Bar. There is no documentary evidence for its existence, and the remains, which consist of two lines of walling, are not sufficient to identify them as a mill site. The location, however, is not ideal, as the area which would have formed the mill pond appears too small. The identification of this site as that of a tide mill must, therefore, remain in doubt.

A number of dams were built across the entrance to creeks in the 18th century for the purpose of reclaiming tidal marsh, and one of these, the Cruglas dam erected in 1776, which was designed to reclaim the Cleifiog sands where the village of Valley now lies, cut off another mill (Ty Mawr) from its supply of tidal water¹¹.

The other three mills on the Strait, which are the subject of this report, all lie close together towards the southern end where there is a large tidal range, and deep protected creeks.

References to three other tidal mills are known from north-west Wales: two of these are in the Menai Strait, one at Llantysilio¹², where the dams can still be seen, and one at Port Dinorwic (Felin heli), the site of which lay under the present dock, and which was apparently a tidally assisted mill¹³. A third tide mill was one of the mills belonging to the medieval borough of Conwy¹⁴, and was situated just outside the town's mill gate. Its location would suggest this was a tidal assisted mill.

That five out of the eight known mills are located close together in the relatively short length of tidal strait between Holy Island and Anglesey suggests that it was particularly suited for the siting of tidal mills, and that their location is as much due to suitability of topographic factors as it is to economic or social factors.

⁸ Jones 1986, p 124

⁹ Jones G T 1989

¹⁰ A bridge is indicated on Saxton's map of that date, and also on Speeds map of 1620.

¹¹ The mill is clearly shown on an 18th century survey of Cleifiog sands UWB Maps/116

¹² Davies H R 1966

¹³ Jones R J 1992 pp. 9-10

¹⁴ Lewis E A 1912 pp. 190-191

History

Although tide mills are known to have been in use from Roman times onwards, and in Ireland several examples of Early medieval tide mills have recently been recognised¹⁵, the Anglesey tide mills all appear to be Post-medieval in date. The earliest reference found is that to Tre-gof mill of 1524, which is a dispute "*concerning the mill dams called Melyn helu in Kaerkeby parish*"¹⁶. This mill is unusually situated between an island, Ynys Swyddog, and the Holyhead shore. A dam was built from the southern end of the island to the shore, and another from the northern end to the shore, and the mill pool was formed from the area between the island and shore. The mill was situated on the Holyhead side of the northern dam, and is clearly shown on a number of manuscript maps¹⁷. The dams still exist but the mill building does not. The mill went out of use following the construction of Telford's embankment in 1824.

The mill at Llandysilio, on the Menai Strait, was erected between 1576 and 1578¹⁸. The original lease of that date, between Sir H Bagnall and Wm Herbert on the one side and Rowland Meredydd of Bodowyr on the other, was for "*the site of a salt water grinding mill and place for a weir at Traeth Tysilio and an acre of land necessary for building the mill*". Other references make it clear the mill was held with a co-lessee, Jasper Price, nephew of Meredydd. In 1593, in a fascinating petition to the Court of Exchequer, by Hugh Lloyd, farmer of the Porthaethwy ferry, he complains of loss of revenue on the ferries because "*dyverse persons wch had occasion to grynde their corne in drye tymes at grieste mylles in the Countie of Carnarvon at hir Masjesties mills*" were now having their corn ground at the new mills erected by "*Jesper Pryce of llanidan in the Countie of Anglesey gen*". He goes on to say that Pryce had "*of late by the labr chardge and assestaunce of one Rowland Meredith gent about five or sixe years paste within the prcincte of the highe water marke of his own wronge and withough warrant or good title erected and buylded two Corne Mylles upon the soyle of her Majestees uppon or neare unto the said Ryver of Mena*". Loss of revenue of Crown mills and Crown ferries was stressed. In fact a grant dated 1576 had given the mills legal status.

The court case mentions two mills, as does the 1576 grant where they are described as "*the aforesaid two water mills under one roof called Melyne Hely*". It has been suggested¹⁹ that this involved two water wheels, one being driven by the ebb tide and the other by the flow. However, this is very unlikely, although possible, as there were enormous technological difficulties driving a wheel on the incoming tide. It is more likely the mill would have had two wheels, each linked to a single pair of stones, which would both have been driven by the release of water from the mill pond²⁰.

The manuscript references to the other tide mills are later in date: there is a 17th century reference to Melin Carnau, and 18th century references to Melin Wen and Melin Bodior (see below).

A possible link between the tide mills has been suggested by Lucy Williams. Rowland Meredydd, the builder of the Porthaethwy mill, was called by Henry Rowlands, writing at the end of the 17th century, "*the celebrated mill builder*"²¹, and he mentions two mills at Bodowyr built by Meredydd. Rowland's son Edmund married the heiress of Traffwll²², close to the Holyhead – Anglesey Strait. It is possible that Edmund and his father were responsible for the construction of one or more of the tide mills there, although the Tre'r Gof mill was already built by this time.

¹⁵ Rynne C 1992 pp 22-4

¹⁶ NLW Sotheby Mss, quoted by Williams 1939, p 109

¹⁷ UWB Penrhos II 772 (1769) and Penrhos II 804 (1817). It is also clearly shown on the 1840 Tithe map.

¹⁸ Williams 1945, p 61

¹⁹ Williams 1945, p 62

²⁰ The question of multiple mills is discussed in detail in Holt 1988, pp 131-2 and Lewis 1996, pp 175-6.

²¹ Rowlands 1848 p 243

²² Griffith J E 1914

THE MILL SURVEYS

Melin Carnau (SH 299761)

History

Little is known of the history of this mill, and indeed only one archival reference has been found, which is a brief mention in a manuscript dated 1666²³. The history is further confused by the construction of a fresh water mill above high tide level which was also called Melin Carnau²⁴, and was fed by the Afon Carnau. The same river would have also fed the tide mill, although there was probably little need for it, and there does not appear to be sufficient water in the present stream to drive a mill. On the coast edge is a ruined stone structure which may be the former mill house. The tide mill is not depicted on any maps yet found: John Evans map of 1796 shows Felin Wen and Bodior Mill, but does not show one at Carnau. The Ordnance Survey maps show the fresh water mill, but not the tide mill. Lucy Williams claims this mill was working into the 1870's, but does not give her sources for this²⁵.

