

Report on Archaeological Watching Brief at
Flat Tor Pan (Broad Down),
Dartmoor



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Non-technical Summary

This report outlines the results of an Archaeological Watching Brief undertaken during blanket bog restoration works at Flat Tor Pan as part of the Dartmoor Mires Project. The restoration works were carried out from 4 August to 31 October 2014 and again from 2 February until 20 March 2015. The Dartmoor Mires Project involves carrying out restoration work to areas of blanket peat within Dartmoor National Park. The restoration works comprised the mechanical removal of peat islands and the excavation of small borrow pits, which were used to block natural erosion gullies on the site. The author, Nicola Rohan and archaeologists Arlene Fadden and Alan Whitaker, from Bournemouth Archaeology, were on site for the duration of the restoration works observing the peat removal, UXO survey and machine access to and from the site. A Royal Navy 766 Squadron Sea Vixen crashed on the site on 31st May 1965 during a training exercise. The pilot and his observer ejected safely and the crash site is now the site of a pond, which is located at the northern end of the restoration area. Sea Vixen fuselage debris and a small quantity of World War 2 artillery fragments were recovered from the site during the course of restoration works and UXO survey. No other remains of archaeological significance were uncovered during the course of restoration works.

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1 Introduction

- 1.1. An Archaeological Watching Brief carried out during the Dartmoor Mires Project blanket bog restoration work was undertaken by the author, Nicola Rohan and archaeologists Arlene Fadden and Alan Whitaker from Bournemouth Archaeology. The restoration work was carried out at a site known for the purpose of the Mires project as Flat Tor Pan (Broad Down) (Figures 1-2). The Unexploded Ordnance (UXO) Survey was also subject to the watching brief. Restoration work was carried out from 4 August to 31 October 2014 and again from 2 February to 20 March 2015.
- 1.2. The restoration work for the Dartmoor Mires Project involves blocking existing erosion gullies with peat blocks that are sourced on site. Work was carried out using an ultra-low ground pressure 7.5 tonne Takeuchi excavator fitted with plastic tracks and a 1.3m grading bucket. The peat used in block construction was taken from areas of undisturbed peat, within the excavator's reach and from the uppermost 1m of the bog.
- 1.3. Block construction was undertaken in Areas 1 and 2 by the Takeuchi excavator under the direction of the Dartmoor Mires Project team (Figure 3). Restoration work was also carried out by a team from The Conservation Volunteers in Area 4. The blocks in this area were excavated by hand and so covered a significantly smaller area.
- 1.4. The site was accessed by the excavator, which made a return journey to and from site during August and October and again in February and March 2015. A second excavator, with identical specifications, made a return journey to the site during August 2014. An ultra-low ground pressure Argo Avenger All-Terrain Vehicle (ATV) fitted with rubber tracks was used to transport staff and equipment to the site on a daily basis. Both vehicles followed an establish route that was agreed with the DNPA archaeologists prior to restoration work. The route was monitored daily for damage. No lasting damage was recorded to any features of archaeological significance along the access route.

1.5. On 31 May 1965, a de Havilland Sea Vixen, from Royal Navy 776 Squadron, crashed on the site during a training flight (Plate 1). The pilot and his observer ejected safely before the plane crashed (Plate 2). The crash site is now marked by a pond, which is located in the northern corner of the restoration area (Plate 3-4, see Figure 4). Much of the plane fuselage was subsequently removed from the bog surface by the MoD but a relatively small quantity remains dispersed across the bog surface to the south of the pond. An unknown quantity of Sea Vixen survives within the peat matrix in an area measuring 240 m north-south by 170m east-west with the pond at its northern end.

1.6. The author, on behalf of the Dartmoor Mires Project, applied to the Secretary of State for a licence to recover Sea Vixen debris, which as a crashed military aircraft falls within the scope of the Protection of Military Remains Act 1986 (Licence no. 1764). The metal amongst the debris, which mainly comprises of aluminium alloy but also, included ferrous material which interfered with the MoD UXO survey. In line with the Methodology for removing Sea Vixen debris, agreed with Dartmoor National Park Authority (DNPA) Senior Archaeologist, each cluster of debris was recorded using differential GPS, photographed and bagged. Only debris investigated during UXO survey or exposed during borrow pit or peat block construction was recovered from the site.

1.7. A number of artillery fragments from exploded bombs dropped during World War 2 were also uncovered during UXO investigations within the restoration area.

2 Site location and topography

The site at Flat Tor Pan (Broad Down) (OSGR SX613812) is located on an area of relatively flat upland in northern Dartmoor, 3.6km northwest of Postbridge and 220m south of Flat Tor, in the parish of Dartmoor Forest (see Figure 1). The restoration boundary encompasses an area of high quality blanket bog and covers approximately 23 ha (see Figure 2). The

site is bounded to the northwest by Flat Tor, to the southwest by the West Dart River, to the southeast by Broad Down and to the northeast by Broad Marsh Stream.

3 Aims and Objectives

3.1 The aim of the watching brief was to observe, investigate, record and excavate, where necessary, any archaeological remains and Sea Vixen debris uncovered during the course of restoration works, UXO survey and to provide advice and guidance for the protection of archaeological features along the access route to site.

4 Historical and Archaeological Background

4.1 An archaeological assessment of the restoration site and the vehicle access route was carried out prior to restoration work and may be referred to for a more detailed historical and archaeological background (Rohan 2014). It indicated that apart from the Sea Vixen there were no known archaeological features located within the restoration area. The site is located within an archaeologically rich landscape that indicates human activity in this part of Dartmoor from the Neolithic through to the modern day. The archaeological features most prevalent in the immediate vicinity of the restoration site are two fine examples of medieval streamworks located to the northeast (MDV 27279) and southwest (MDV 27276) of the site (see Figure 4). A peat pass (MDV 6762) runs 30m northwest of and parallel to the northern end of the restoration site. There is also extensive evidence for peat cutting across the Moor to the south.

4.2 The Royal Navy 766 Squadron Sea Vixen (XN 648) that crashed into the bog at Flat Tor Pan (Broad Down), on 31 May 1965, was based at the Royal Navy Air Station (RNAS) base at Yeovilton where operational flying training was carried out by 766 Squadron (Plate 1). The Sea Vixen is a two-seater twin engine, twin-boom tail jet fighter designed by de Havilland and used by the Royal Navy Fleet Air Arm from the late 1950s to the early

1970s (Sea Vixen Operation History, 2013). The Sea Vixen's operational role within the Royal Navy was to defend the fleet at sea during the Cold War. It was the first British aircraft to be exclusively armed with missiles. The Sea Vixen that crashed at Flat Tor Pan did so during a training exercise and so was armed with dummy missiles.

4.2 A total of 145 Sea Vixens were built by de Havilland (*Ibid.*). The aircraft weighed approximately 15 tonnes with a wing span measuring 15.5m and a total length measuring 17m. It could reach speeds of up to 700 miles per hour and a range of up to 2000 miles (de Havilland Sea Vixen FAW2). There are a total of 12 Sea Vixen airframes currently on display in the UK and abroad. A single Sea Vixen is still flying and is operated by Naval Aviation Ltd., a subsidiary of Fly Navy Heritage Trust. It performs at air shows and is currently based at the Fleet Air Museum at RNAS Yeovilton (Sea Vixen FAW2 G-Cvix "Foxy Lady", 2014).

4.2 The crash at Flat Tor Pan occurred during a training exercise and there were no fatalities as the pilot, Derek Cottrill and his observer Roy Kenward ejected safely (Plate 2-3). The crater created by the crash is now the site of a substantial pool (see Figure 4, Plate 4). The majority of the larger parts of the fuselage were removed by the military during several clearance operations as the fuselage came to the surface. Today a relatively small amount of debris remains visible on the bog surface; however given that the aircraft weighed approximately 15 tonnes it is likely that the engines, fuel tank and an unknown quantity of fuselage remains buried in the peat. Restoration work, UXO and metal detection survey have shown that Sea Vixen debris survives within the peat in proximity to and south of the crash site.

