BEDD MORRIS STANDING STONE

EXCAVATION AND RE-ERECTION 2012

Prepared by Dyfed Archaeological Trust
For Cadw and Pembrokeshire Coast National Park Authority

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RHIF YR ADRODDIAD / REPORT NO. 2012/23
RHIF Y PROSIECT / PROJECT RECORD NO. 102644

March 2012
Revised February 2013

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BEDD MORRIS STANDING STONE: EXCAVATION AND RE-ERECTION 2012

CONTENTS

FIGURES

PHOTOGRAPHS

BEDD MORRIS STANDING STONE: EXCAVATION 2012

SUMMARY

In October 2011, the scheduled Bedd Morris standing stone broke and toppled over, probably having been hit by a vehicle. The upper part of the stone was subsequently removed from the site for safe keeping. A small-scale excavation in February 2012 recovered the snapped-off base of the stone, and established that the stone had probably been originally erected in the prehistoric period. Several hammer stones and stone flakes from dressing the stone were discovered in the stone socket. Two Bronze Age radiocarbon determinations from charcoal from the stone socket are strong supporting evidence for the stone having been erected in the prehistoric period and not moved until hit by the vehicle. In November 2012 the stone was repaired and reset into its original socket.

INTRODUCTION

Bedd Morris standing stone is a Scheduled Ancient Monument (PE361), recorded on the Dyfed Historic Environment Record as site 1435. It stands immediately alongside a minor road running over Carningle Common in Pembrokeshire, and is on the boundary of Newport and Llanychlwydog parishes, at the highest point of the road crossing at 290m (Fig. 1; NGR SN 03824 36509). Several rights of way converge on the stone, and it still acts as a marker for parcels of grazing land. It is a Dolerite, standing 2.2m high above the ground surface, 0.9m wide and 0.45m thick (Photo. 1). A modern (probably 19th century) inscription towards the base of the stone facing the road records its location as a parish boundary marker. An Ordnance Survey benchmark has also been carved on this face. The stone is assumed to be Bronze Age in date, although the scheduling description notes that is may have been moved or maybe laid flat and re-erected when the inscription was added.

In 2007, graziers reported that the stone had become unstable and raised concerns that it could topple. It was unclear what had caused this to happen, but it was most likely a combination of factors; vibration from vehicles, animals rubbing against it, erosion around the base of the stone, impact from a vehicle. It was decided that stabilisation was required; this was undertaken in June 2007 by Pembrokeshire Coast National Park Authority staff under the supervision of their Archaeologist, Polly Groom (2007). This stabilisation consisted of removing turf and loose material from an eroded hollow between the stone and the road to create a solid surface to build from. This work revealed a crack in the stone. It would seem that the bottom of the stone had been 'squared off'. It was noted that hardcore from the road spread almost to the base of the stone. Beams of recycled plastic were placed against the squared sides of the stone and concrete poured in behind them with the intention of providing a solid buffer and preventing movement of the stone. Earth was then mounded up over the concrete and the turf reinstated.

During the weekend of 8th/9th October 2011 the standing stone toppled over, fracturing across the crack noted in 2007. The reason for this is unknown, but it is considered likely that a vehicle clipped it. The stone was removed to a nearby farm for safekeeping. The preferred option of Cadw and the Pembrokeshire Coast National Park and others was to return the stone to, or very close to, its original upright position. However, before this could be achieved the base of the stone had to be recovered. As there was the possibility that it had remained *in situ* since the Bronze Age, this had to be achieved as part of an archaeological excavation. Dyfed Archaeological Trust therefore submitted a request for grant-

aid to excavate the site. This was approved and the excavation was undertaken in the week of the 6th-10th February 2012.

In November 2012 Elliott Ryder Conservation repaired the broken stone, funded by Pembrokeshire Coast National Park Authority, and on 28th November 2012 Pembrokeshire Coast National Park Authority staff and Elliot Ryder Conservation re-erected the stone in its original socket.

METHODOLOGY

An area approximately 2m by 2m was hand-excavated around the site of the standing stone down to undisturbed natural deposits. The 2007 concrete fillet was left in place as were the deposits filling the stone socket below the fillet. All deposits and features were recorded according to Dyfed Archaeological Trust's recording manual. The base of the stone was removed and stored with the upper part in the nearby farm. Prior to back-filling perforated plastic was placed in the stone socket and surrounding area. Safety of the site workers was a consideration; Pembrokeshire National Park Authority therefore provided temporary barriers between the excavation and road-edge.

EXCAVATION RESULTS

Removal of turf and topsoil (101), which included rounded boulders, pieces of plastic and metal, and debris from the 2007 stabilisation work, revealed the surface of a low bank (102) through which the base of the standing stone protruded.