Archaeology (Figs 2-3 and plates 1-6)

This mill differs in layout to the two adjacent mills, and more closely resembles the 16th century mill at Llandysilio. However, this is in part dictated by the topography: the mill building is situated on an island which is centrally located at the mouth of the tidal creek. The dam, of which there are only slight remains visible, therefore ran from either side the island to the shore. The north dam is not straight, but makes use of rock outcrops close to the shore, where it runs roughly west, before turning in a dog-leg bend to the south to the island. The dam is visible at the coast end where two lines of boulders can be seen through the turf, but elsewhere it is only visible as a stone spread where a water channel has cut through the sand, and much of the dam is not visible. It is also not clear how the dam joined the island. South of the mill island the dam can again be picked up where it runs along a rock outcrop before turning south-east to re-join the mainland. Comparison of the present water channels with those shown on the 1902 OS map show that there has been considerable movement, and it is the 1902 channels which have been shown on fig. 3, as these better illustrate how the mill would have operated, although the modern channels are shown on the present survey fig. 2.

The mill is a small almost square structure, which appears to have been orientated so that the wheel was on the west side. There is no clear wall on this side, although there is a cross wall inside the building, and slight traces of additional walling which suggest the former presence of a wheel race. The remaining three walls are better preserved, and are up to three courses high in places. A foundation plinth is visible on the north wall.

Within the area thought to have been occupied by the wheel race is part of a wooden axle with an octagonal cast iron collar or hub around it. The axle is 600mm long and 300mm in diameter. It has been sawn at the west end, but is broken at the east end. The octagonal hub is 200mm wide, and is held onto the axle with a number of iron wedges. It has protruding ridges at each of the corners, with a further protrusion at one end of each ridge. It is assumed that spokes were attached to the hub, but by what means is not known. It is probably the central hub of the water wheel, in which case each face may have acted as a socket for a wooden spoke, although the spokes would have measured six inches or so square, which would be larger than usual. If not part of the water wheel, then it must have been part of the pit wheel.

South of the mill, and within the line of the dam, is a rectangular stone spread, which may mark the location of another mill, the remains are very slight, and the exact nature of the feature is obscure.

Other short lengths of walling are visible in eroded water channels east and south of the mill, which suggests the layout as surveyed is not the only system of dams employed, and that this is a multi-phase

²³ UWB Presaddfed 396

²⁴ This mill is clearly depicted on a railway plan of 1865 (W/CD/43). It was in existence by 1776, when it was a fulling mill run by William and Mary Roberts, who moved in that year to run another fulling mill on Anglesey (Davidson A 1987 pp 8-9).

²⁵ Williams 1945, p 62

site, of which the present survey has recorded the last phase. It is not possible to relate the very small lengths of walling to any other features, or to the logical working of the present mill.

It is probable that the sluice gates were sited west of the mill. The reasons for this are: there is no trace of a dam in this area; a water channel is shown here on the second edition OS map (fig. 3); it is adjacent to the wheel race, a relationship which is similar at the other mills.

Felin Wen (SH 296773)

History

Slightly more is known about the history of Felin Wen than the other mills. It was owned by Bodorgan Estate, and there are a number of references to the mill in the estate manuscripts held at UWB. The earliest reference is the estate map of 1725²⁶, which clearly depicts the mill with a water wheel and dam. In 1755²⁷ the mill was let for £6.00.00, with an accompanying smallholding called Mynydd y Felin for £3.00.00. The earliest description is in the Estate Survey of 1774²⁸, which describes it as "Mill has one pair of stones – watered by the tide – landlord repairs – should not". The rental value of the mill and holding was £11.00.00. In 1795²⁹ the mill was let for £12.12.0 to Owen Williams. In 1815³⁰ the rent was £30.00.00, which reflected the general rise in rents following the Napoleonic wars. Repairs were carried out to the mill in 1829³¹, when the agent records "*Melin Wen – Journey to view the repairs wanted and allowed*", and three weeks later "*Felin Wen – Settled plan of new buildings, dimensions and castings etc with the tenant*". In 1835³² the mill was let to Margaret Williams and William Owen for a rent of £25.00.00. In 1871³³ the agent again visited the mill, when he made the following report "*Felin Wen – The cogs in main wheel had been almost all broken and mill would not work. Visited on 13 March and allowed tennant £4.00.00 towards new segments of cogs to be bolted on to old wheel. Visited this day and found work had been satisfactorily done and tenant and Owen Owens, Millwright, were satisfied. Also walked over tenement. Everything in fair order. Roofs of mill and old kiln very bad, to be repaired. Kiln not used now. House straw thatched but tidy.*". However, it would appear that the mill was not to keep going long, because a further visit in 1876³⁴ reads "*House bad, buildings fair. Present tenant to try for a year or two. Mill out of order. Embankment ditto.*"

Archaeology (Figs 4-5 and plates 7-10)

This site consists of a long dam, orientated approximately east-west across the mouth of a tidal inlet, which encloses a mill pool some 10,000 sq metres in extent. The mill is situated on a rocky outcrop, or island, at the east end of the dam, and the outcrop is linked to the shore by another short length of dam. The principal dam is a strong stone wall, just over 100m long, and between 3.0 and 3.5 m wide. On the seaward side it is a little over 1.0 m deep, whereas in the mill-pool silting has occurred against the wall so it is only 0.6 m deep, although 1 m from the wall the bottom of the pool is 1.08m below the top of the wall. The sluice gates were situated at the mill end of the dam, which is where the tide presently runs through. There are no visible remains of the gates, which appear to have been some 2 m wide.

The wheel race, 1.1 m wide and 0.66 m deep, is situated along the west side of the mill. The location of the mill building has been created on the rock outcrop, by blasting stone to create a fairly level area 6.5 m by 4 m, of which the south side is formed from the rock face of the remaining outcrop, and the north and east sides by stone walls. The west side appears to have been open to the race. The mill

²⁶ Bodorgan 1579

²⁷ Bodorgan 1326

²⁸ Bodorgan 1581

²⁹ Bodorgan 1557

³⁰ Bodorgan 1559

³¹ Bodorgan 1596

³² Bodorgan 1562

³³ Bodorgan 1598

³⁴ Bodorgan 1598

building is depicted on the 1887 25" OS map as a rectangular structure, with a narrower rectangular building on the east gable (fig. 4). It is no longer possible to make out the east extension.

Adjacent to the wheel race, within the mill, is a level floor of irregular shape, but approximately 4 m square, in which is set a length of timber 0.2 m wide and 3.8 m long, which runs parallel to the race. A second, small length of wood is also visible (see fig. 5). The function of the lengths of wood is unknown, nor is it known if they are *in situ*. Just inside the east wall is a probable small remnant of a mill stone, but insufficient of it remains to calculate its diameter.