4.3 There are a significant number of bomb craters visible on both the bog surface within the restoration area and on the surrounding landscape (Figure 5). They are the physical evidence for extensive shelling of the Moor during World War 2 by both German and Allied Forces. The whole

Moor was used for live firing during this period so some of the craters on Flat Tor Pan may be the result of such activity (The Armed Forces on Dartmoor, 8). It has also been suggested that shells were fired from naval ships in Plymouth Sound onto the Moor. Fires were also lit on the Moor to lure German military aircraft to drop their bombs away from essential services and industry in Plymouth (*Ibid.*, 9). The extensive bomb craters and the artillery fragments that survive within the restoration are likely to be attributed to both the Allied and German forces. The current boundary of the Merrivale Military training area, within which live firing is carried out, is located immediately west of the western limit of the restoration area. It is also possible that some activity may be attributed to more modern military training.

5 Previous Surveys

5.1 Walkover Survey

On 19 December 2011 the footprints of the two hydrological monitoring enclosures, which measured 80m by 25m and 20m by 25m, were systematically field-walked at 5m intervals by the author. The Ministry of Defence (MoD) UXO survey team requested that Sea Vixen debris was removed from the field surface prior to UXO survey of the hydrological enclosures. The field surface of each enclosure was closely examined for Sea Vixen debris, which was identified at four locations within and beyond the enclosure footprints. Once identified each cluster or piece of debris was numbered, photographed *in situ* and their exact locations recorded using differential GPS. At the request of the landowner, the Duchy of Cornwall, the debris identified during the survey was removed from the site and is presently stored at DNPA premises.

5.2 MoD UXO Survey Watching Brief

An archaeological watching brief of the MoD UXO survey of the hydrological enclosures was undertaken by the author on 14th February 2012. The MoD team systematically walked the enclosures and under archaeological supervision investigated areas which gave readings for

suspected UXO. As a result, Sea Vixen fuselage was uncovered at three locations within the larger enclosure (Rohan, 2013). Secretary of State Licence no. 1762 was issued retrospectively for the recovery of these items.

5.3 Metal detection Survey

In April 2014, the author and Scott Hardy, Assistant Project Officer with the Dartmoor Mires project carried out a metal detection survey in order to establish the extent to which Sea Vixen debris survives within the peat matrix. The survey revealed that a significant amount of debris survives within the peat over an area measuring 270m north to south by 170m east to west (Figure 6).

6 Fieldwork Methodology

6.1 The restoration work was carried out using a 7.5 tonne Takeuchi excavator with low ground pressure 900mm plastic tracks and a 3ft grading bucket (Plate 4).

6.2 The restoration works involved blocking erosion gullies with peat blocks that were sourced from their immediate vicinity (Plates 5-6). Where there were no suitable locations to source peat as outlined above, it was necessary to excavate small borrow pits within the reach of the excavator's arm. The pits predominantly measured two bucket widths (1.8m), where necessary, and were excavated to an average depth of 0.40m but were occasionally excavated to a maximum depth of 1m.

6.3 The UXO survey was carried out alongside the restoration works and the onsite archaeologist was present for any investigations of anomalous readings.

6.4 The Sea Vixen debris was recorded in accordance with the Methodology for recording Sea Vixen debris agreed with the DNPA Senior Archaeologist and the terms of the Licence to excavate crashed military aircraft. Debris

was numbered sequentially using the Licence no. 1764 (e.g. 1764.1 etc) and each cluster of recovered debris was recorded as follows:

- location recorded using a differential GPS;
- photographed
- numbered and bagged accordingly (if necessary to remove from site);
- stored at the National Park offices until, in accordance with the licencing conditions, the MoD decide who final ownership rests with.

7 Results

7.1 During the course of restoration work peat was extracted from borrow pits within the excavator reach. The borrow pits varied in size depending on the requirement for block construction. On average the borrow pits measured two bucket widths (1.8m) and 0.4m in depth. The stratigraphy varied slightly between Areas 1 and 2. Area 1 was higher quality bog with the upper 0.2 to 0.3m of the peat primarily composed of poorly humified *Sphagnum* rich peat with moderate root inclusions (Plates 6-8). The peat below was also composed of poorly humified *Sphagnum* rich peat. Area 2 was *Mollinia* dominated so the upper 0.3 to 0.4m of the borrow pits contained frequent dense root systems (Plates 9-10). The peat below was composed of poorly humified *Sphagnum* rich peat. The borrow pits in Area 3 were excavated by volunteers and so were smaller than elsewhere on the site. They varied slightly but on average measured 0.9m in length, 0.5m in width and 0.3m in depth (Plate 11). The upper 0.3m of the peat was composed of poorly humified *Sphagnum* rich peat with frequent root inclusions.

7.2 The Sea Vixen debris was recovered from fifty-eight locations within an area extending southwards from the northern side of the pond/crash site for a distance of 190m and measuring approximately 125m east to west (Figures 7-8). The debris was recovered during restoration work and UXO survey of the site either through restoration groundworks or as a result of UXO investigations. It was largely comprised of twisted unidentifiable fragments of aluminium alloy but also included some ferrous material, steel and wire. A list detailing the Sea Vixen debris removed from the site and accompanying plates can be found in Appendix 1.

7.3 Four artillery fragments were also uncovered during UXO survey investigation work (Figure 7). Three are unidentifiable rusted fragments (AF1-3) while the fourth is a possible tail fin (AF4). All four fragments are twisted and badly damaged. The artillery fragments were identified and recovered during the UXO survey of the site as they contained ferrous

material which is identified by the survey equipment. AF1 and AF2 were uncovered during UXO investigation in Area 4. AF3 and AF4 were uncovered in the southeast corner of Area 5 (Plates 13-14). AF1-3 measured, on average 0.2m in length, 0.1m in width and 4mm in depth. The possible tail-fin measured 0.5m in length and 0.36m in width. At one end of this fragment the two corners were folded and held together suggesting that it may be part of the tail fin of an exploded bomb. They are the remnants of exploded artillery most likely dropped on the site during World War 2.

7.4 A large fragment of Sea Vixen (InSitu SV1) was uncovered during UXO survey in Area 5 (Plates 15-16). This fragment was not fully exposed as it would have created excessive disturbance and there was evidence of oil in the surrounding peat. It comprised a large fragment of possible engine casing that measured 2.5m in length and 0.25m in width at its southern end where it appeared bent. Its exterior was painted black while the interior had evidence of rusting/corrosion. Given the size of this fragment and the evidence of oil it was decided to leave it *in situ*. A second fragment was uncovered during the excavation of a borrow pit during restoration in March 2015. This fragment (1764.45) was also left *in situ* (Plate 17).

8 Discussion

8.1 It may be surmised from the distribution of the Sea Vixen debris that the fuselage was thrown forward in a southerly direction on impact. The majority of fragments have the Royal Navy grey paint and contain rivets indicating that are likely part of the outer skin of the aircraft which were propelled forward before the aircraft impacted the bog. There were few identifiable fragments recovered from the site. The vast majority were composed of twisted fragments of aluminium alloy.

It is likely that a substantial quantity of Sea Vixen fuselage remains within the peat matrix within Areas 1 and 5. It is also possible that some debris survives outside the blocked area.

