

Saltash Gridirons, Clearance and Recording 2023 Saltash, Cornwall

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The site clearance was undertaken by the Tavistock Taskforce community group.

The Project Manager was James Gossip. The survey was assisted by Antony Angove.

The views and recommendations expressed in this report are those of Cornwall Archaeological Unit and are presented in good faith on the basis of professional judgement and on information currently available.

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Cover illustration

The Tavistock Taskforce undertaking clearance of the gridirons.

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Contents

1 Summary		1	
2 Introduction			3
	2.1	Site location and project background	3
2.2 Aims		Aims	3
2.3 Methods		Methods	3
	2.3	3.1 Desk-based assessment	3
	2.3	3.2 Volunteer clearance	3
	2.3	3.3 Survey and recording	3
3	Sit	te Details	4
	3.1	Site description	4
	3.2	Designations	6
	3.3	Historical background	6
4	Su	rvey results	11
	4.1	Fieldwork	11
	4.2	Main threats	14
5 Recommendations		14	
6 Photographic record		14	
7 References		31	
	7.1	Primary sources	31
	7.2	Publications	31
	7.3	Websites	31

List of Figures

- Fig 1 Location of the Saltash Gridirons.
- Fig 2 Extent of Scheduled Monument area.
- Fig 3 First Edition of the Ordnance Survey 25 Inch Map, c1880.
- Fig 4 Second Edition of the Ordnance Survey 25 Inch Map, c1907.
- Fig 5 A Landing craft floated on the gridirons at high tide c1944 to allow maintenance work to be carried out at low tide.
- Fig 6 1946 RAF aerial photo. RAF 106G/UK/16663-3169
- Fig 7 Construction of bridge piers for the Tamar Bridge c1959. Aggregate was laid across the foreshore and quay to provide stable access for machinery.
- Fig 8 Aerial photo, 1988.
- Fig 9 Aerial photo, 1995.
- Fig 10 landing craft maintenance site at Noss on Dart @Wessex Archaeology.
- Fig 11 Reconstruction of landing craft maintenance site during operation at Noss on Dart ©Wessex Archaeology.
- Fig 12 Gridirons at Mylor (1946 RAF aerial photograph).
- Fig 13 Plan of gridirons (using GPS/Total Station survey data).
- Fig 14 Schematic profile of a typical gridiron (using GPS/Total Station survey data).
- Fig 15 Saltash Gridirons submerged at high tide.
- Fig 16 Saltash Gridirons Tavistock Taskforce clearance underway.
- Fig 17 Saltash Gridirons Tavistock Taskforce clearance underway.
- Fig 18 Saltash Gridirons Tavistock Taskforce clearance underway.
- Fig 20 Saltash Gridirons facing south-south-east
- Fig 24 Saltash Gridirons oblique aerial view facing west.
- Fig 26 Saltash Gridirons oblique aerial view facing north-north-east.
- Fig 27 Saltash Gridirons oblique aerial view facing north-west.
- Fig 28 Saltash Gridirons overhead view of gridirons (south to top).
- Fig 29 Saltash Gridirons detail of gridirons and brackets facing north.
- Fig 31 Saltash Gridirons detail of gridiron 1 erosion.
- Fig 32 Saltash Gridirons well-preserved south face of gridiron 2 with adjacent erosion.
- Fig 33 Saltash Gridirons well-preserved south face of gridiron 4 with adjacent erosion.
- Fig 34 Saltash Gridirons well-preserved south face of gridiron 3 with erosion around bracket.
- Fig 35 Saltash Gridirons gridiron 8 showing erosion of concrete around brackets.
- Fig 36: Saltash Gridirons Displaced gridiron (32) on gridiron 4.
- Fig 37 Saltash Gridirons poorly preserved gridirons 11 and 12.
- Fig 38 Saltash Gridirons brackets with eroding concrete on gridiron 8.
- Fig 39 Saltash Gridirons line of brackets facing north.
- Fig 40 Saltash Gridirons Lower sections submerged in river mud.
- Fig 41 Saltash Gridirons gridiron 8 mooring chain and rope secured to bracket.

Fig 42 Saltash Gridirons – bracket re-used as a boat mooring.

Fig 43 Saltash Gridirons - anchor next to bracket.

Fig 44 Saltash Gridirons – foreground showing extensive damage western end gridiron 6.