Melin Bodior (SH 287768)

History

This mill is situated on land forming part of Bodior Estate. The house at Bodior has 16th century origins, and the estate may be a century older. Unfortunately there is no full manuscript collection covering the estate, and the only reference to the mill is in a Deed dated 1778³⁵ relating to Bodior and "*all that water corn grist mill called Bodior mill*". No other mill is known in the vicinity of Bodior, and the lack of suitable streams suggests the tide mill is probably the mill referred in the Deed. The mill is clearly marked on John Evans map of 1795, although it is not shown on the tithe map of 1840. Its method of depiction on the 25" OS map of 1900 suggests it was no longer in use by that date.

The house associated with the mill, called Ty'n y Felin, and now used as a school holiday centre, lies south of the mill.

Archaeology (Figs 6-7 and plates 11-14)

Bodior mill (fig's 6 and 7) lies on the opposite side of the strait to Felin Wen, but closely resembles that mill in layout. It consists of a long dam which cuts across a tidal inlet, at one end of which is a rectangular mill building situated on a rocky outcrop. As at Felin Wen, the wheel race and sluice gates are adjacent to one another, on the one side of the mill. The construction of the dam, however, appears quite different from that of its neighbour. In place of the strong stone wall with vertical faces on each side, is a wide stone bank c. 4 m wide and 1 m high, sloping steeply on the pond side but at a shallow angle on the seaward side. On top of the bank on the pond side is a stone wall, which appears later in date than the bank, which measures approximately 1 m high and 0.25 m wide. On the site of the sluice is a modern sluice gate, and the original opening has been blocked to the width of the modern gate. The original width is shown by parallel facing stones across the dam which are 2.3 m apart. The mill race alongside is now blocked, but it was some 1.2 m wide. The original depth of the race is not possible to obtain.

The mill building is a rectangular structure 8.7 m long by 4.8 m wide internally, with walls 1.4 m wide. The clearest wall is the NE one. The SW wall was built over a rock outcrop, but whereas one small portion remains, most of it has gone. The SE gable (opposite the race) is only visible as a single line of facing stones, through which a door may be visible. It seems likely that the wall facing the race was largely open, as the primary facing visible is that which would have formed the wheel race, although another slight line is visible parallel to the race facing but 1.4 m in from it, which may be the inner face of the wall, on which may have rested the inner bearing of the main wheel axle.

The floor of the mill slopes to the NW, towards the wheel race. There is little evidence for layout, and no timber visible as at Felin Wen. However, there is an area of stone spread, consisting of fairly small (< 10 mm) stone on the floor of the mill. The function of this is unknown.

DISCUSSION

All three mills would have operated as described in the introduction. The machinery, given the size of the mills, and the corroborative evidence from the manuscript sources for Melin Wen, would have consisted of an undershot waterwheel, probably some 2 m diameter, driving a single pair of stones,

³⁵ CRO Poole 3604

which used simple gearing consisting of a pit wheel on the opposite side of the axle to the water wheel, which drove a smaller cog at right angles to the pit wheel, which was linked to a vertical shaft which fitted directly into the rynd of the upper millstone. Mills with this simple gearing system are often termed Vitruvian mills (see frontispiece). Mill gearing which was capable of driving more than one set of stones from a single wheel by use of a spur wheel was not used in Britain until the early 18th century³⁶, but Vitruvian style mills continued in use into the late 19th century in rural Wales³⁷. There is no evidence for the use of more than one set of machinery at any of the surveyed mills, as was the case at Porthaethwy, unless the rectangular stone spread in the dam at Melin Carnau denotes the location of a second mill there.

Despite their simplicity and ample water supply, tide mills can suffer certain handicaps. The length of time a tide mill can operate between tides depends upon three factors: the size of the mill pond; the tidal range and the level of the tail race. The mill can only operate whilst the tide is below the level of the tailrace, and there is sufficient water in the pond. The surveyed mills have the advantage of a very large tidal range, which means that the tidal water only prevents milling for some 4 to 5 hours per high tide. There is thus some 7 to 8 milling hours available between tides. The smallest mill pool is Felin Carnau, and this is some 10,000 sq metres in extent. Because of silting, the minimum useable depth is no longer easily calculated, but at 1.5m, the stored water would give at least 6 ½ hours milling. This mill had the additional advantage of the fresh water from the Afon Carnau. The larger size of the other mill pools suggest they would have contained ample water to allow them to mill for the full available time.

The success of the tide mills, particularly Felin Wen which operated into the late 19th century, despite fierce competition from windmills and improved water mills, is undoubtedly, as is suggested by the 16th century court case over Porthaethwy, due to their continuous supply of water. Anglesey mills were often short of water, a complaint common in 19th century estate agent's reports³⁸. Windmills were built in some number from the mid 18th century onwards to counter this problem³⁹, but they were dependant upon the wind, which even on Anglesey would not be as reliable as the diurnal tides.

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³⁶ Jones 1969 pp 311-12

³⁷ Parkinson 1987, pp11-20

³⁸ e.g. Felin Esgob, Baron Hill Mss 4964 where it is stated "This is an excellent mill but badly supplied with water in Summer", and Melin Strydan, Bodorgan Mss 1581 "Mill sometimes short of water".

³⁹ See Guise and Lees 1992, and Roberts R O, 1958.