9 References

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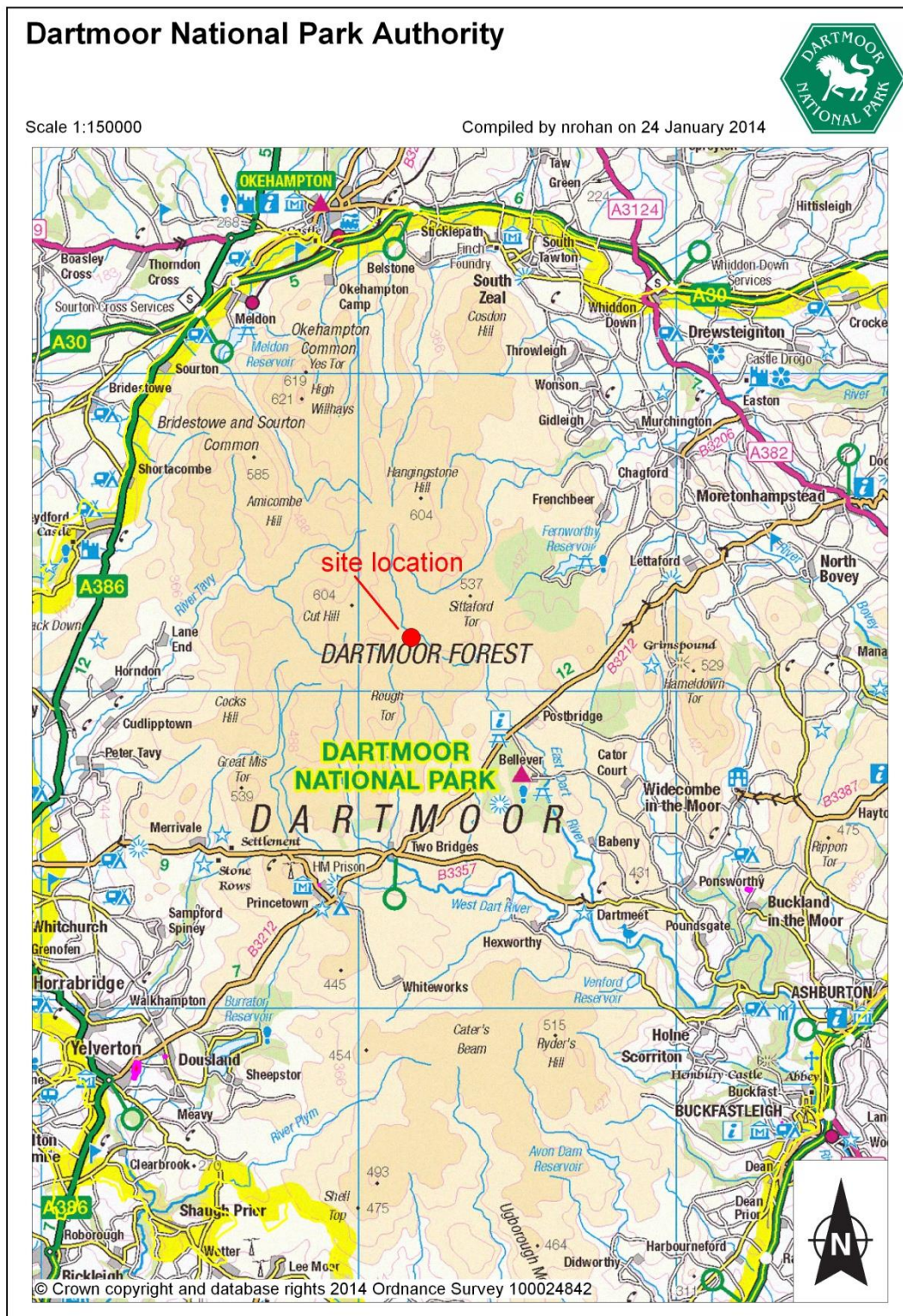


Figure 1 Flat Tor Pan (Broad Down) site location within Dartmoor National Park (outlined in yellow).

Dartmoor National Park Authority



Scale 1:30000

Compiled by nrohan on 4 December 2014

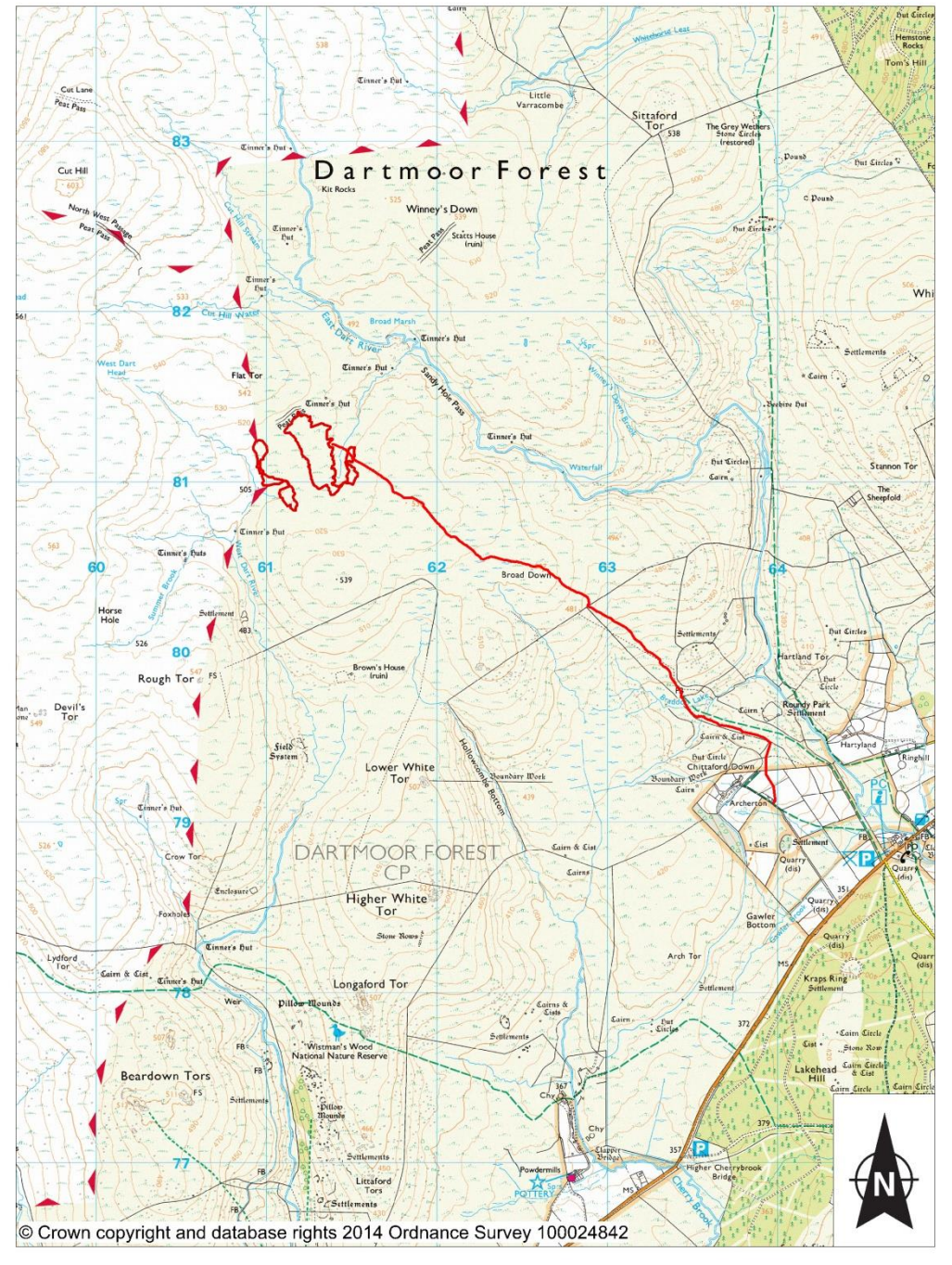


Figure 2 Site location map showing restoration areas on Flat Tor Pan (Broad Down) outlined in red.

