

**MILFORD HAVEN TO ABERDULAIS NATURAL
GAS PIPELINE**

Final Report

Assessment Report for Stone

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RSK on behalf of NACAP Land & Marine for National Grid

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SUMMARY

A small collection of stone was recovered. Much of this material was collected as being potentially burnt, from both hand collection and sieving. Only a small number of pieces show undisputable evidence for burning however. The collection also includes a probable hammerstone.

The finds come from the counties of Carmarthenshire, Pembrokeshire and Swansea (Table 1).

Table 1

category	Carmarthenshire	Pembrokeshire	Swansea	Grand Total
MODIFIED	231	1		232
POSSIBLY MODIFIED	207	13		220
UNWORN AND UNMODIFIED	63	114	2	179
WORKED		1		1
Grand Total	501	129	2	632

1 INTRODUCTION

This report deals with stone finds from various sites on the Milford Haven to Aberdulais Natural Gas Pipeline (Site Code: MHA 06). A total of 632 objects were submitted. Of these, 166 were recovered by hand and 466 were small, recovered through sieving. Table 2 shows the quantities in each group identified as worked, modified, possibly modified or neither.

Table 2

category	hand recovered	sieved residue	Grand Total
MODIFIED	105	127	232
POSSIBLY MODIFIED	22	198	220
UNWORN AND UNMODIFIED	38	141	179
WORKED	1		1
Grand Total	166	466	632

2 **METHODOLOGY**

Each recovered item was examined visually by the authors, looking at the type of stone, traces of use or modification and any evidence for post-burial alteration. A catalogue was produced using the standard Access-based table adopted for all AVAC finds projects.

Visual examination was supplemented by examination using a x20 magnification stereo-microscope to examine rock type and wear traces.

The principal questions asked of the material were:

- a) has the material been modified by deliberate human activity and, if so, can we identify the object?
- b) is the material the by-product of a human activity?

If the answer to both questions is negative then it is assumed that the material is an unmodified stone which was either present in the subsoil before any human activity took place or was brought to the site by human agency but was unchanged by this action. Neither author visited the site during the excavation. Therefore, we cannot say whether the stones are of types naturally present on the site or not.

3 ASSESSMENT OF ASSEMBLAGE

3.1 Quantity

The submitted stones vary considerably in weight, from large rocks to small scraps recovered in sieved samples. Table 3 quantifies the material by count, the number of objects represented (i.e. old and new breaks are ignored) and weight in grams.

Table 3

CATEGORY	Condition	Fragments	Objects	Weight
MODIFIED	hand recovered	105	105	3485
	sieved residue	127	124	50
POSSIBLY MODIFIED	hand recovered	22	11	609
	sieved residue	198	196	55
UNWORNED AND UNMODIFIED	hand recovered	38	36	3322
	sieved residue	141	141	160
WORKED	hand recovered	1	1	1336
Grand Total		632	614	9017

3.2 Provenance

Those stones which might be worked or modified are listed in Table 4 by plot and context.

Table 4

Site	RDX/Field number	Fragments	Objects	Weight
16	RDX 135.14	2	1	6

18	RDX 134.2	6	6	88
19	RDX 134.2	4	4	8
200	RDX 144.15	4	3	27
222	RDX 148.4	171	170	29
257	RDX 174.1	4	1	114
286	RDX 179.9	1	1	3
500	RDX 145.1	18	18	55
503	RDX 148.5	233	229	3695
504	RDX 166.14	8	2	148
506	RDX 154.4	1	1	26
511	RDX 185.3	1	1	1336
Grand Total		453	437	5535

With very few exceptions, stone artefacts can only be broadly dated unless they occur in a sealed, stratified deposit associated with datable artefacts belonging to a single period.

3.3 Range & Variety of Material

3.3.1 Stone type

Much of the collection consists of fine-grained rocks present as small fragments where macro-features such as bedding are either absent or cannot be distinguished from jointing or metamorphic foliation. Details of the mineral content in these fine-grained rocks cannot be determined by eye. Nevertheless, at least six different rock types are present:

- Conglomerate: this is probably of Old Red Sandstone age and outcrops locally in the Skrinkle Sandstones (1970, 54). Only a few fragments are present, including some well-rounded quartzite pebbles to which hard silicious cement still adheres.
- Sandstone and siltstone: This is the most common group and consists of brown to red fine-grained rocks with some bedding visible and rare fossils present mainly as voids.
- Shale: Fragments of shale with prominent bedding and plant fossils are present. Shales outcrop within the Old Red Sandstone as lenses in sandstone deposits but are more common in the Carboniferous coal measures, the nearest outcrop of which is to the north of Milford Haven.
- Altered volcanic rock. A single fragment of a fine-grained purple rock is traversed by irregular circular pipes, partially filled with white crystalline minerals. This, it is suggested, is a fragment of an altered volcanic rock. Since there is no evidence that the rock was modified or utilised no further attempt to identify it has been made.
- Chalk. Two fragments of chalk, both elongated pebbles of soft chalk with parallel veins of sparry calcite running across the rock, were present. These are presumably erratics of Northern Irish origin and originated in a Quaternary deposit, such as boulder clay, morainic gravel or a raised beach deposit (where they could have been present as drop stones, carried by icebergs).
- Carboniferous limestone. A single eroded fragment of grey limestone with several large coral fossils present is almost certainly Carboniferous limestone. This rock outcrops on the Gower Peninsular to the south and west of Milford

Haven (1970, 58-72) and could have been present in a raised beach deposit or even modern beach deposit.

3.3.2 Unused stone

The majority of the stone finds show no conclusive evidence for human modification nor for their use as “found objects”. Several objects show some possible evidence for burning, but in many cases this consists of alteration of the natural reduced grey colour of shales and siltstones. Neither of these materials, however, would make very suitable pot boilers or steam generators, because of the softness and fine texture of the rock. Heating a rock of this sort and plunging it into water is likely to cause total disintegration of the rock rather than its cracking into the sort of fragments recovered from these sites. It is therefore our opinion that most of the stone which we label “burnt?” is in fact not.

3.3.3 Burnt stone

Of the 463 fragments submitted as possible burnt stone, almost exactly half had features which we consider to be indisputably due to burning. The range of sites present in the two groups is similar although the quantities recovered from sieved residues skew the figures for both sites 222 and 503.

Table 6 shows the same data quantified by weight, indicating that by this measure Site 503 produced far and away the largest collection.

Table 5 burnt stone quantified by number of fragments

Form	16	18	19	222	286	500	503	506	Grand Total
BURNT STONE	2	6		22		18	183	1	232
BURNT STONE?			4	179	1		47		231
Grand Total	2	6	4	201	1	18	230	1	463

Table 6 Burnt stone quantified by weight

Form	16	18	19	222	286	500	503	506	Grand Total
BURNT STONE	6	88		6		55	3354	26	3535
BURNT STONE?			8	46	3		185		242
Grand Total	6	88	8	52	3	55	3539	26	3777

3.3.4 Hammer stones

A single hammerstone was recognised in the collection. It was formed from a natural ovoid pebble with impact fractures on one of the narrower ends, suggesting that it was held in the hand and used to hammer another hard material, probably another stone (such as flint). As found, it was broken in half.

The object comes from context 511422 on Site 511 (RDX 185.3).

3.4 Condition of Material

Most of the stone consists of quartz-rich siltstones, sandstones and conglomerates which are unaffected by most burial conditions. A few fragments of limestone (chalk and a grey limestone containing fossil corral) show signs of chemical erosion, sufficient to remove any traces of wear or other use but not sufficient to suggest that material of this type has been selectively removed from the site. All of the stone is capable of being stored in perpetuity without further decay.

3.5 Statement of Potential

3.5.1 Hammer stones

The possible hammer stone is relevant to any study of Mesolithic, Neolithic or Bronze Age flint tool production. However, it can only be dated through association.

3.5.2 Burnt stones

The possible burnt stone may have been associated with burnt stone mounds, sites located near running water and usually on the edge of, or at some distance from, more permanent settlement. These mounds have been suggested to have been used in food preparation, or bathing or perhaps ritual cleansing (in the manner of a modern sauna). Alternatively, they may have been used as pot boilers to heat water without subjecting the container to flames.

3.6 New Research Questions and Potential of Data

The stone finds raise no research questions which are not noted above.

3.7 Recommendations

No further work is required.