Fig 1 : Location of tide mills on O/S 1:50000 Anglesey - Sheet 114

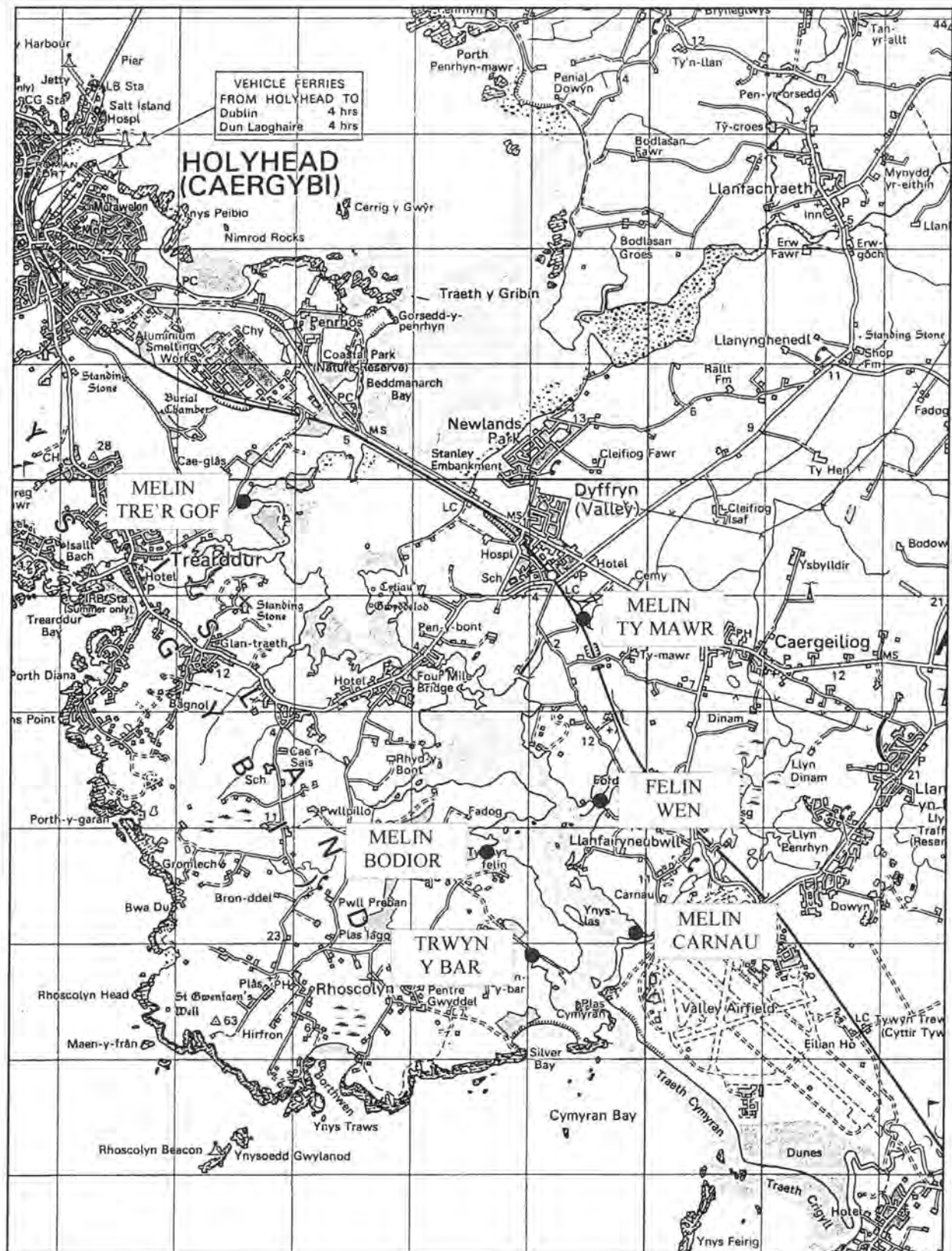


Fig 2 : Melin Carnau and other features from EDM survey