Abbreviations

CAU Cornwall Archaeological Unit

CIfA Chartered Institute for Archaeologists

HE Historic England

HER Cornwall and the Isles of Scilly Historic Environment Record

MCO Monument number in Cornwall HER

NGR National Grid Reference

OD Ordnance Datum – height above mean sea level at Newlyn

OS Ordnance Survey

1 Summary

In January 2023 Cornwall Archaeological Unit undertook a programme of recording work at the WWII D-Day site known as the 'Saltash Gridirons'. The site is a Scheduled Monument (National List no 1020053). The work was commissioned by The Tamara Landscape Partnership Scheme and involved clearance by volunteers (The Tavistock Taskforce) followed by detailed digital survey and photography, including aerial capture by UAV. The survey concluded that preservation was surprisingly good for a structure designed to last for a very short time, but that gradual deterioration was taking place.

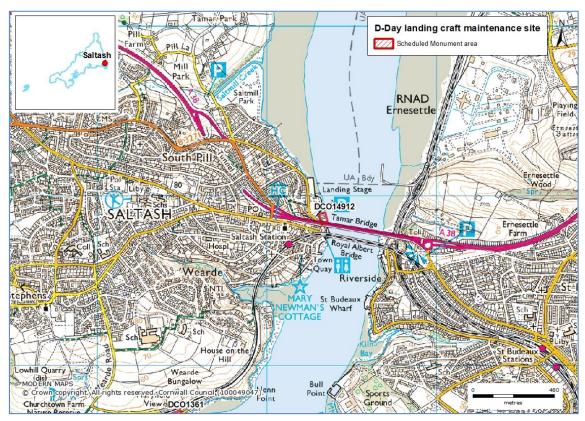


Fig 1 Location of the Saltash Gridirons.

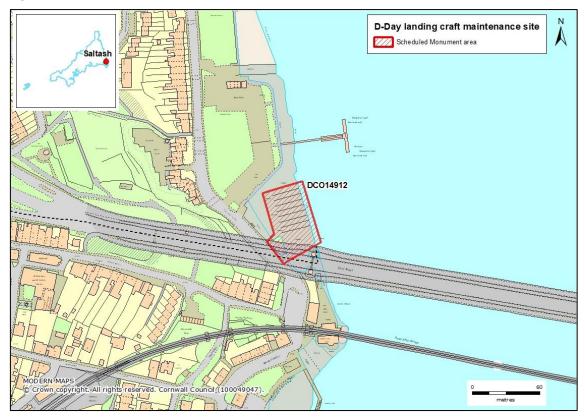


Fig 2 Extent of Scheduled Monument area.

2 Introduction

2.1 Site location and project background

Cornwall Archaeological Unit (CAU) has been commissioned by The Tamara Landscape Partnership Scheme on behalf of Tamar Valley AONB to undertake clearance and recording of a D-Day landing craft maintenance site on the Cornish side of the River Tamar in Saltash (NGR SX 43333 58878; Figs 1 and 2).

The survey was undertaken using a pole-mounted Leica GPS GNSS and Leica Total Station, locating the gridirons and remaining fixtures where visible, in order to assess condition and inform any potential further work.

A group of twelve volunteers from the Tavistock Task Force cleared the site before recording was undertaken, which was densely covered in seaweed, silt and mud.

The clearance and recording work was carried out on the 24th and 25th January 2023.

During clearance work, the Tamara Project lead engaged with 50 members of the public, answering their questions regarding the project.

Ground and aerial photos and video were taken using a low altitude Unmanned Aerial Vehicle (UAV). However, due to strongly shaded light conditions a 3D photographic model of the site was unattainable. As an alternative oblique aerial views and detailed shots are supplied.

The site is a Scheduled Monument, and the work received grant funding from Historic England.

2.2 Aims

The principal aims of the work have been to:

- Produce an archaeological record of the current condition of site.
- Undertake GPS/Total Station survey to accurately locate the gridirons.
- Assist volunteers from the local community clearing the monument.
- Propose future management recommendations.

2.3 Methods

All recording work was undertaken according to Chartered Institute for Archaeologists (CIfA) (CIfA 2014) guidance.

2.3.1 Desk-based assessment

During the desk-based assessment historical databases and archives were consulted in order to obtain information about the history of the site and the structures and features that were likely to survive. The main sources consulted were as follows:

- Cornwall HER, via the Heritage Gateway.
- Maps and photographs (see Section 6 and 7.1).