Bank 102 consisted of mixed layers of soil and occasional large rounded stones and boulders (Fig. 2; Photos. 2 and 3). It ran parallel to the road, occupied the whole width of the trench, apart from where removed in 2007, and stood up to 0.5m high. This seems to be the remains of a turf/soil and stone built boundary bank into which the standing stone had been incorporated. The bank is not recorded on any map, and as no archaeological dating evidence was found, the date of its construction and use is unknown. Hammer stones assigned to the bank may have come from the underlying layer (103).

Removal of bank 102 revealed what was probably a buried soil (103), consisting of silty-clay with occasional small/medium-sized stones. It overlay a stony surface (104), the fill (106) of the stone socket (107) and the fill of a posthole (108, 109).

It was not possible to completely excavate the whole of the socket (106, 107) due to the presence of the concrete fillet and to the sharply tapering nature of its base. It was approximately 1m across and 0.7m deep, with its pointed bottom formed by the base of the stone (Figs. 3, 4 and 5; Photos. 3, 4 and 5). Several large rounded stones, including what appeared to be hammer stones, had been jammed into the pit acting as packing stones. Several stone flakes, possibly a result of dressing the standing stone, were included in the stony silty-clay fill (106) of the socket. In early 2013, two Radiocarbon determinations were obtained from charcoal from the fill (106) of the stone socket: 1735 to 1535 Cal. BC (SUERC-44258) and 2430 to 2145 Cal. BC (SUERC-44262) The snapped-off base of the standing stone mirrored the shape of the base of the socket (Photos. 6 and 7). Originally the stone would have been embedded at least 0.7m in the ground. A posthole (109, filled by 108) cut through part of the fill (106) of the stone socket.

The stone socket cut through silty-clay geological deposits. Resting on these in the south-west corner of the excavation trench was a stony surface (104) made

up of rounded and angular pebbles, and some larger rounded stones (Fig. 3: Photo. 4). There was no discernible relationship between this layer and the stone socket or the posthole.

CONCLUSIONS

The erection of the standing stone pre-dates the construction of the boundary bank and therefore is of some antiquity; certainly earlier that 19th century. There is the possibility that the stone could have been placed in position in the early modern period or the medieval period, but the presence of hammer stones and dressing flakes in the stone socket are a strong indication of a prehistoric date, most likely Bronze Age. This suggestion is strongly supported by the two radiocarbon dates obtained from charcoal from the stone socket. The ranges of these two dates calibrated at 2 sigma do not overlap, and the earliest one (2430-2145 Cal.BC) is likely to be from residual material. The Bedd Morris stone is therefore likely to have been erected in the Bronze Age, similar to other excavated and dated examples in south-west Wales and beyond (Williams 1988).

The presence of hammer stones and dressing flakes is of considerable interest as this is the first time such evidence has been found in south-west Wales in association with a standing stone and indicates greater manipulation of natural resources than previously recognised. The depth (0.7m) to which the stone had been dug into the ground was also unusual, as all other investigated south-west Wales examples have been shallowly set, seemingly relying on an act of faith to keep them upright.

ACKNOWLEDGEMENTS

The excavation was grant-aided by Cadw with support in-kind from the Pembrokeshire Coast National Park Authority. The excavations were supervised by Pete Crane and assisted by Hubert Wilson of Dyfed Archaeological Trust. Geoff Wainwright enthusiastically volunteered on the excavation. The Trust is indebted to the Barony of Cemais for permission to undertake the excavation, and also to several staff members of the Pembrokeshire Coast National Park Authority for health and safety guidance, provision of signs and fencing,for lifting the stone and removing it to a place of safety, and finally for re-erecting the stone – in particular thanks are due to Richard Vaughan and Geraint Harries. Elliot Ryder Conservation repaired the stone. The Trust and PCNPA are also grateful to Mr and Mrs Joy Phillips of Danderi, Pontfaen, for storing the stone after it had been knocked over.

SOURCES

Groom P, 2007. 'Repairs to Bedd Morris standing stone, SAM Pe361', unpublished Cambria Archaeology (Dyfed Archaeological Trust) report 2007/48.

Williams G, 1988. *The standing stones of Wales and south-west England*, BAR British Series 197.

RADIOCARBON DATES

The calibrated age ranges are determined using the University of Oxford Radiocarbon Accelerator Unit calibration program OxCal 4.1.