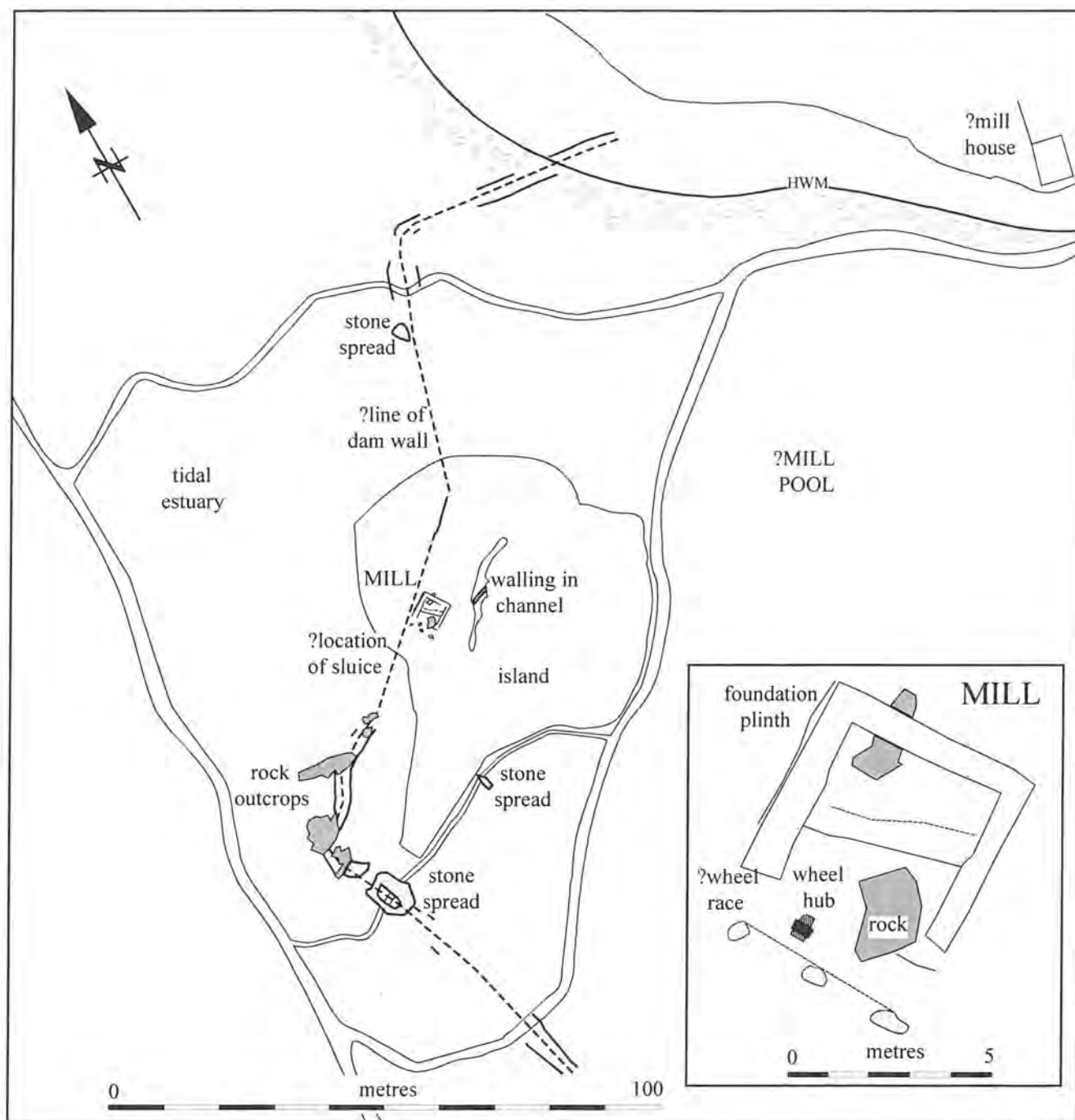
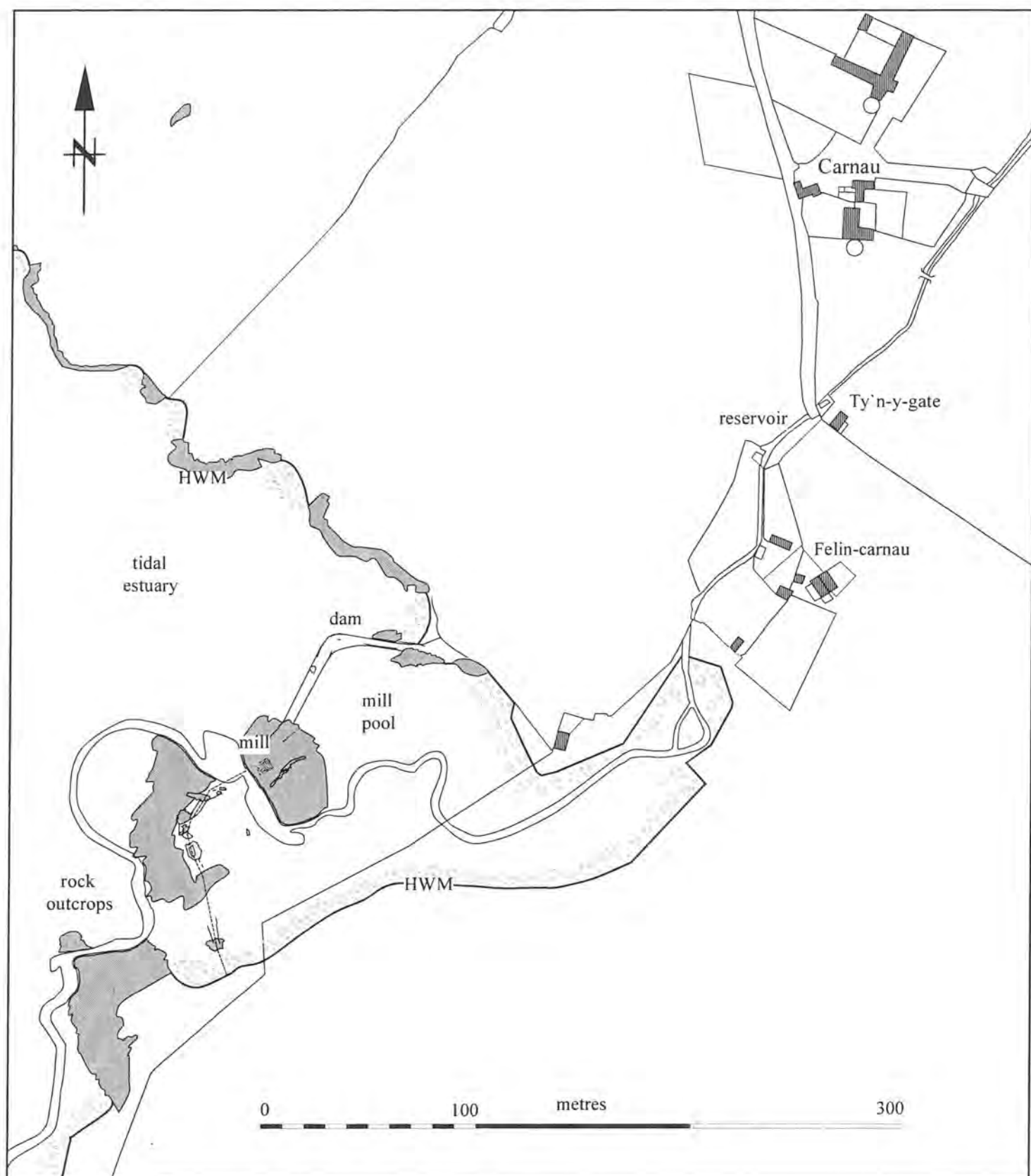


Fig 3 : Location of tidal channels at Melin Carnau - compiled from O/S 1:2500 1900 Anglesey map and EDM survey