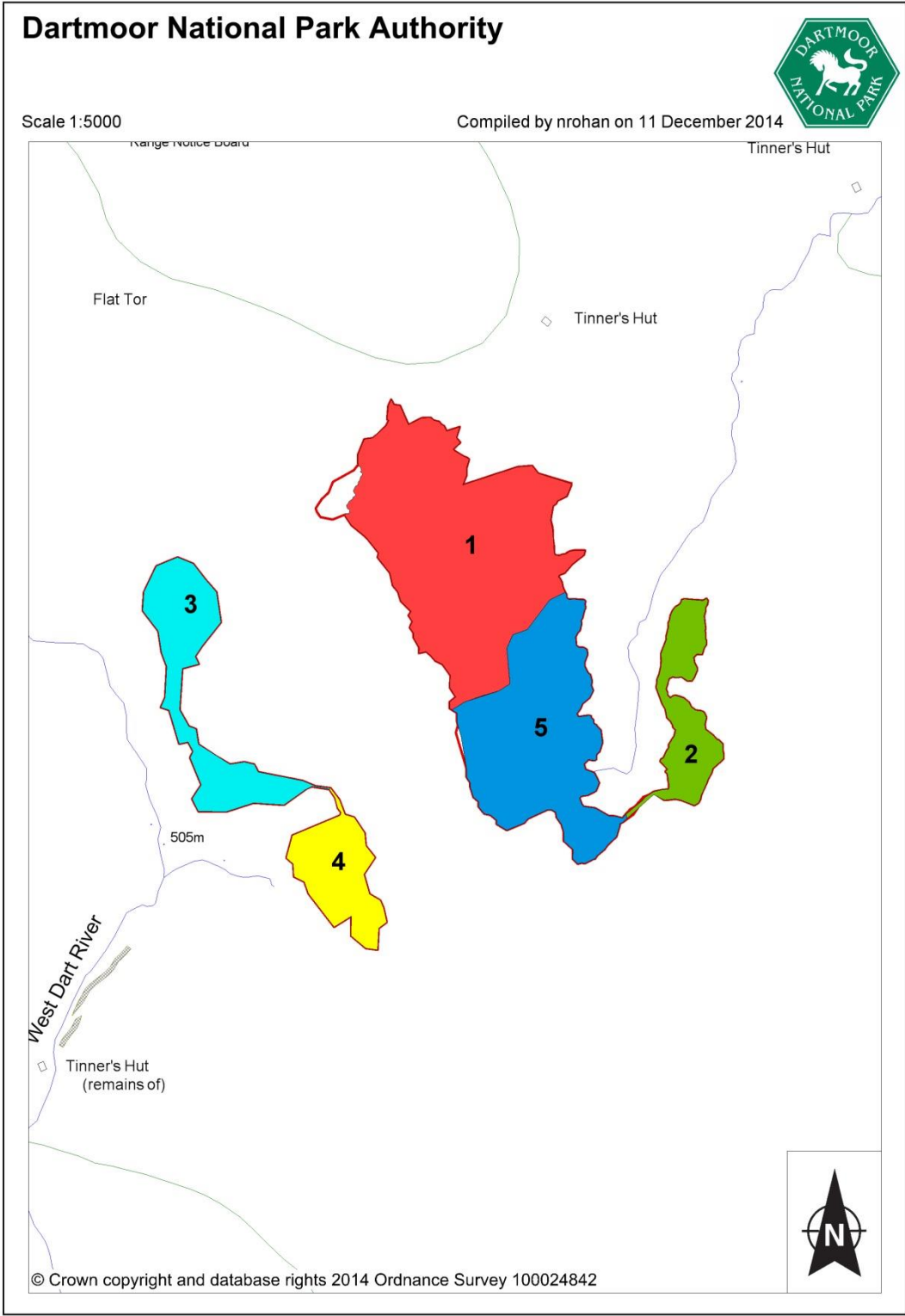


Figure 3 Restoration areas numbered 1 to 5 on Flat Tor Pan (Broad Down).

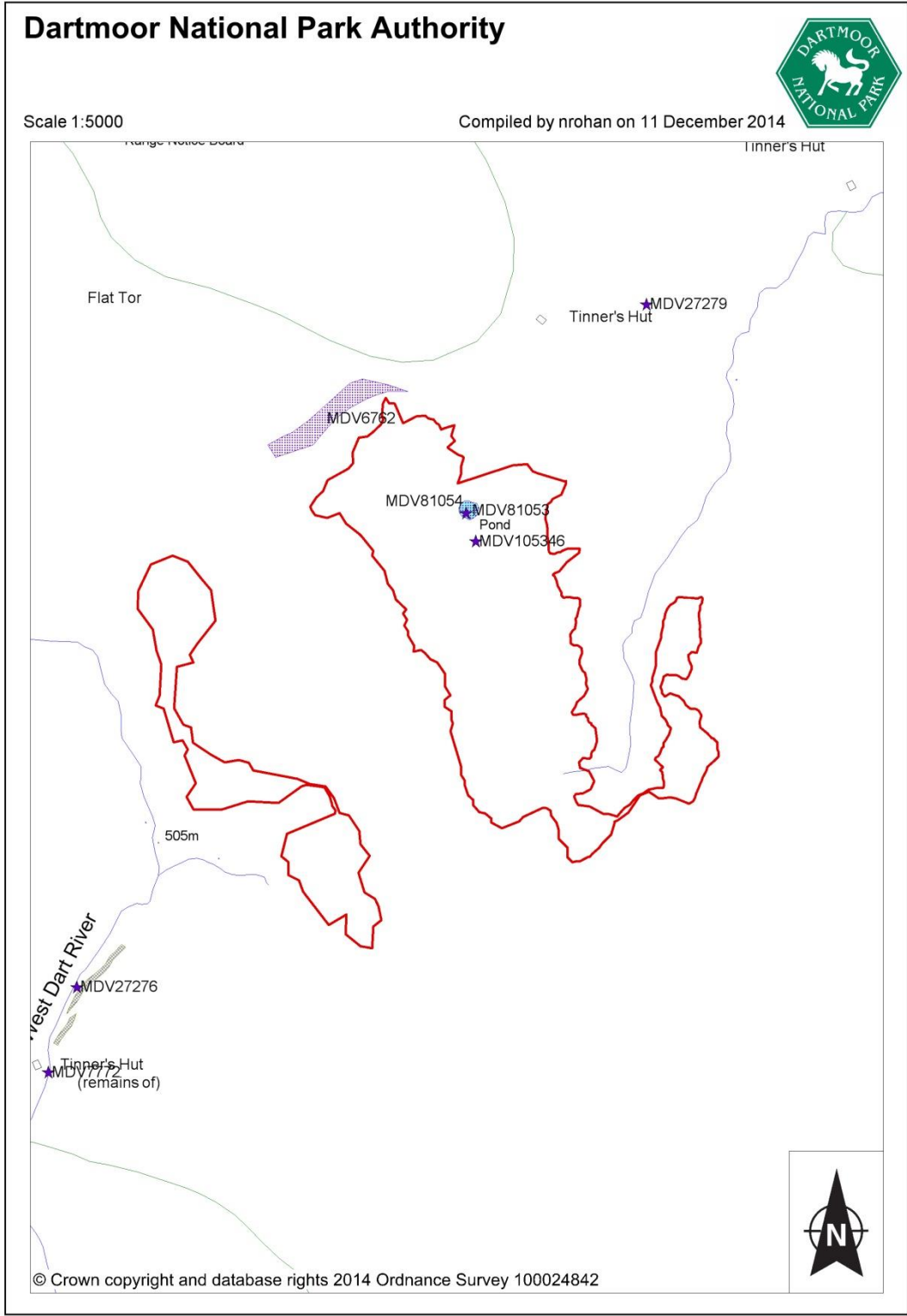
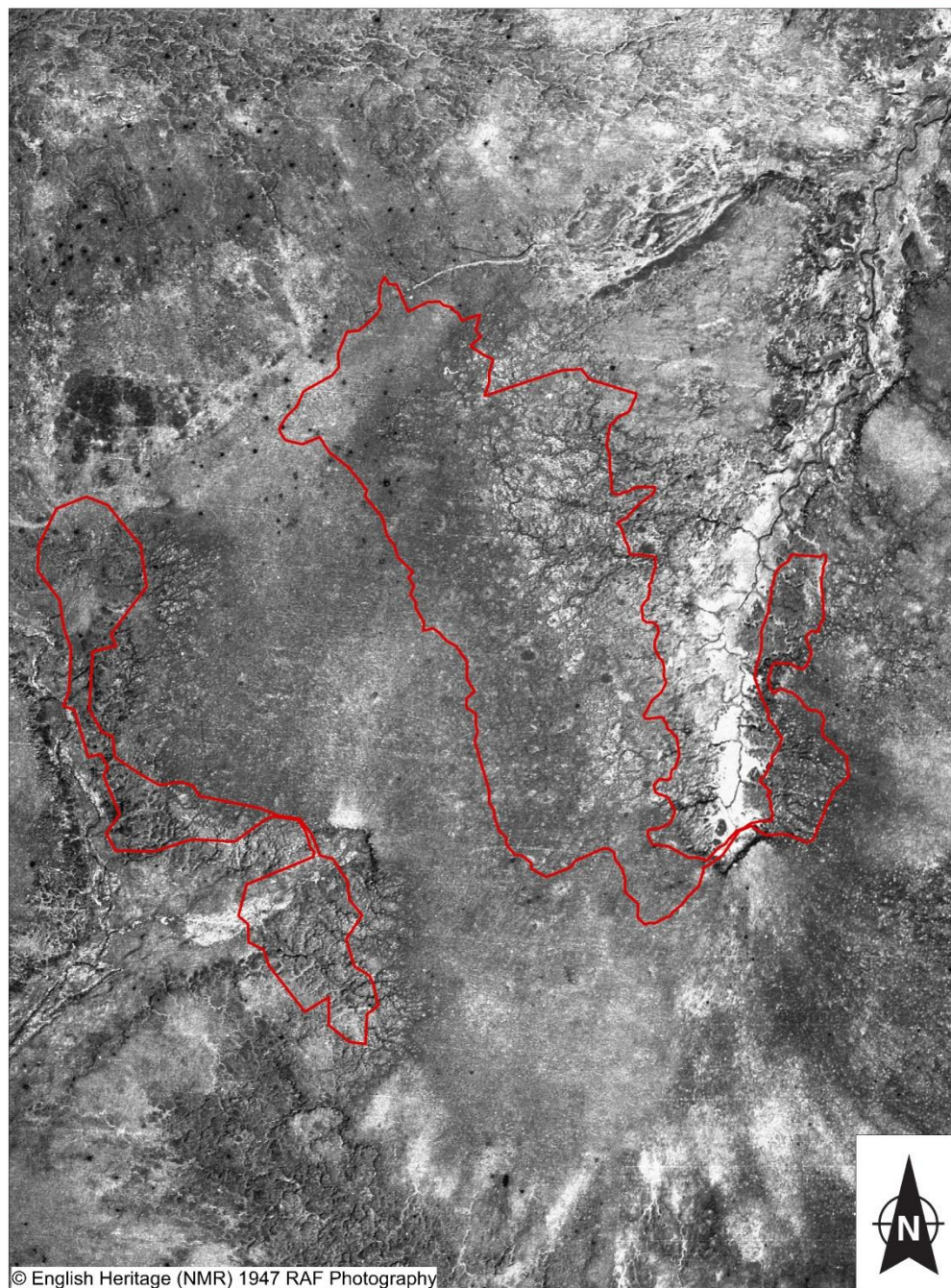