Laboratory Code: SUERC-44258

Context: fill 106 of stone socket 107

Material: *Quercus* charcoal

Radiocarbon Age BP: **3350±25**

Calibrated date range at 2 sigma: 1735 - 1715 Cal. BC (3.8%) and 1695 – 1605 Cal. BC (75.7%) and 1590 – 1535 Cal. BC (16%)

Laboratory Code: SUERC-44262

Context: fill 106 of stone socket 107

Material: *Moloideae* type charcoal

Radiocarbon Age BP: **3820±25**

Calibrated date range at 2 sigma: 2430 – 2425 Cal. BC (0.3%) and 2405 – 2380 Cal. BC (2.5%) and 2350 – 2195 Cal. BC (88.9%) and 2170 – 2145 Cal. BC (3.7%)

ARTEFACTS

Context 101

Post-medieval ceramics – 2 small sherds

Quartz fragments – 4 small fragments (largest 0.03x0.02m)

Corroded iron – 1 amorphous lump (0.04x0.03m)

Context 102

Hammer stones – 3 – rounded, one with very distinct flattened surface - 0.15x0.10m / 0.14x0.10m / 0.12x0.09m

Quartz pebbles – 3 – each 0.05-0.06x0.04m

Context 103

Hammer stones – 2 –of size and shape to fit comfortably in the hand – 0.16x0.10m / 0.12x0.12m

Context 106

Hammer stones – 3 – large stones – 0.14x0.14m (rounded on one side, flattened on other) / 0.23x0.14m (rounded ends and 4 flattened, elongated sides) / 0.20x0.16 (flattened surfaces created a ridge around one half of the stone)

Flat stones – 3 – possibly worked – 0.19x0.10m (well-defined hand-axe shape, blue-grey stone – Dolerite?) / 0.17x0.11m (possible working on one edge but less well-defined) / 0.13x0.05m (amorphous with evident break)

Small mixed-stone fragments and flakes – 88 – range from 0.11x0.05m to 0.01x0.01m – generally flat, elongated stone flakes.