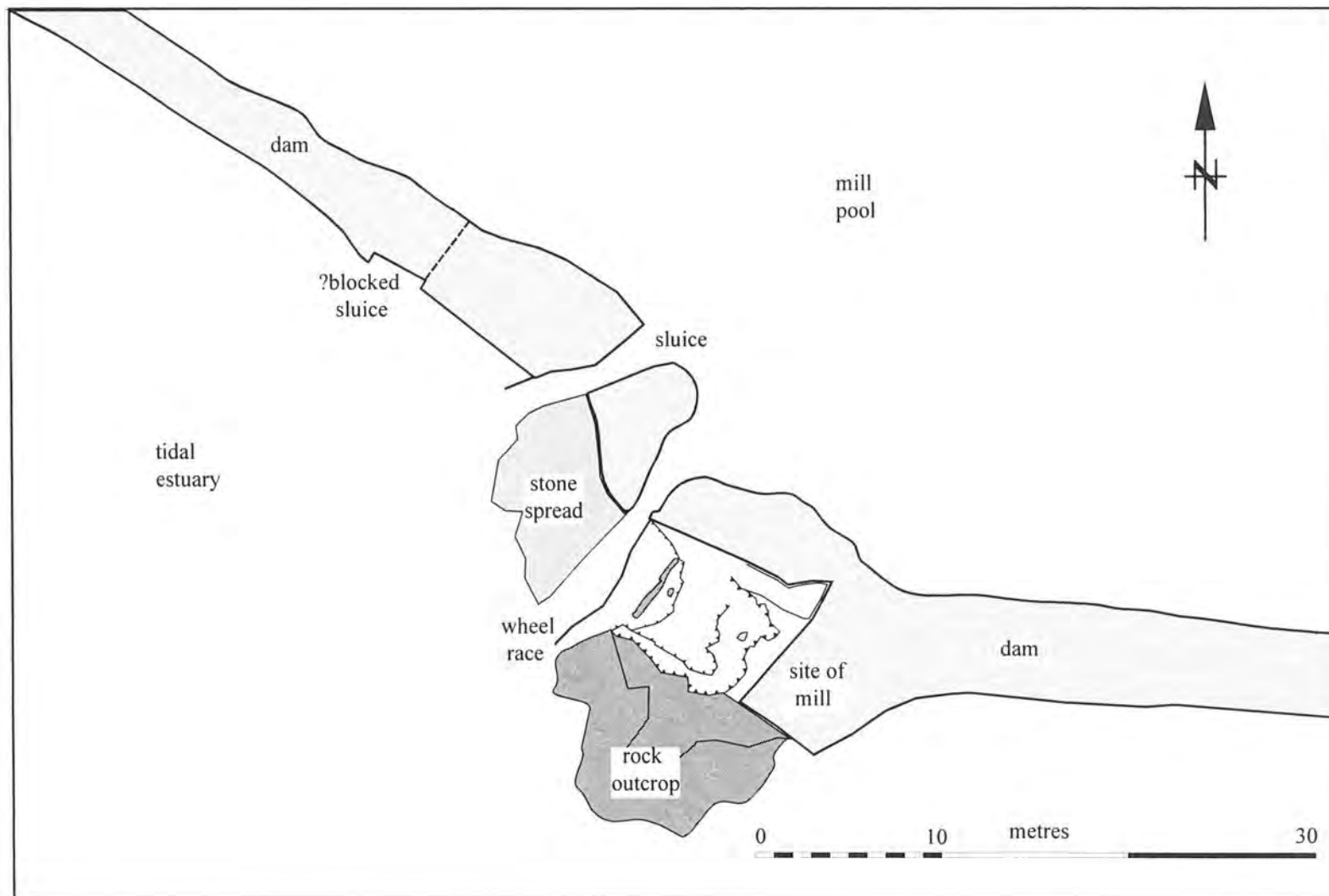


Fig 5 : Detail of Felin Wen from EDM survey

Fig 4 : Location of Felin Wen - compiled from O/S 1:2500 1887 Anglesey map, tithe map and EDM survey

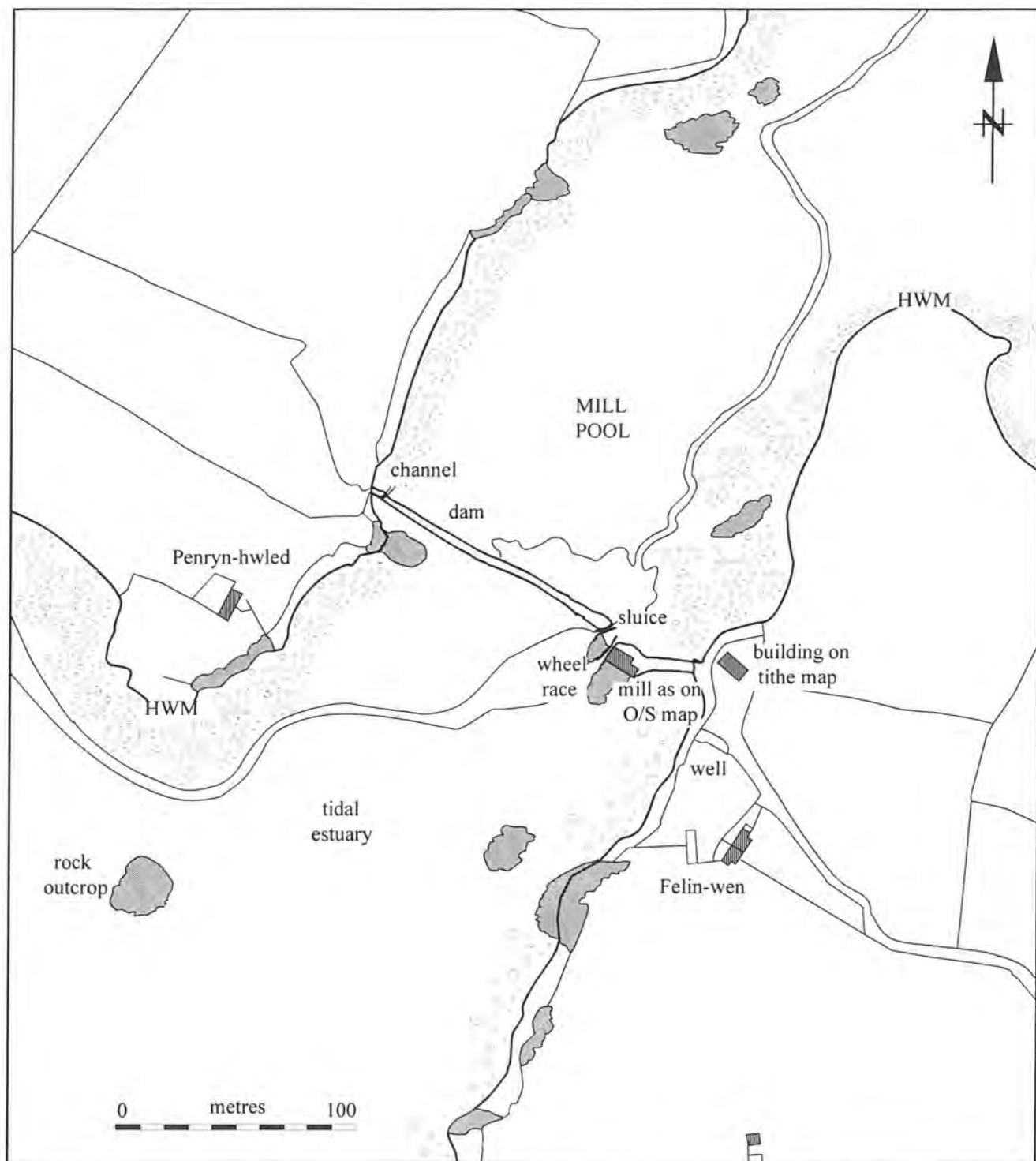
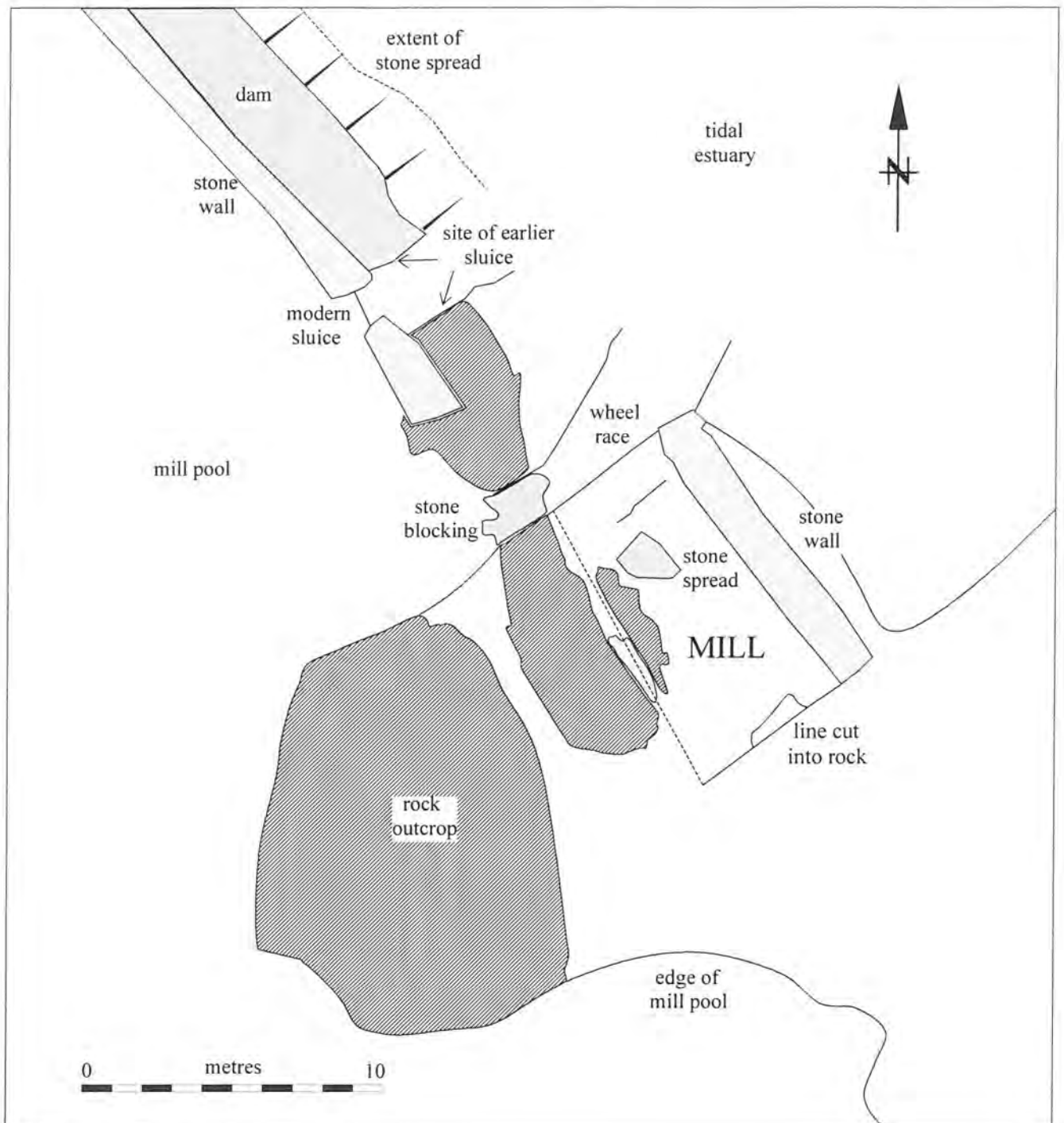