2.3.2 Volunteer clearance

Before recording and survey work was undertaken, a group of volunteers from the Tavistock Taskforce community group attended site on $24^{\rm th}$ January 2023 to clear the gridirons of seaweed, mud and silt.

2.3.3 Survey and recording

Analysis of the fabric was undertaken on site (recorded as notes) to allow a description to be written up at the report stage.

Photographic recording included colour photography using a DSLR camera (with a resolution of 15 megapixels or higher) and UAV (12 megapixels) to capture a range of aerial photographs.

CAU follows Historic England guidance on digital image capture and file storage (2014). The photo record comprised:

- · General and aerial views.
- Examples of structural detail.

A metric scale was included in all views, except where health and safety considerations make this impractical.

3 Site Details

3.1 Site description

The D-Day landing craft maintenance site (the 'Saltash Gridirons') is located within the parish of Saltash on the bank of the River Tamar and directly beneath the Tamar Bridge.

The monument comprises twelve gridiron beams, although the eastern extent of gridiron twelve has been truncated by construction of the Tamar Bridge which began in 1959.

Fixed along the upper edges of each gridiron beam are a series of iron brackets, positioned approximately 3.2m (approximately 10 feet) apart, which allowed timbers to be laid along the upper surfaces at right angles. This was most likely to prevent the hull of flat bottomed landing vessels coming into direct contact with the concrete surface of the gridirons. Furthermore, potentially acting as a decking or access platform to the vessels during maintenance and repairs.

The Scheduled Monument area includes a quay adjoining the southern end of the gridirons, which is visible from the 1907 OS map (Fig 3 and 4) and likely altered whilst the maintenance site was in operation.

The site is publicly accessible via steps adjoining Old Ferry Road, with visibility and access to the gridirons dependant on a low or receding tide.

There are several small boats moored to the adjacent western wall and currently they do not impede upon the gridirons beams. However, there is evidence of later reuse and significant damage is visible within sections of the gridiron beams – aerial photographs show mooring of small boats during the 1980s and 1990s (Figs 8 and 9).

The surrounding site area has been significantly re-landscaped during the post-war period, with the demolition of buildings and quay formerly situated within the present car park and public walkway adjoining the northern end of the gridirons. Temporary landscaping was undertaken to allow access for machinery during the Tamar Bridge construction (Fig 7), which had an impact on the degree of preservation towards the southern end of the monument.

The underlying geology is of the Saltash Formation, with slate and siltstones of the Devonian and Carboniferous Periods (BGS, 2023).

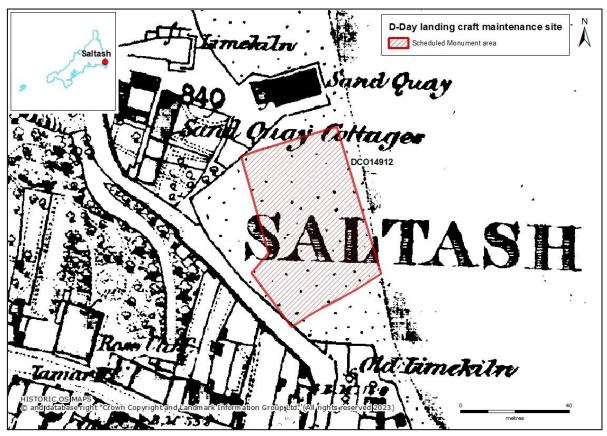


Fig 3 First Edition of the Ordnance Survey 25 Inch Map, c1880.

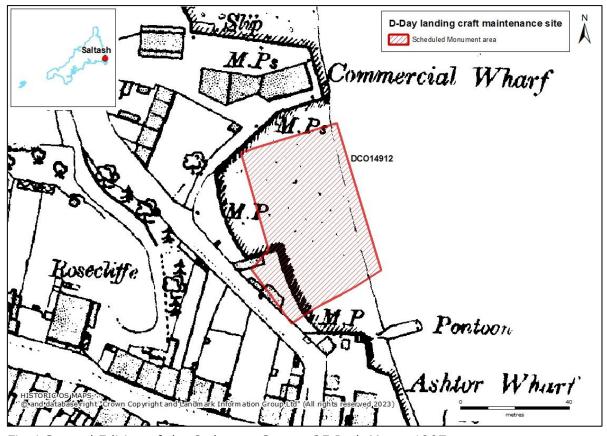


Fig 4 Second Edition of the Ordnance Survey 25 Inch Map, c1907.