Quartz fragments – 7 – amorphous lumps – range from 0.03x0.03m – 0.08x0.09m

FIGURES

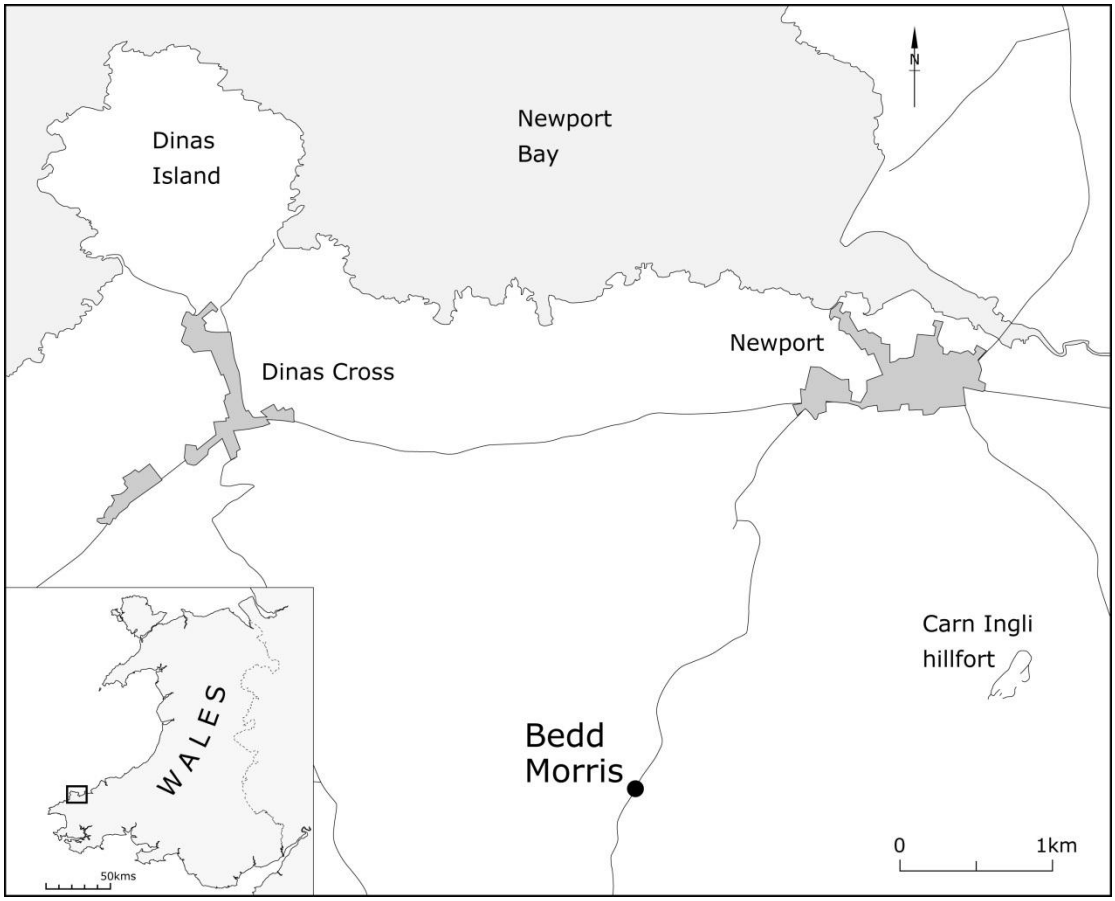

Figure 1. Location map

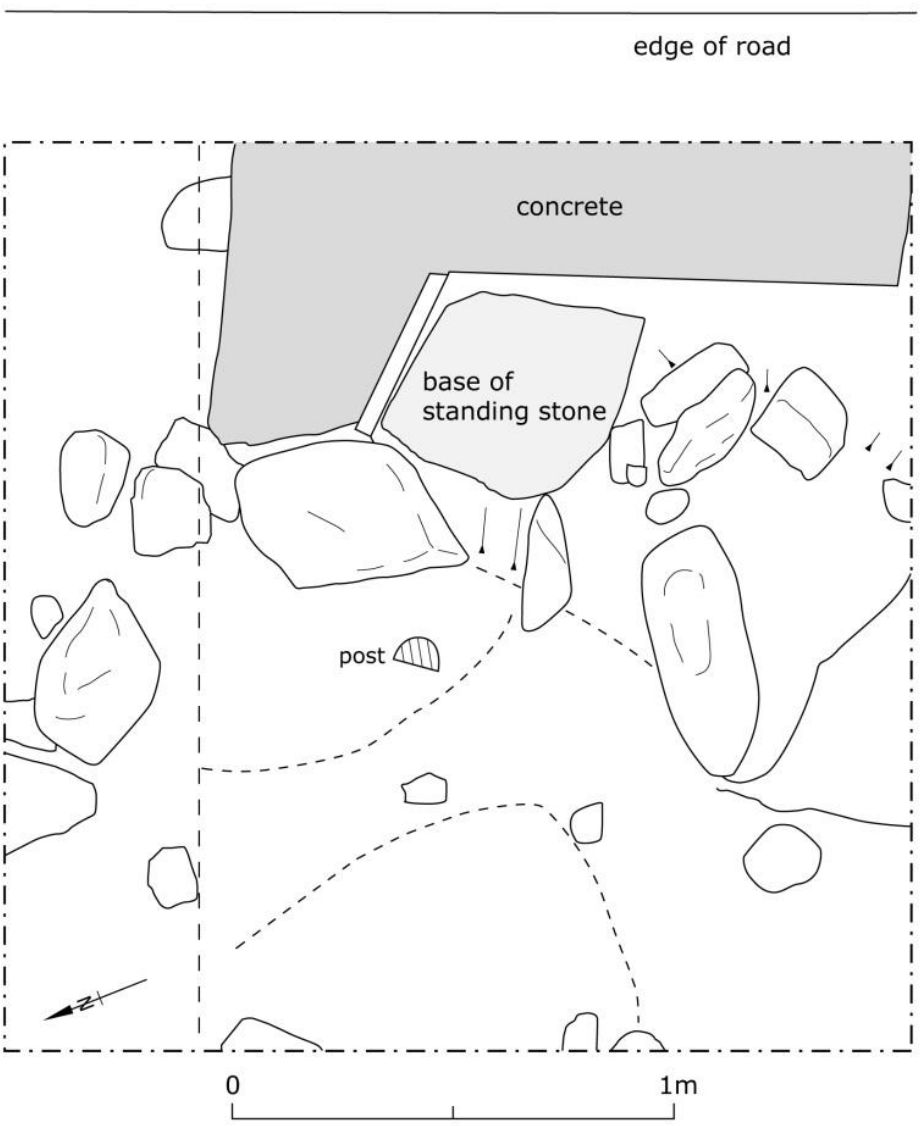

Figure 2. Plan of the surface of bank 102, the base of the standings stone and the concrete fillet.