Figure 4 Site location in relation to HER sites (with MDV prefix), note Sea Vixen crash site not site of Pond (blue).



© English Heritage (NMR) 1947 RAF Photography

Figure 5 RAF aerial photograph of restoration site taken in 1947. The bomb craters visible as small dark sub-circular features.

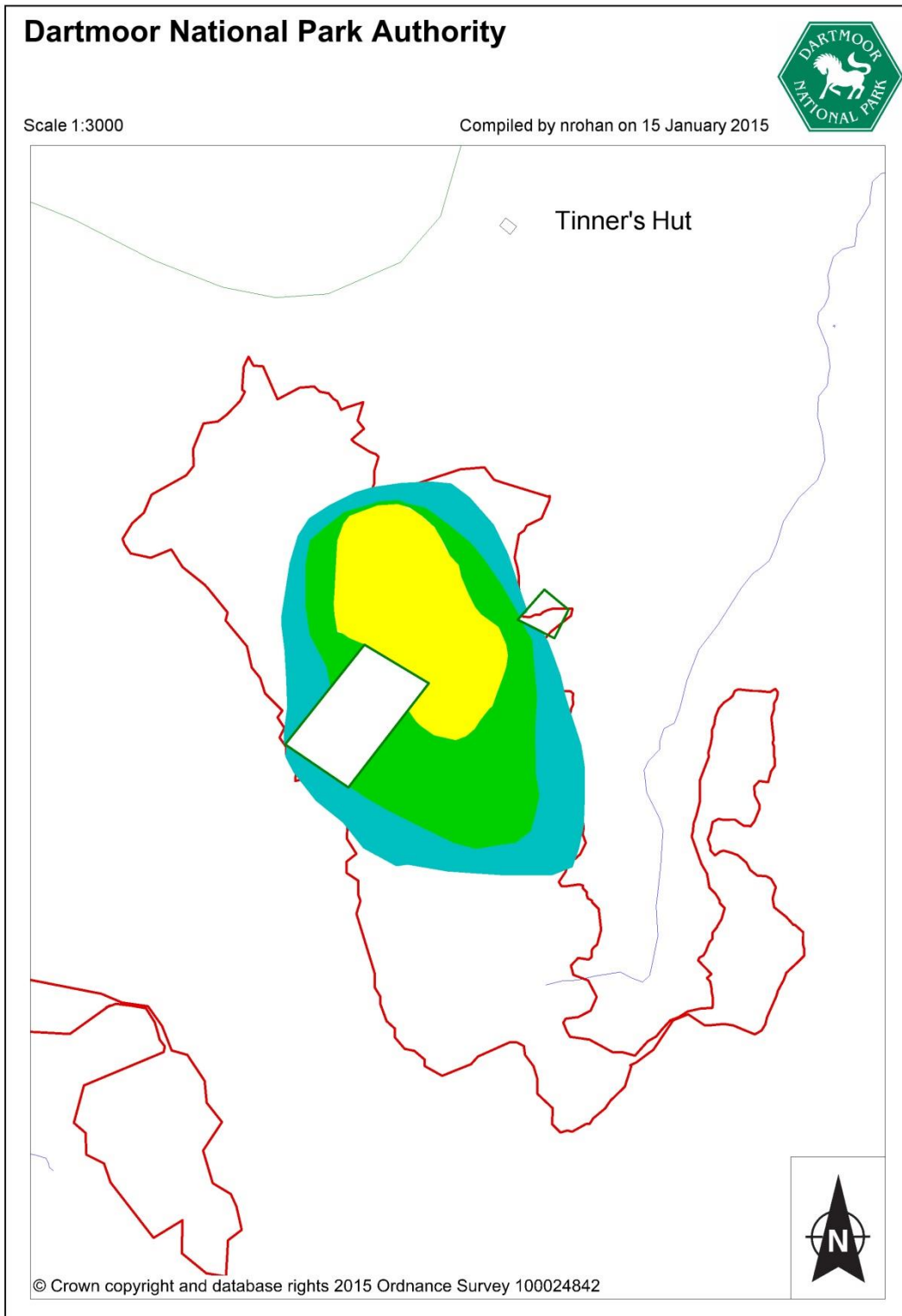


Figure 6 Metal detection survey results showing Sea Vixen distribution. Yellow illustrates high density, green medium density and blue low density.