3.2 Designations

The D-Day landing craft maintenance site is a listed Scheduled Monument area (National List no 1020053) (Fig 2) and is located within a Site of Specific Scientific Interest (SSSI) Risk Zone.

3.3 Historical background

Upon arrival to Britain in 1943, the United States Navy (USN) began building infrastructure to facilitate preparations for invading occupied France.

During preparations for D-Day, it was vital that landing vessels required for the invasion were constructed, maintained and repaired. To increase output, maritime assets ranging from ports and harbours to coastal villages and beaches were requisitioned to provide facilities to undertake these tasks (Dobinson 1996).

Documentary evidence records the Saltash sub-base commenced operating in November 1943 under the command of Lt Com T H Harris, to service and repair landing craft for infantry and tanks and to service minesweepers. The site formed part of the Saltash sub-base, which was one of three maintenance and repair departments of the United States Naval Advanced Amphibious Base (USNAAB) at Plymouth.

The construction of these facilities was undertaken by the 29th and 81st United States Naval Construction Battalions, otherwise known as the 'Seabees'. The sailors of this battalion were often experienced construction workers in their civilian lives and their experience and skills were requestioned by the USN to undertake such projects throughout the war (Clamp 1994).

The gridirons were constructed using shuttered concrete and iron reinforcement rods, forming a series of parallel piers running east-west on a slight gradient towards the River Tamar. This allowed vessels to be floated on and secured at high tide, with maintenance such as servicing and scraping to be undertaken at low tide (Fig 5). An example of the vessel type serviced at the Saltash site are LCA's (Landing Craft Assault). The craft had a shallow-draft and were able to access at lower depths, an important design characteristic for landing on the Normandy Beaches.

The overall USNAAB at Plymouth was as a major asset during preparations for the D-Day invasion, providing a range of shore-base and supply facilities before, during and after the invasion. Throughout this period, the Saltash sub-base continued to provide service and repair facilities for a variety of craft and vessels, which remained operational until 31 August 1945, with a reduced personnel as strategic value decreased as the allied forces advanced through Europe (Clamp 1994).

The gridirons at Saltash are one of a few remaining sites of their type, with a recorded site on the River Dart providing a well preserved example (Figs 10 and 11) and at Mylor Harbour in Cornwall which has since been buried *in situ* to allow the construction of a car park (Fig 12).

Winch mechanisms and mooring dolphins would have been used to maintenance tasks, which are visible on the 1946 aerial photograph (Fig 6), however, no physical evidence remains of these structures.

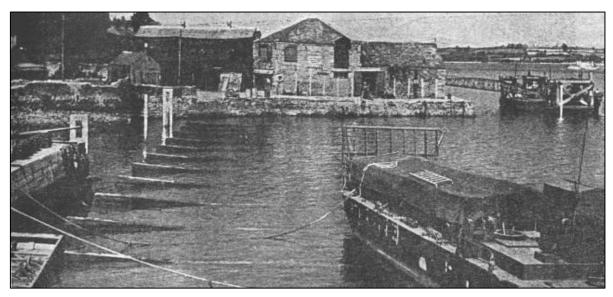


Fig 5 A Landing craft floated on the gridirons at high tide c1944 to allow maintenance work to be carried out at low tide.



Fig 6 1946 RAF aerial photo. RAF 106G/UK/16663-3169



Fig 7 Construction of bridge piers for the Tamar Bridge c1959. Aggregate was laid across the foreshore and quay to provide stable access for machinery.



Fig 8 Aerial photo, 1988.



Fig 9 Aerial photo, 1995.

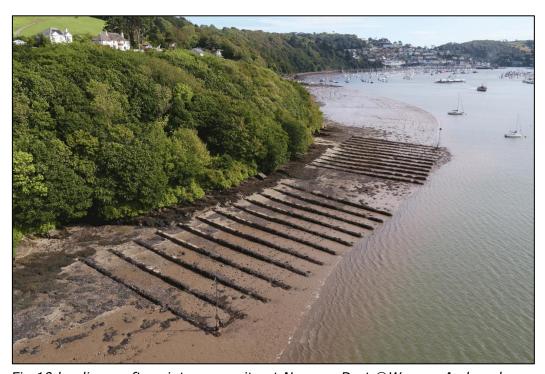


Fig 10 landing craft maintenance site at Noss on Dart ©Wessex Archaeology.