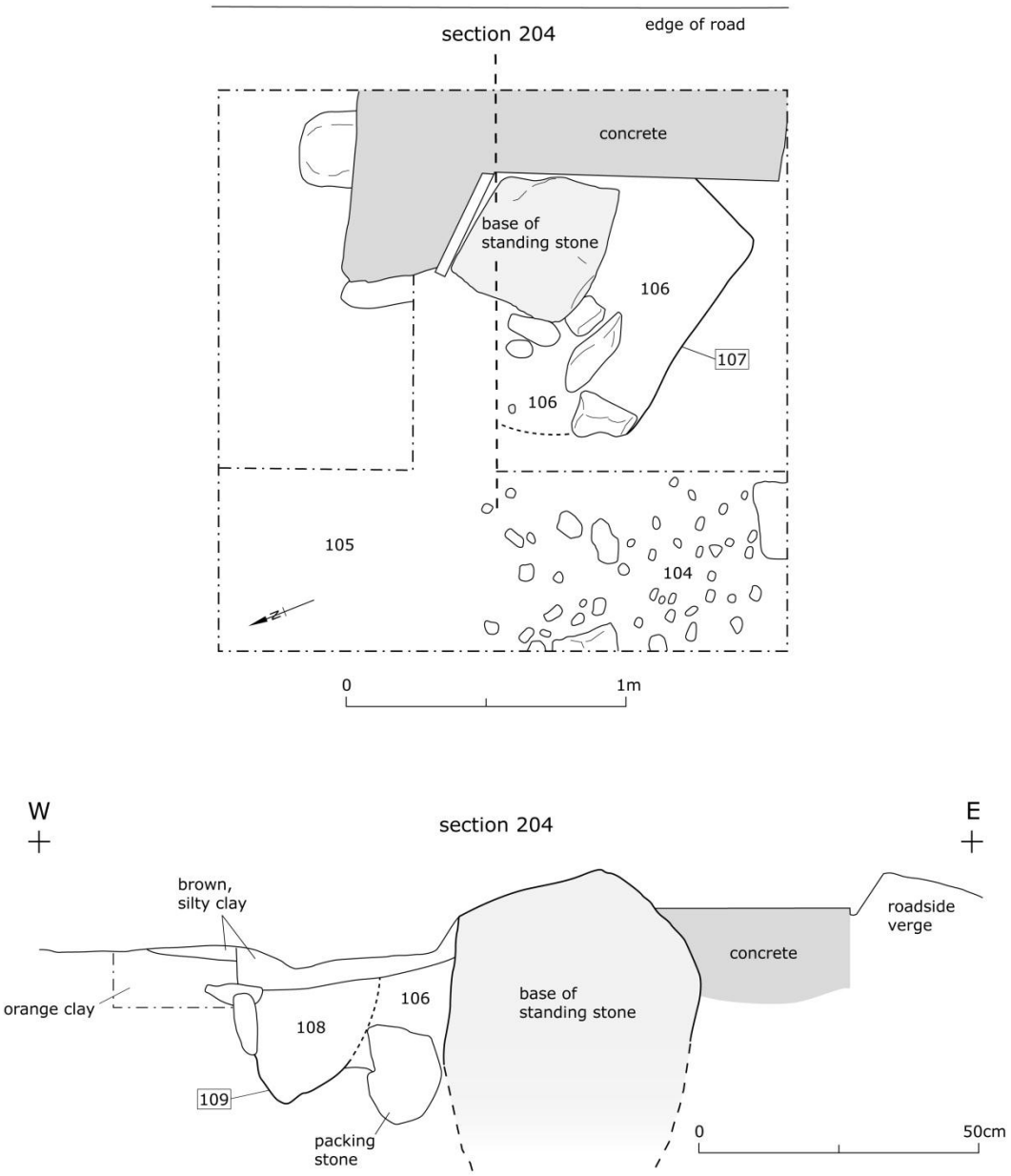

Figure 3. Plan and section of the stone socket showing the packing stones and also layer 104.