Bibliography

Neville George, T. (1970) *British Regional Geology: South Wales*, HMSO, London

Appendix - Catalogue of Finds

RDX/Field number	Site Number	Context	class	Stone type	Form	Nosh	NoV	Weight	REFNO	Description
RDX 112.14	5	1305	GEO		GEO	2	1	408		
RDX 134.2	501	501018	GEO		GEO	8	8	36	501006	DENSE DARK RED PEBBLES
RDX 134.2	501	501015	GEO		GEO	1	1	854		
RDX 134.2	501	501100	GEO		GEO	8	8	25	501007	DENSE DARK RED PEBBLES
RDX 134.2	18	6604	STONE	SHALE	BURNT STONE	6	6	88		COLOUR
RDX 134.2	19	6904	STONE		BURNT STONE?	4	4	8	6901	IRREGULAR FRAGS, RED TO DARK RED
RDX 135.14	16	5204	GEO		GEO	1	1	8		
RDX 135.14	16	5204	STONE	SHALE	BURNT STONE	2	1	6		COLOUR
RDX 144.15	200	20018	STONE	SHALE	SHATTERED	2	1	6		FROST/FIRE
RDX 144.15	200	20014	STONE		SHATTERED	2	2	21		FROST/FIRE SPALLING
RDX 144.15	200	20014	GEO		GEO	1	1	69		
RDX 145.1	500	50013	STONE	CONGLOMERATE	BURNT STONE	18	18	55	50002	IRREGULAR FRAGS, SHARP EDGES AND BLACK TARRY SUBSTANCE
RDX 145.1	500	50034	GEO		GEO	1	1	412		
RDX 148.4	222	222095	STONE/GEO		BURNT STONE/GEO	49	49	7	222067	IRREGULAR, SOFT EDGE, LIGHT GREY/ORANGE
RDX 148.4	222	222022	GEO		BURNT STONE?	30	30	23	222010	IRREGULAR FRAGS, DARK RED TO DARK BROWN
RDX 148.4	222	222073	STONE		BURNT STONE?	2	1	3	222055	IRREGULAR FRAGS, DARK RED TO DARK BROWN
RDX 148.4	222	222033	STONE		BURNT STONE?	17	17	3	222018	IRREGULAR FRAGS, ORANGE, DARK RED,

RDX/Field number	Site Number	Context	class	Stone type	Form	Nosh	NoV	Weight	REFNO	Description
RDX 148.4	222	222103	STONE		BURNT STONE?	40	40	6	222074	DARK BROWN IRREGULAR FRAGS, ORANGE, DARK RED,
RDX 148.4	222	222063	STONE		BURNT STONE?	15	15	2	222014	DARK BROWN IRREGULAR FRAGS, ORANGE, DARK RED,
RDX 148.4	222	222022	STONE		BURNT STONE	1	1	2	222010	DARK BROWN IRREGULAR BROWN FRAG WITH BLACK DEPOSIT
RDX 148.4	222	222026	STONE		BURNT STONE	4	4	2	222011	IRREGULAR, SOFT EDGE, DARK GREY/ORANGE
RDX 148.4	222	222068	STONE		BURNT STONE	10	10	1	222037	SMOOTH FLAKES OF ORANGE/BROWN STONE
RDX 148.4	222	222039	STONE/GEO		BURNT STONE/GEO	1	1	1	222022	IRREGULAR ORANGE
RDX 148.4	222	222005	STONE		BURNT STONE	7	7	1	222001	SMOOTH FLAKES OF ORANGE/BROWN STONE
RDX 148.4	222	222024	STONE		BURNT STONE?	25	25	1	222008	IRREGULAR FRAGS, ORANGE, DARK RED, DARK BROWN
RDX 148.5	503	503004	STONE	SHALE	BURNT STONE	5	5	606		COLOUR
RDX 148.5	503	503019	STONE		BURNT STONE	11	11	26	503063	IRREGUALR ABRADED FRAGS; SOME ORANGE/RED/DARK BROWN
RDX 148.5	503	503005/503068	STONE		BURNT STONE	31	31	100	503005/503040	IRREGUALR ABRADED FRAGS; SOME ORANGE/RED/DARK

RDX/Field number	Site Number	Context	class	Stone type	Form	Nosh	NoV	Weight	REFNO	Description
RDX 148.5	503	503050	STONE/GEO		BURNT STONE/GEO	4	4	152		BROWN IRREGULAR, SOFT EDGE, DARK ORANGE CONSISTENT - IRON? BURNING?
RDX 148.5	503	503002	GEO	MUDSTONE	GEO	1	1	11	503018	
RDX 148.5	503	503004	GEO	SHALE	GEO	2	2	107		
RDX 148.5	503	503090	STONE		BURNT STONE	2	2	1	503008	BLACK DEP ON IRREGULAR, SOFT EDGED FRAGS
RDX 148.5	503	503103	STONE		GEO	1	1	216	503017	
RDX 148.5	503	503065	STONE	SHALE	BURNT STONE	1	1	388		COLOUR
RDX 148.5	503	503004	GEO	CONGLOMERATE	GEO	1	1	80		
RDX 148.5	503	503022	STONE	SHALE	BURNT STONE	18	18	1172		COLOUR
RDX 148.5	503	503067	STONE/GEO		BURNT STONE/GEO	4	4	3	503002	IRREGULAR, SOFT EDGE, DARK ORANGE CONSISTENT - IRON? BURNING?
RDX 148.5	503	503000	STONE		SHATTERED STONE	3	1	156		FROST/FIRE
RDX 148.5	503	503141	STONE		BURNT STONE	1	1	1	503015	IRREGULAR DARK RED/BLACK
RDX 148.5	503	503053	STONE		BURNT STONE?	1	1	18	503056	DARK GREY IRREGULAR FRAG
RDX 148.5	503	503053	STONE		BURNT STONE?	2	2	2	503056	IRREGULAR FRAGS, ORANGE TO RED
RDX 148.5	503	503141	STONE/GEO		BURNT STONE/GEO	4	4	1	503015	IRREGULAR DARK GREY
RDX 148.5	503	503048	GEO	SHALE	GEO	3	3	521		LIGHT GREY STONE
RDX 148.5	503	503112	GEO		GEO	4	4	10	503035	IRREGULAR, SOFT EDGE, LIGHT GREY
RDX 148.5	503	503067	STONE/GEO		BURNT STONE/GEO	21	21	1	503002	IRREGULAR, SOFT EDGE, LIGHT GREY/ORANGE