Fig 11 Reconstruction of landing craft maintenance site during operation at Noss on Dart ©Wessex Archaeology.



Fig 12 Gridirons at Mylor (1946 RAF aerial photograph).

4 Survey results

4.1 Fieldwork

A summary of each gridiron beam is listed below as follows. Gridirons labelled GI1 – GI12, brackets labelled 1 - 108 (Figs 13 and 14).

- GI1 Bracket 1 is not present and severe erosion was recorded within its former
 position on the gridiron beam. The remaining brackets were recorded in situ, with
 erosion ranging from minimal to severe on each bracket base. The southern face
 has a better level of preservation than the northern face. The top of the gridiron
 is severely eroded.
- GI2 Bracket 10 is not present and severe erosion was recorded within its former
 position on the gridiron beam. The remaining brackets were recorded in situ, with
 erosion of the bracket bases most severely eroded at the eastern end and bracket
 18 largely covered in mud. The southern face has a better level of preservation
 than the northern face. The top of the gridiron is severely eroded. However, it is
 likely to be the best preserved gridiron beam.
- GI3 All brackets remain in situ, but with severe erosion occurring where they
 were positioned along the length of the gridiron beam. There is evidence of later
 reuse with rope tied to bracket 20. An additional iron plate has been added to
 bracket 24. The southern face has a better level of preservation than the northern
 face.
- GI4 Brackets 28 and 35 are not present and severely eroded where positioned on the gridiron beam. The remaining brackets were recorded *in situ*, however, bracket 32 has been displaced away from the beam. The southern face has a better level of preservation than the northern face. There is evidence of later reuse with rope tied to bracket 30. The top of the gridiron is severely eroded.
- GI5 Brackets 37 and 38 are not present and severely eroded around their former positions on the gridiron beam. The remaining brackets were recorded *in situ*, with minimal to severe erosion on each bracket base. Bracket 42 was damaged, with the northern edge snapped off next the gridiron beam.
- GI6 Brackets 46, 47 and 48 are not present and severely truncated between these former bracket positions. Brackets 51 and 52 are severely bent and the top of the gridiron severely eroded.
- GI7 Bracket 55 is not present and severe erosion recorded around its former position on the gridiron beam. The remaining brackets were recorded *in situ*, with erosion ranging from minimal to severe on each bracket base. There is evidence of later reuse with rope tied to bracket 57. The top of the gridiron is severely eroded. Brackets 57 to 63 were not clearly visible due to mud.
- GI8 Bracket 66 is not present and severe erosion was recorded around its former on the gridiron beam. The remaining brackets were recorded *in situ*, with erosion ranging from minimal to severe on each bracket base. There is evidence of later reuse with rope tied to bracket 65. 68 is slightly displaced from is positioning and

is severely eroded. Brackets 69 to 72 were not clearly visible due to mud. The top of the gridiron is severely eroded.

- GI9 Brackets 73, 76, 77 and 78 are not present and minimal to severe erosion was recorded where they had been positioned on the gridiron beam. The remaining brackets were recorded *in situ*, however, brackets 79 to 81 were not clearly visible due to mud. The top of the gridiron is severely eroded.
- GI10 Brackets 82, 83, and 85 are not present with severe erosion was recorded where they had been positioned on the gridiron beam. The remaining brackets were recorded *in situ*, however, brackets 87 to 91 were not clearly visible due to mud. The top of the gridiron is severely eroded.
- GI11 Bracket 91 to 93 are not present with severe erosion was recorded where
 they had been positioned on the gridiron beam. There is severe damage to bracket
 96, with the top of the fixing torn. Brackets 97 to 99 were recorded in situ,
 however, were not clearly visible due to mud. The top of the gridiron is severely
 eroded.
- GI12 The gridiron beam has been severely truncated by the construction of the Tamar Bridge. No brackets remained or were visible due to mud.