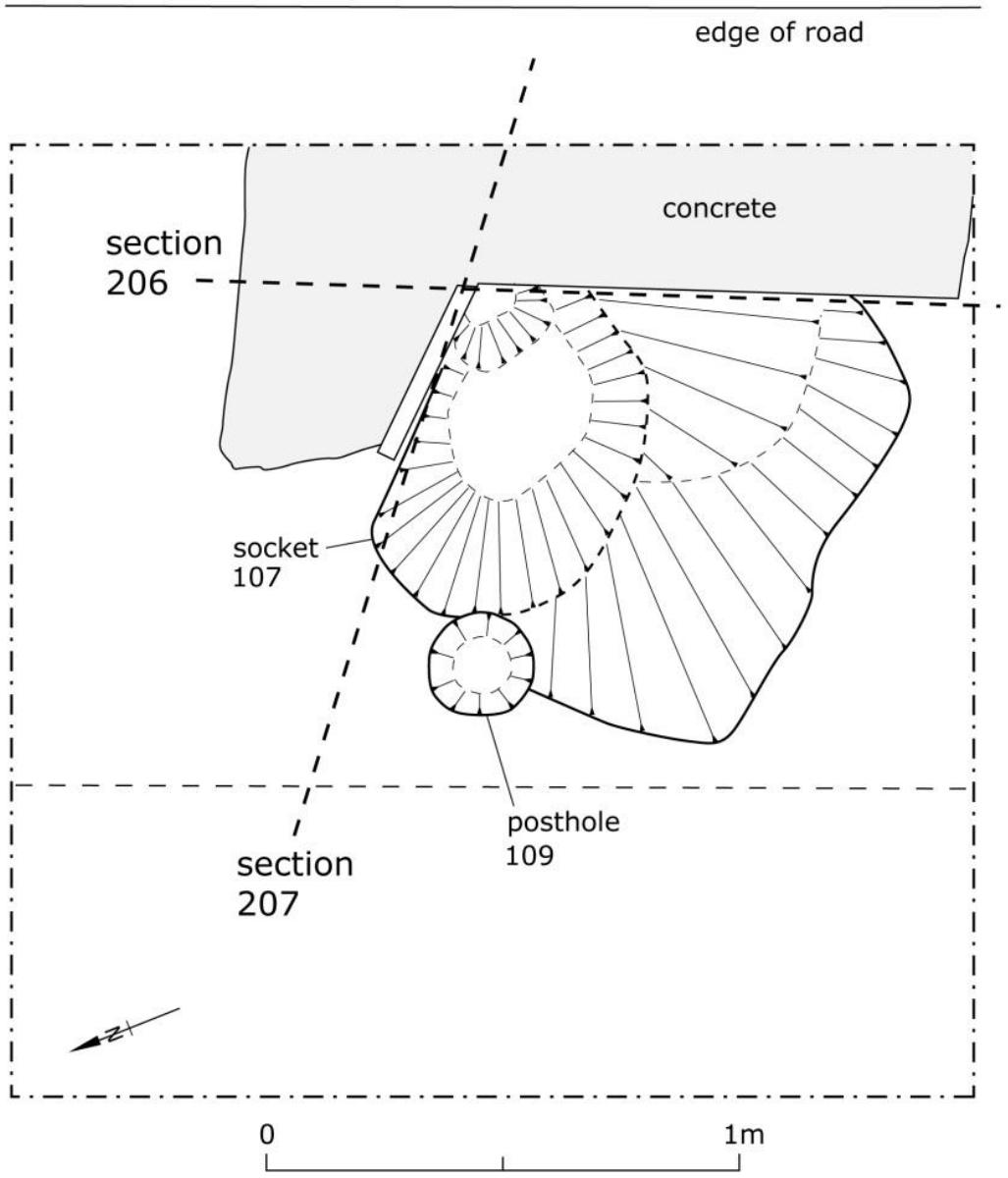

Figure 4. Plan of the stone socket 107.