Fig 7 : Detail of Melin Bodior from EDM survey



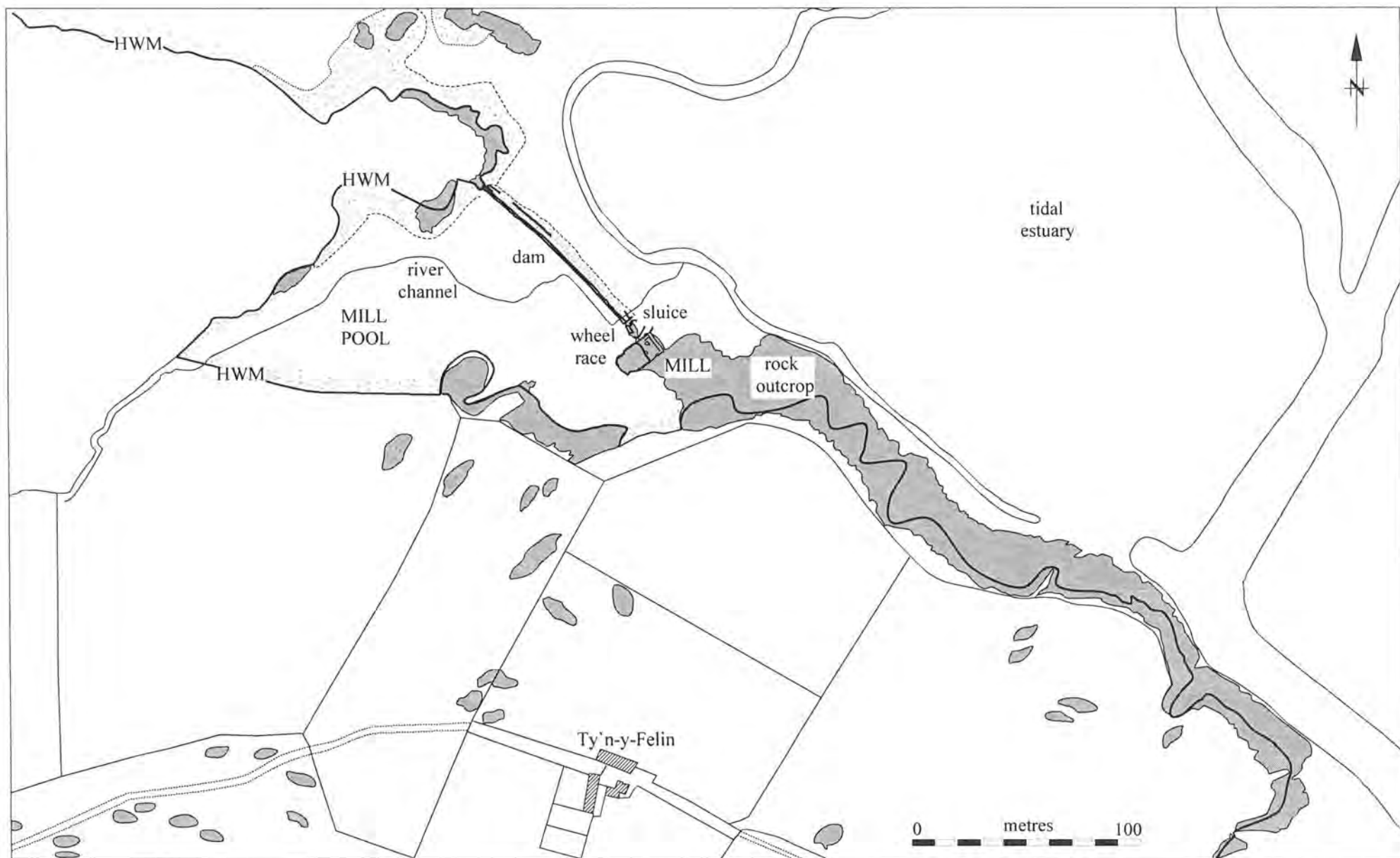


Fig 6 : Location of Melin Bodior - compiled from O/S 1:2500 1887 and 1900 Anglesey maps and EDM survey