RDX/Field number	Site Number	Context	class	Stone type	Form	Nosh	NoV	Weight	REFNO	Description
RDX 148.5	503	503053	STONE		BURNT STONE	1	1	1	503056	IRREGULAR, SOFT EDGE, ORANGE/DARK RED/BROWN
RDX 148.5	503	503019	GEO		GEO	1	1	1	503063	IRREGULAR, SOFT EDGE, LIGHT GREY
RDX 148.5	503	503048	STONE		BURNT STONE	25	25	1050		ORANGE/BROWN/RED
RDX 148.5	503	503019	STONE		BURNT STONE	6	6	1	503063	IRREGULAR, SOFT EDGE, GREY/ORANGE/DARK RED/BROWN
RDX 148.5	503	503154	STONE		BURNT STONE	3	1	1	503073	IRREGULAR ORANGE/BLACK
RDX 148.5	503	503115	STONE		BURNT STONE	41	41	3	503039	FRESH FLAKES OF GREY/ORANGE/RED STONE
RDX 148.5	503	503015	STONE		BURNT STONE	11	11	1	503039	FLAKES OF GREY/RED STONE
RDX 148.5	503	503131	STONE		BURNT STONE	23	23	1	503012	IRREGULAR, SOFT EDGE, ORANGE/DARK RED/BROWN
RDX 148.5	503	503090	STONE/GEO		BURNT STONE/GEO	2	2	1	503008	IRREGULAR, SOFT EDGE, ORANGE
RDX 148.5	503	503067	STONE		BURNT STONE	1	1	1	503002	IRREGULAR, SOFT EDGE, DARK GREY/ORANGE
RDX 148.5	503	503005	STONE		BURNT STONE	3	3	1	503040	IRREGULAR, SOFT EDGE, ORANGE/BROWN
RDX 148.5	503	503168	STONE/GEO		BURNT STONE/GEO	9	9	7	503033	IRREGULAR, SOFT EDGE, LIGHT GREY/ORANGE COLOUR
RDX 154.4	506	506064	STONE	SANDSTONE	BURNT STONE	1	1	26		
RDX 155.7	23	8504	GEO	CARBONIFEROUS LIMESTONE WITH	GEO	1	1	15		

RDX/Field number	Site Number	Context	class	Stone type	Form	Nosh	NoV	Weight	REFNO	Description
RDX 166.14	504	504013	STONE	CORAL FOSSILS CONGLOMAERATE	SHATTERED STONE	3	1	72		FROST/FIRE
RDX 166.14	504	504012	STONE		SHATTERED STONE	5	1	76		FROST/FIRE
RDX 174.1	257	257026	STONE	SANDSTONE	SHATTERED	4	1	114		FROST/FIRE
RDX 174.5	509	255098	GEO	CONGLOMERATE	GEO	2	1	20		
RDX 179.9	286	286004	GEO		GEO	12	12	21	286002	DENSE DARK RED FRAGS
RDX 179.9	286	286004	STONE	SANDSTONE	BURNT STONE?	1	1	3	286002	VARIAGATED RED
RDX 179.9	286	286010	GEO		GEO	40	40	55	286001	DENSE DARK RED FRAGS
RDX 179.9	286	286008	GEO		GEO	54	54	50	286000	DENSE DARK RED FRAGS
RDX 182.4	513	268050	GEO		GEO	1	1	92		
RDX 185.3	514	511421	GEO		GEO	3	3	396		PEBBLES
RDX 185.3	511	511422	STONE		HAMMERSTONE	1	1	1336		LARGE PEBBLE BROKEN AT ONE END AND EXIBITS MULTIPLE HAMMER SPALLING AT OTHER
RDX 185.3	511	0	GEO	SHALE	GEO	1	1	52		

Key: GEO – definitely unworked and unmodified, geological. NOSH = fragment count, NOW = Object count.