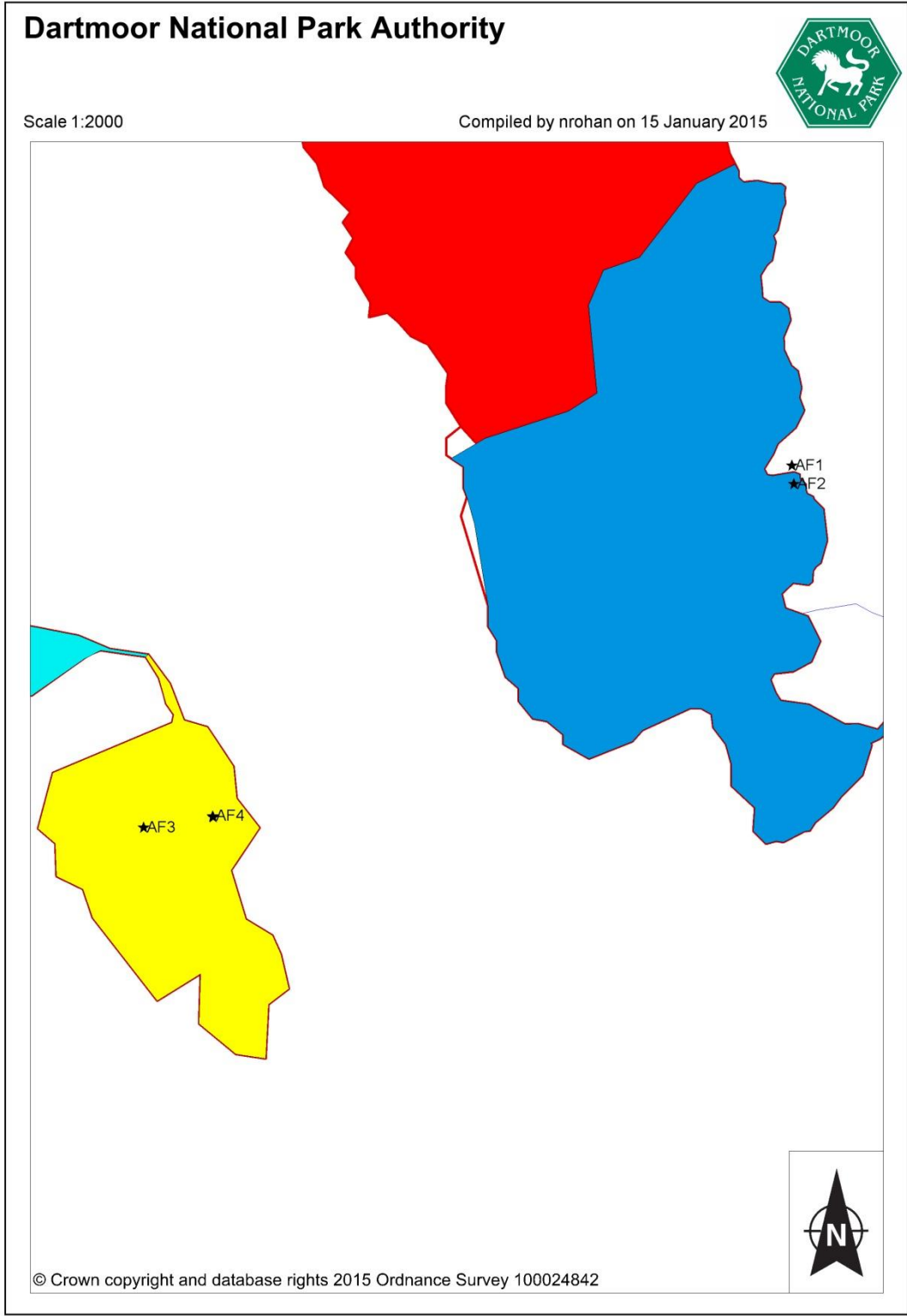


Figure 7 Artillery Fragment Distribution map showing AF.1 and AF.2 in Area 4 and AF. 3 and AF.4 within Area 5.

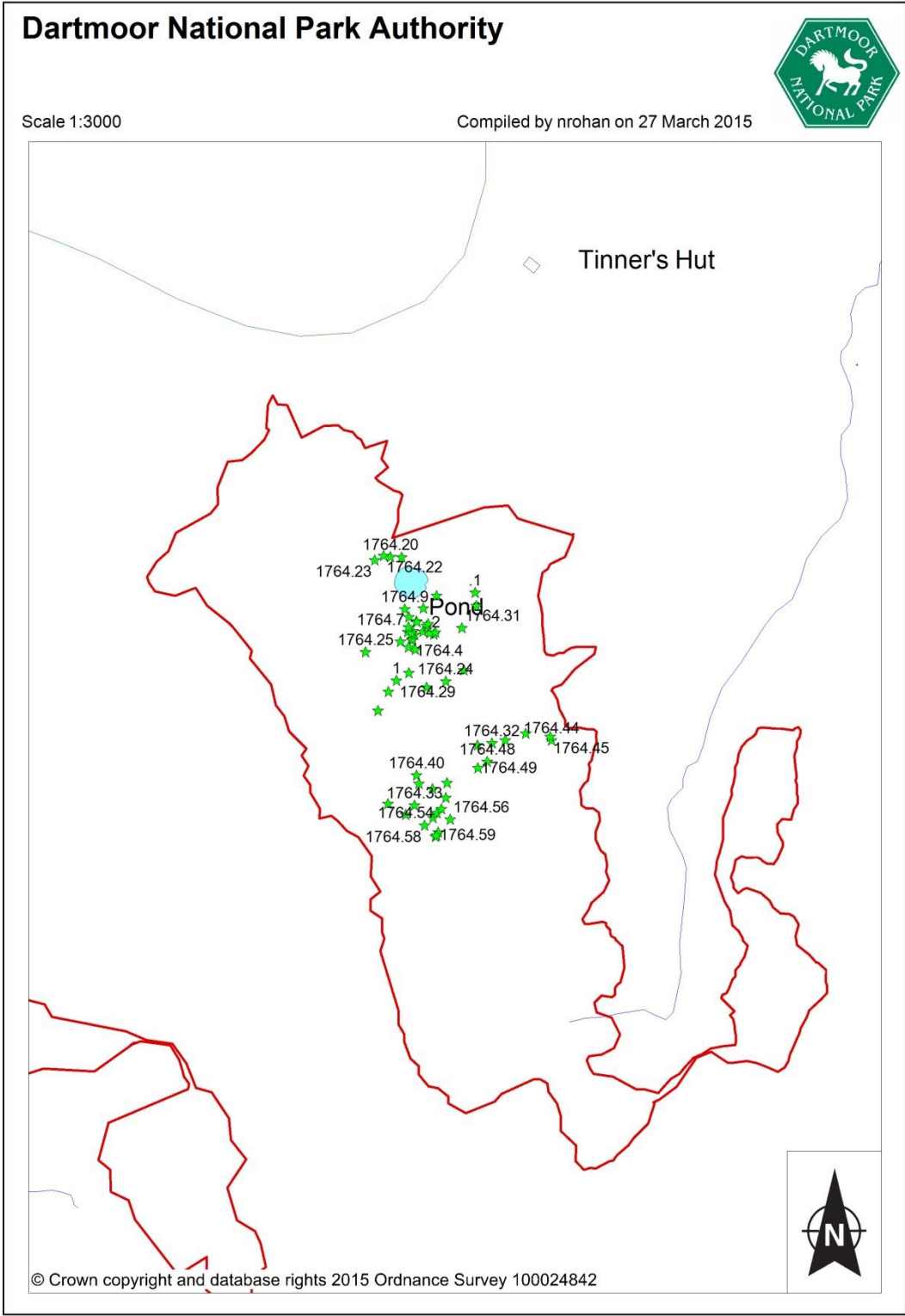


Figure 8 Recovered Sea Vixen debris distribution map.