Plate 1 Melin Carnau: Mill from east



Plate 2 Melin Carnau: Mill from south-west



Plate 3 Melin Carnau: Mill from west



Plate 4 Melin Carnau: Axle and hub



Plate 5 Melin Carnau: Remains of dam



Plate 6 Melin Carnau: Structure south-west of mill within dam

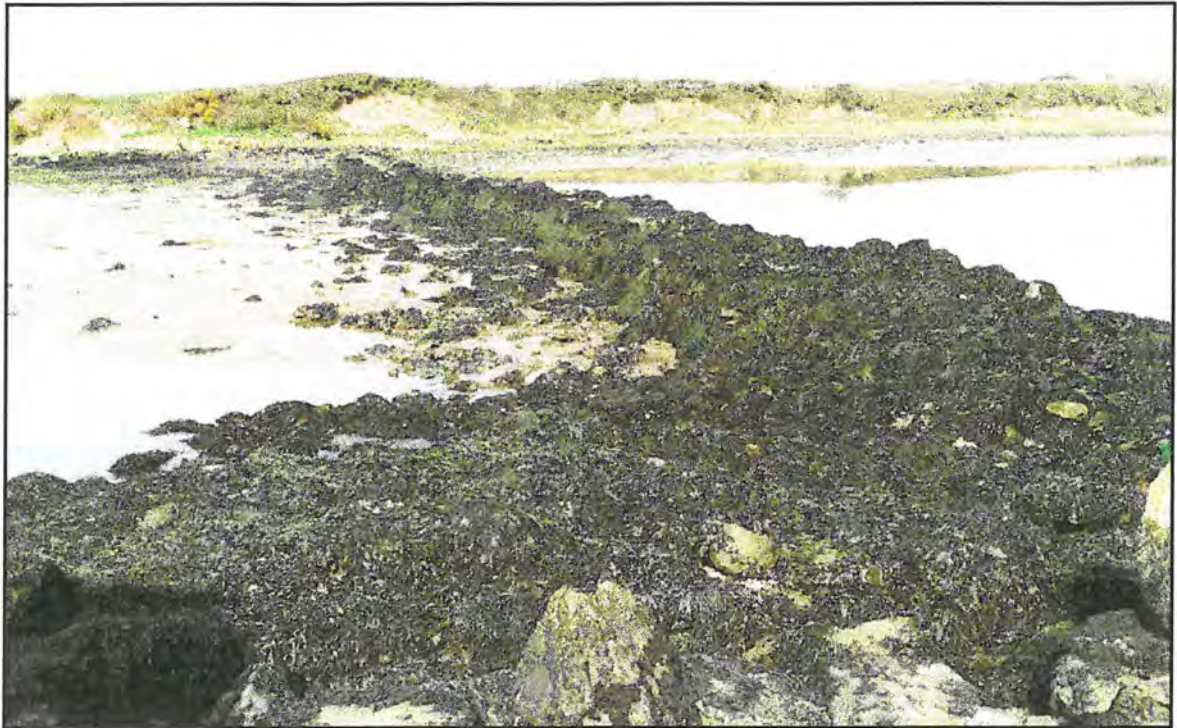


Plate 7 Melin Wen: Main dam from south-east

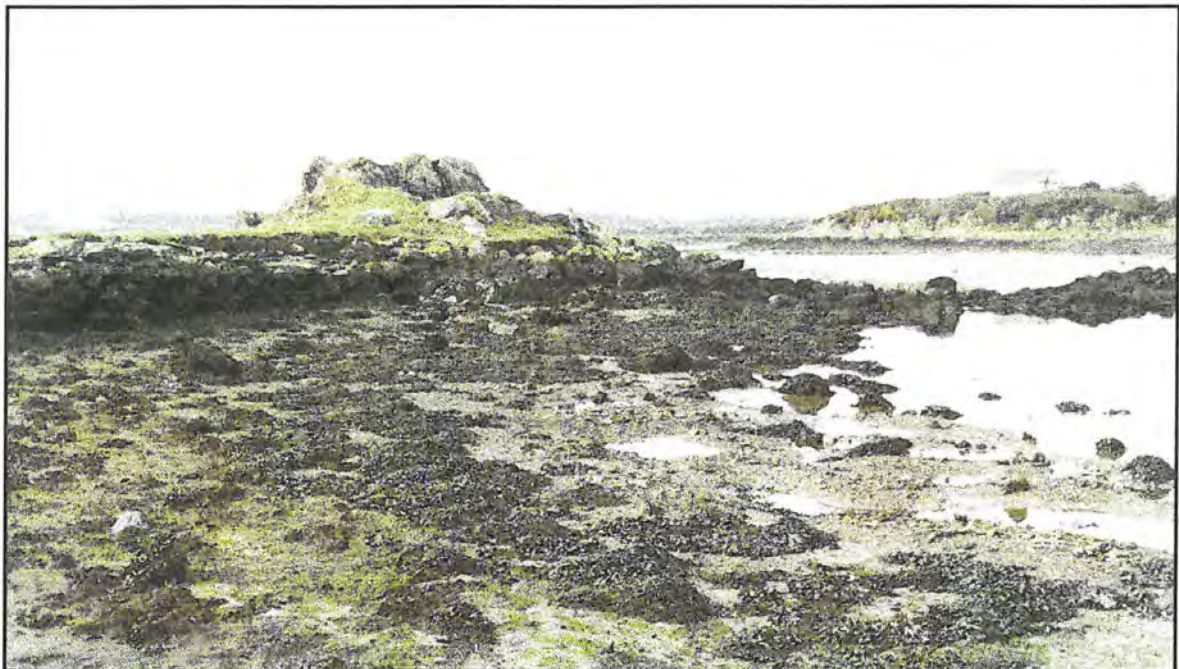


Plate 8 Melin Wen: East dam and rock outcrop with mill



Plate 9 Melin Wen: Mill floor with timber beams



Plate 10 Melin Wen: Mill interior with wheel race in foreground



Plate 11 Melin Bodior: Mill and dam from south-east



Plate 12 Melin Bodior: Dam and sluice from south-east



Plate 13 Melin Bodior: Mill from south-east



Plate 14 Melin Bodior: Blocked wheel race from south-west