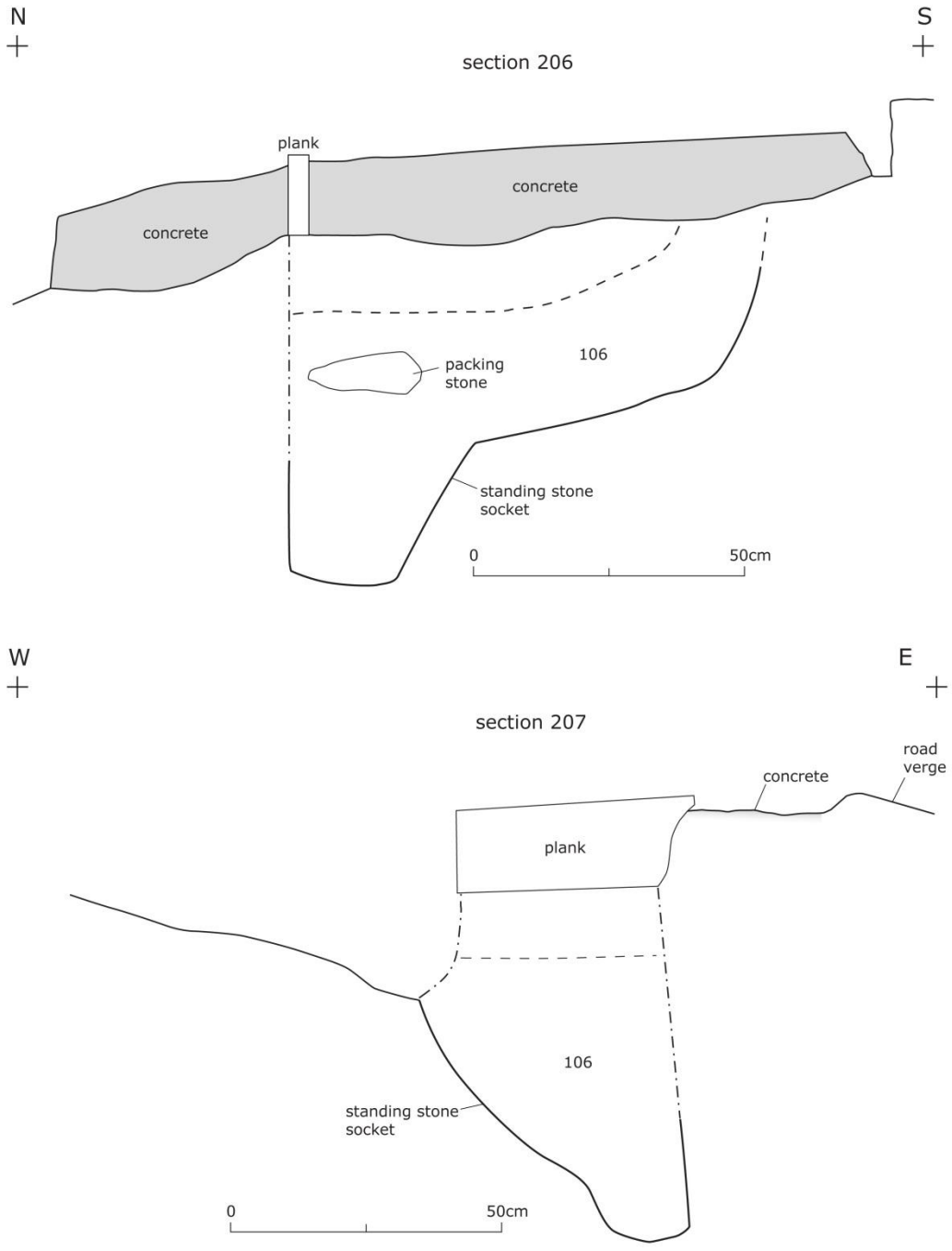

Figure 5. Sections 206, 207 across stone socket 107.

PHOTOGRAPHS

Photograph 1. Bedd Morris standing stone in 2007 following stabilisation.

Photograph 2. The site after the removal of topsoil showing the surface of the bank (102) and the in situ base of the standing stone. Scales 1m and 0.5m.

Photograph 3. The *in situ* base of the stone with packing stones and stony surface 104.Note the section through bank 102 at the end of the trench. Scales 1m and 0.5m.

Photograph 4. The *in situ* base of the stone with packing stones and stony surface 104. Scales 1m and 0.5m.

Photograph 5. The *in situ* base of the stone after removal of most of the packing material. Scale 1m and 0.5m.

Photograph 6. The base of the standing stone reunited with its upper section. Photo: Geoff Wainwright.

Photograph 7. The base of the standing stone following removal from the socket. Scale 0.5m. 7871

Photograph 8. Two hammer stones from Layer 102.

Photograph 9. Three hammer stones and quartz pebbles from Layer 102.

Photograph 10. Three hammer stones from fill of stone socket (106, 107).

Photograph 11. Stone fragments and flakes from fill of stone socket (106, 107).

Photograph 12. Three hammer stones and other stones from fill of stone socket (106, 107).

Photographs 13-15. Views of the stone undergoing repair. Photographs: Ellioit Ryder Conservation.

Photgraph 16. General view of the stone replaced in the socket with geotextile acting as a separation layer between limecrete and the stone. The limecrete ring was the third of five overall layers, securing the stone firmly in position. Excess geotextile was removed before the turf was re-laid. Photographs: Ellioit Ryder Conservation.

Photographs 17 and 18. Two views of the re-erected stone, February 2013.

Appendix 1

CONSERVATION REPORT FOR THE BEDD MORRIS STANDING STONE

Elliott Ryder Conservation

Both extant sections of the slab had been stored externally on pallets off the ground in a nearby farmyard so as not to compromise the aged lichens, which have colonised much of the surface and are indicative of age and the excellent air quality in the Gwaun valley. The two sections had been calculated as weighing approximately 2,200 kilograms.

Both sections were removed carefully into a nearby barn, using a mini-digger with soft nylon slings around both sections so not to cause any further damage to the historic stone.

Due to the low porosity of the stone, both faces of the fracture were cleaned with de-ionised water and stiff bristle brushes, to remove all biological growth and ensure a good bond with the resin employed. This was carried out using two beakers of constantly changing water so as not to re-distribute biological rich, dirty water. Surfaces were dried with paper towelling but very little water had penetrated due to the low porosity of the material.