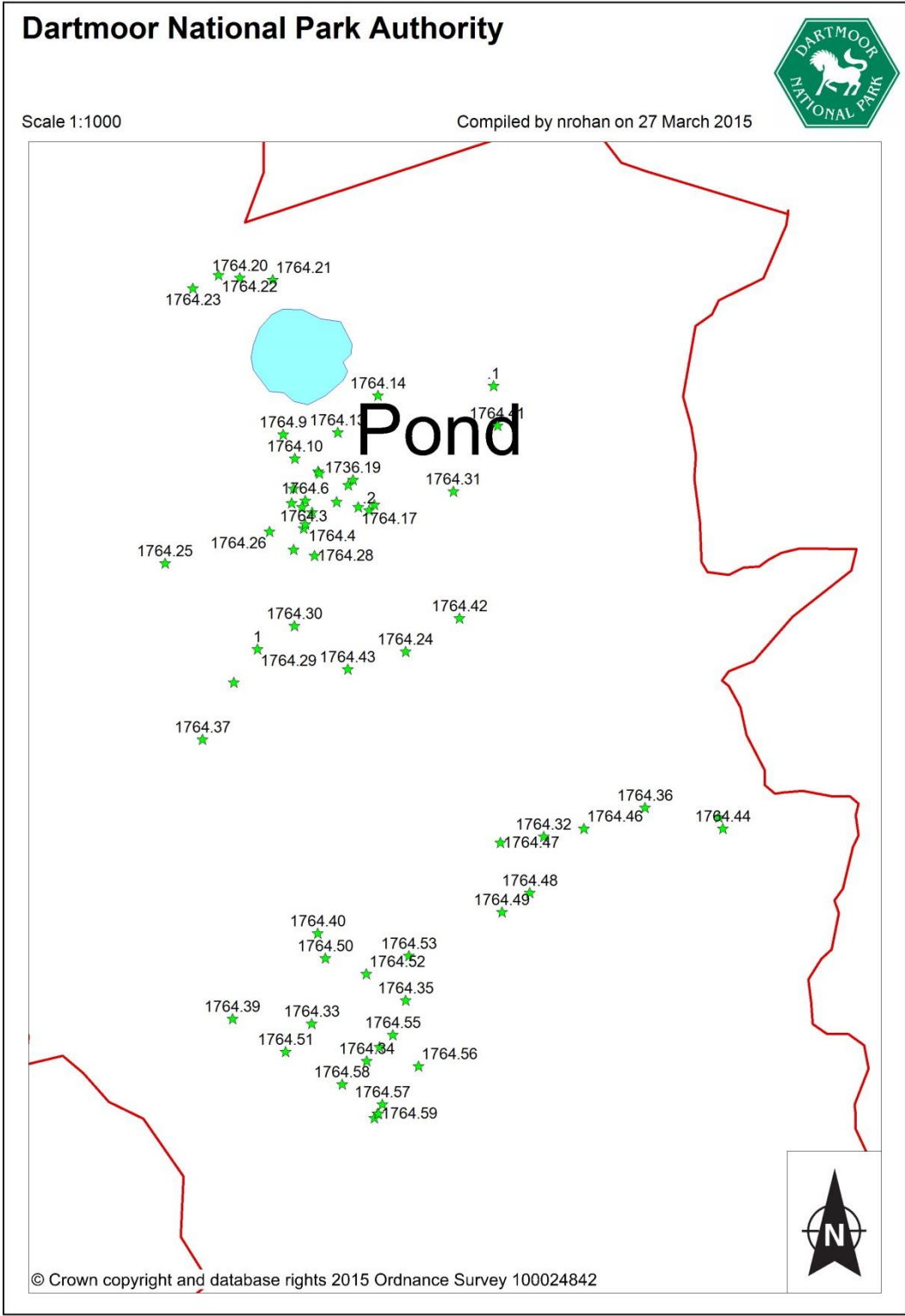


Figure 9 Close up Sea Vixen distribution map.

11 Plates



Plate 1 Royal Navy Sea Vixen that crashed on Flat Tor Pan (Broad Down), taken the year before the crash (photo courtesy of Pilot Derek Cottrill via www.davebellamy.co.uk).



Plate 2 Pilot Derek Cottrill and his observer Roy Kenward after ejecting from the Sea Vixen on Flat Tor Pan (Broad Down) (photo courtesy of Derek Cottrill via www.davebellamy.co.uk).



Plate 3 The crash site the day after the Sea Vixen aircraft crash taken by Royal Navy 766 Squadron's recovery team (photo courtesy of Derek Cottrill via www.davebellamy.co.uk)



Plate 4 The crash site today, looking west.



Plate 5 Restoration work on the north side of the pond in area 1, looking south towards restoration work in Area 2.



Plate 6 Borrow pit in Area 1.



Plate 7 Large borrow pit Area 1.



Plate 8 Borrow pit Area 1.



Plate 9 Borrow pits Area 2.



Plate 10 Large borrow pit in Area 2.



Plate 11 Borrow pit excavated by Conservation Volunteers in Area 4.



Plate 12 AF.1 and AF.2 uncovered on the eastern limit of Area 5.



Plate 13 AF.3 uncovered in Area 4.



Plate 14 AF.4 possible tail fin uncovered in Area 4.



Plate 15 In Situ SV1 uncovered on eastern side of Area 5, looking east.



Plate 16 Close up of western end of In Situ SV1, looking north.



Plate 17 1764.45 preserved *in situ*, looking north.

Appendix 1 List of Sea Vixen debris recovered from site under Licence 1764

Find No.	Quantity	Description	Plate No. Appendix 2
1764.1	1	Small magnet.	1
1764.2	1	Large unidentifiable metal fragment measuring 0.6m in length.	2
1764.3	1	A rusted metal ring measuring 0.2m in diameter.	3
1764.4	3	3 unidentifiable metal fragments.	4-6
1764.5	1	1 corroded metal disk measuring 0.1m in diameter that is solid metal on one side. The other side has a metal ring surrounding an unknown textile.	7
1764.6	62	57 unidentifiable fragments of wire and 5 pieces of wire.	8-9
1764.7	2	2 unidentifiable fragments of metal.	10
1764.8	2	2 small metal fragments.	11
1764.9	1	Single piece of rusted metal measuring approximately 0.25m in length.	12
1764.10	1	Small piece of metal approximately 0.1m in length.	13
1764.11	1	Fragment of rusted metal ring measuring approximately 0.22m in diameter.	14
1764.12	24	21 metal fragments and 3 pieces of wire.	15
1764.13	1	1 small metal fragment.	16
1764.14	1	1 small rusted fragment of metal.	17
1764.15	4	4 metal fragments, 1 of which was a piece of copper.	18
1764.16	8	8 fragments of various metals including a metal plate with a lap joint on either side. It also included a fragment of steel which was originally circular with two screw holes one of which had screw <i>in situ</i> . It was possibly part of the engine casing and is very similar to 1764.27.	19
1764.17	2	2 fragments including a possible supporting arm for a hatch and a piece of the outer aircraft body.	20
1764.18	13	9 fragments of aluminium alloy, 3 with Royal Navy grey paint and rivets. It also included 1 piece of wire, 1 red fuse case containing two fuses and two pieces of torn fabric that may have been part of the cover for the radar.	21

Find No.	Quantity	Description	Plate No.
1764.19	1	1 small blade measuring 0.1m in length. It is n-shaped at one end with the serial number BR13389G. It is possibly one of the engine intake compressor blades.	22
1764.20	6	4 metal fragments and two small fragments of possible radar dish.	23
1764.21	5	5 unidentifiable fragments of metal, one of which is a lap joint.	24-25
1764.22	1	1 fragment of twisted ferrous metal with rivet holes along one side.	26
1764.23	1	1 fragment of possible radar dish displaying obvious circular cut in the centre.	27
1764.24	1	1 unidentifiable cylindrical object with textile exterior measuring 0.05m in length and 0.03m in diameter.	28
1764.25	3	3 unidentifiable fragments of twisted metal, all with rivet holes.	29
1764.26	5	5 metal fragments, two of which were joints contained ferrous material. 1 was composed of a riveted lap joint that was likely to be part of the outer skin of the fuselage. There was also a short section of a slightly raised piano hinge.	30
1764.27	4	4 fragments of metal including two small fragments of corroded ferrous material, 1 fragment containing a bolt and 1 steel fragment that appeared to be originally part of a large circular object and may be part of the engine casing.	31
1764.28	7	7 unidentifiable fragments of various metal, 5 are corroded indicating the presence of iron. It includes one fragment of metal tubing, one fragment with multiple rivet holes and one stronger fragment with large rivet holes.	32
1764.29	1	1 large hinge fragment composed of various metals. This fragment is very heavy and is likely to contain steel. There are a large number of rivets with <i>in situ</i> screws. Given the weight of this piece it is possibly part of the landing gear or air break.	33-34