The larger section was chocked up with flat timbers and folding wedges so in a largely flat horizontal plane. The smaller section was offered up and lines denoting horizontal and vertical planes marked on the surfaces with chalk, to facilitate drilling straight, deep holes.

Two opposing horizontal holes were drilling roughly in the centre of the block to a depth of 460mm each side, with a 30mm diameter tungsten drill bit. Both holes were de-dusted to depth with the aid of a bottle brush and hand pump. A single stainless-steel, threaded dowel 20mm in diameter and 860mm in length was inserted into the large stone section and the smaller section offered up dry to ensure a 'natural' fit, which was achieved first time.

A two part external quality, pure epoxy resin 'HPE 385' (from VJ Technology, Ashford, KENT) was injected into both pre-drilled holes, smeared around the dowel and applied to both break edges, making sure to keep resin back from the outer perimeter. The small section was offered up to the larger section and manoeuvred into its final 'natural' position with the aid of crow-bars and ratchet straps. The small section was then chocked into position with folding wedges. The ratchet straps were left on overnight to assist with alignment during curing and contain any potential movement during transportation the following day.

Two diagonally opposing holes 12mm in diameter were drilled close to the central vertical dowel. These were drilled such that the entry point was drilled up into the block, so any moisture ingress (when back in the ground) has to migrate upwards and were positioned so that the line where the dowels cross or converge was at the horizontal fracture site, making for a stronger bond, even though the join would eventually be under compression.

The same pure epoxy resin was injected up into the two holes and two lengths of stainless-steel 'Helibar' both 640mm long and 8mm in diameter were hammered into position. 'Helibar' is flexible and helical in shape and is designed for repairing horizontal subsidence cracks and dealing with shear forces. It was hammered into position due to the volume of resin in the holes, which it relies upon to produce a solid bond once the resin has cured. The 'Helibar' was kept back 20mm from the surface of the stone and a plug of mortar comprising of the stone-dust drillings mixed into a thixotropic paste with the epoxy resin was applied to the drill entry hole to prevent the ingress of moisture. Although the resin cures in low temperatures the join was covered with a blanket and left overnight to ensure a strong bond, as the barn, although dry, was subject to external temperatures.

The following day, the re-joined sections were manoeuvred from the barn onto a low trailer using wide nylon slings and the slab was secured into position on the flat bed with ratchet straps for the short journey over rough farm tracks and road to its original location. The slab was lowered from the trailer onto a soil bank, with the repaired end

resting on soft-ground and the centre of the slab on the soil bank. This enabled final positioning of a pair of opposing, wide nylon strops which were located one third of the way down from the top. The strain was taken from the lifting machinery which tightened the strops around the rough stone, which diminished in girth towards the top. The slab was lifted vertically and swung over above the original small hole where the tip of the slab was originally. The slab was then lowered roughly into position, the strops were re-positioned to enable final positioning of the slab and enable removal of the opposing ratchet straps before being lowered completely.

Large stones that had been excavated from the hole originally were re-positioned in the hole around the base of the slab, so as to have tight contact with the slab. These were built up in a ring around the slab and tamped into position with a punner such that they were forced into the soil and provided a solid layer. Clean stone scalpings were then put in to fill the interstices between the large stones, before a layer of scalpings 75 – 100mm thick were put on top and also tamped into position. A layer of water permeable 'Terram' was applied to cover the surface of the stone slab and act as an intervention layer between the limecrete before a layer of limecrete 100 – 150mm thick was applied. This was a 2.5 : 1 , 'all-in' concrete ballast (provided by the National Parks team) and Natural Hydraulic Lime (NHL 3) mixed with clean water. This provided a ring around the slab and was also tamped into position, before another thick layer of scalpings and finally the original cut turf squares.

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RHIF YR ADRODDIAD / REPORT NUMBER 2012/23

March 2012
Revised February 2013

Paratowyd yr adroddiad hwn gan / This report has been prepared by K Murphy

Swydd / Position: Trust Director

Llofnod / Signature  Dyddiad / Date 21.03.2012

Mae'r adroddiad hwn wedi ei gael yn gywir a derbyn sêl bendith
This report has been checked and approved by J Meek

ar ran Ymddiriedolaeth Archaeolegol Dyfed Cyf.
on behalf of Dyfed Archaeological Trust Ltd.

Swydd / Position: Head of Field Services

Llofnod / Signature  Dyddiad / Date 21.03.2012

Yn unol â'n nôd i roddi gwasanaeth o ansawdd uchel, croesawn unrhyw sylwadau sydd gennych ar gynnwys neu strwythur yr adroddiad hwn

As part of our desire to provide a quality service we would welcome any comments you may have on the content or presentation of this report

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