Find No.	Quantity	Description	Plate No.
1764.30	2	1 small black object with black metal casing which measured 0.11cm in length and leaks oil. 1 corroded fragment of a cylindrical object measuring 0.12m in length and 0.05m in diameter with two yellow wires extending from the centre. This object was likely to be part of the aircrafts electrical system.	35-36
1764.31	3	1 fragment of a possible arm that may have supported an open hatch. Two unidentifiable fragments of corroded metal.	37
1764.32	2	1 Plessy Rotary Transformer with an almost intact label. This unit is cylindrical in shape with a hollow centre that contains a small number of wires. It has serial number 2057 engraved on the label. It may have been part of the aircrafts radio. The second piece appeared to be composed of two small interconnecting pieces of corroded metal connected to a number of wires.	38-39
1764.33	1	1 fragment of possible electronic gear/control panel. This piece is badly damaged and twisted but is composed of an outer metal casing that is painted black which appears to encase wires. It also leaked oil.	40
1764.34	1	1 large piece similar to 1764.33 but there are more wires visible and there are two possible fuse inputs labelled 'RV1' and 'RV2'.	41
1764.35	25	19 unidentifiable fragments of twisted metal, three of which appear to be pipes. Also included 6 wire fragments, two of which are short lengths of metal cable.	42
1764.36	2	1 sprocket and a short piece of chain. The sprocket measures 0.13m in diameter and the chain 0.12m in length. Both are corroded.	43
1764.37	1	1 small unidentifiable fragment of twisted metal with three small rivet holes.	44
1764.38	1	1 fragment of lap joint with multiple rivets.	45
1764.39	1	1 small fragment of metal.	46

Find No.	Quantity	Description	Plate No.
1764.40	1	1 small unidentifiable fragment of metal.	47
1764.41	1	1 small unidentifiable fragment of twisted metal with rivet holes and green paint.	48
1764.42	4	4 fragments of unidentifiable twisted metal, 3 of which had green paint.	49
1764.43	2	1 unidentifiable metal fragment with rivet holes and Royal Navy grey paint, 1 cylindrical metal tube.	50
1764.44	1	1 unidentifiable fragment of twisted metal with Royal Navy grey paint with four rows of rivet holes.	51
1764.45	1	Not removed from site. 1 large circular metal object remains <i>in situ</i> .	52
1764.46	20	17 unidentifiable metal fragments and 3 pieces of wire.	53
1764.47	1	1 strip of twisted aluminium.	54
1764.48	5	5 fragments of various metal, 3 have Royal Navy grey paint and 1 has green paint.	55
1764.49	7	6 fragments of aluminium alloy and 1 piece of tubing.	56
1764.50	3	1 fragment of metal, 1 piece of wire and 1 bundle of small wires.	57
1764.51	2	1 fragment of metal with rivets and 1 piece of wire.	58
1764.52	2	2 metal fragments.	59
1764.53	3	4 metal fragments and 1 bundle of wires.	60
1764.54	4	2 metal fragment, 1 small fragment of rubber and 1 wire.	61
1764.55	1	1 fragment of rubber tube.	62
1764.56	2	1 fragment of a lap joint and 1 rubber tube.	63
1764.57	2	2 strips of metal bolted together to form a hinge.	64
1764.58	95	86 fragments of various metals and 9 pieces of wire. This cluster of debris was previously recorded as SV6.	65
1764.59	43	36 fragments of various metals, 6 pieces of wire and 1 bundle of wires. This cluster of debris was previously recorded as SV7.	66

Appendix 2 – Sea Vixen Debris Plates



Plate 1 1764.1 (small magnet).



Plate 2 1764.2



Plate 3 1764.3.



Plate 4 1764.4 (1 of 3).



Plate 5 1764.4 (2 of 3).



Plate 6 1764.4 (3 of 3).



Plate 7 1764.5.



Plate 8 1764.6 (1 of 2).



Plate 9 1764.6 (2 of 2) Debris removed from water.



Plate 10 1764.7.



Plate 11 1764.8.



Plate 12 1764.9.



Plate 13 1764.10.



Plate 14 1764.11.



Plate 15 1764.12.



Plate 16 1764.13.



Plate 17 1764.14.



Plate 18 1764.15.



Plate 19 1764.16.



Plate 20 1764.17.



Plate 21 1764.18.



Plate 22 1764.19.



Plate 23 1764.20.



Plate 24 1764.21 (1 of 2).



Plate 25 1764.21 (2 of 2).



Plate 26 1764.22.



Plate 27 1764.23.



Plate 28 1764.24.



Plate 29 1764.25.



Plate 30 1764.26.



Plate 31 1764.27.



Plate 32 1764.28.



Plate 33 1764.29(1 of 2).



Plate 34 1764.29 (2 of 2)



Plate 35 1764.30



Plate 36 1764.30 Close up of cylindrical object.



Plate 37 1764.31



Plate 38 1764.32



Plate 39 1764.32 Close up of rotary transformer.

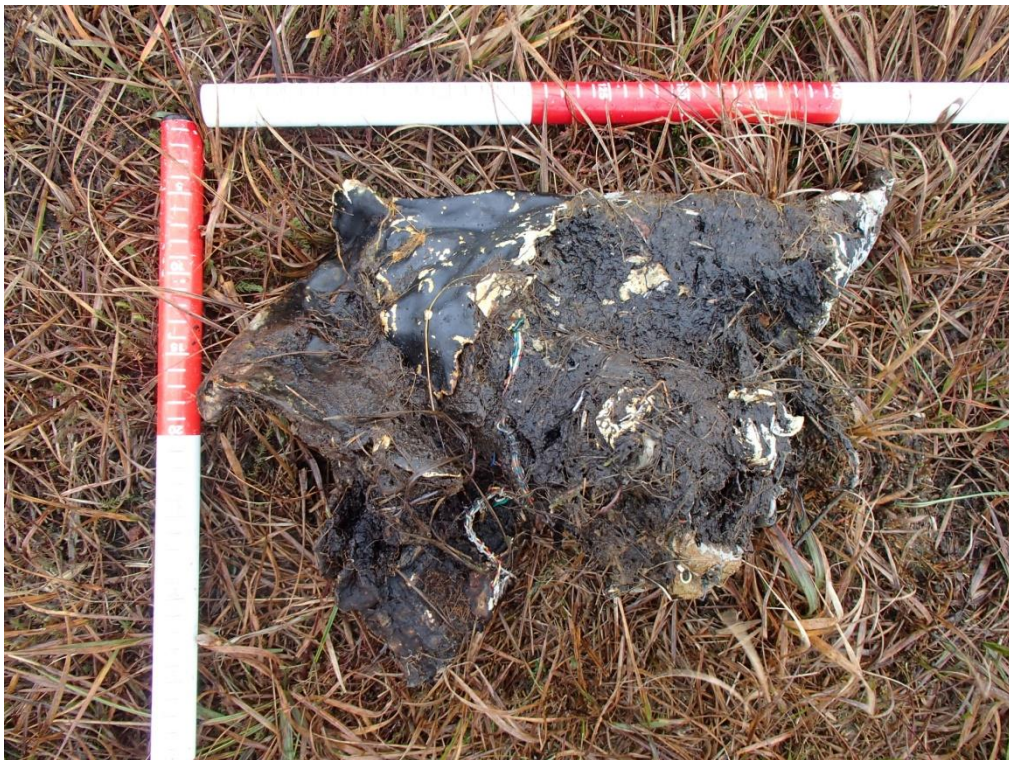


Plate 40 1764.33



Plate 41 1764.34



Plate 42 1764.35



Plate 43 1764.36



Plate 44 1764.37



Plate 45 1764.38



Plate 46 1764.39



Plate 47 1764.40



Plate 48 1764.41



Plate 49 1764.42



Plate 50 1764.43



Plate 51 1764.44



Plate 52 1764.45 (not recovered, remains *in situ*).



Plate 53 1764.46



Plate 54 1764.47



Plate 55 1764.48



Plate 56 1764.49



Plate 57 1764.50



Plate 58 1764.51



Plate 59 1764.52



Plate 60 1764.53



Plate 61 1764.54



Plate 62 1764.55



Plate 63 1764.56



Plate 64 1764.57



Plate 65 1764.58



Plate 66 1764.59