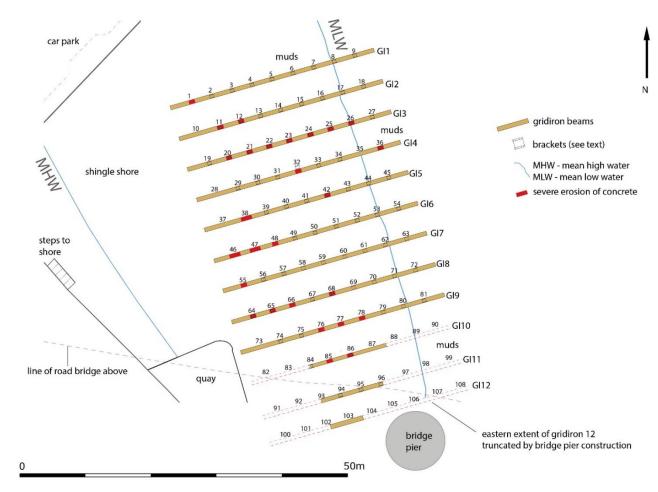


Fig 13 Plan of gridirons (using GPS/Total Station survey data).

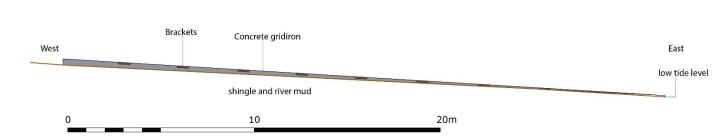


Fig 14 Schematic profile of a typical gridiron (using GPS/Total Station survey data).

4.2 Main threats

The gridirons have been used as moorings for local boats since it was decommissioned after the Second World War. This has had a detrimental impact upon the site, damaging both gridiron beams and brackets, accelerating erosion of the concrete. The constant ebb and flow of the tide, seaweed growth and movement of mud and shingle has also contributed to the gradual degradation of the monument.

5 Recommendations

The gridirons were built to last until D-Day, supporting the preparation of landing vessels and craft for the invasion.

Considering almost 80 years has elapsed, the gridirons are remarkedly well preserved. However, they are gradually declining and recommendations to manage this process are as follows:

- Regular clearance events by local volunteers.
- Encourage local boat owners to use alternative moorings installation of mooring posts or rings?
- Ongoing monitoring of monument by volunteers.

6 Photographic record

Figure 15 shows the site at high tide, with gridirons completely submerged.

Figure 16 - 18 show the Tavistock Taskforce clearing the site.

Figure 19 shows recording of the gridirons underway.

Figure 20 – 28 show oblique and overhead aerial views of the gridirons.

Figure 29 – 44 show views of the gridirons, including areas of erosion and re-use of brackets as mooring points.

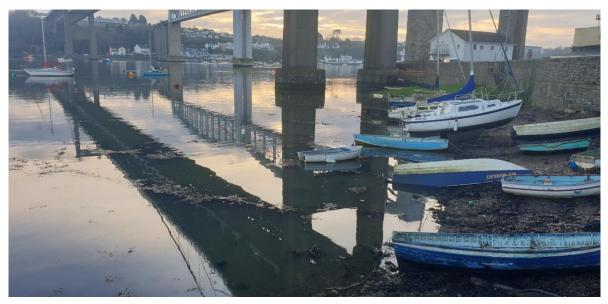


Fig 15 Saltash Gridirons submerged at high tide.



Fig 16 Saltash Gridirons – Tavistock Taskforce clearance underway.



Fig 17 Saltash Gridirons – Tavistock Taskforce clearance underway.



Fig 18 Saltash Gridirons – Tavistock Taskforce clearance underway.



Fig 19 Saltash Gridirons – Recording the northern gridirons.



Fig 20 Saltash Gridirons facing south-south-east

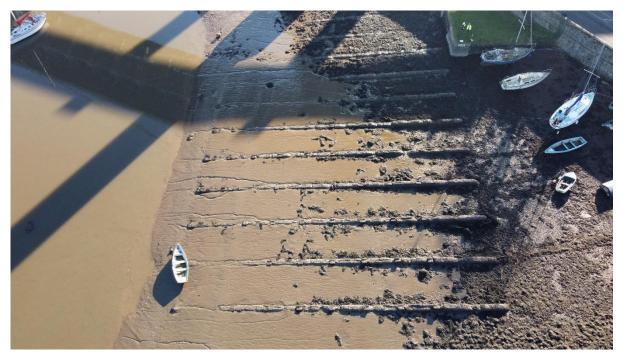


Fig 21 Saltash Gridirons – oblique aerial view facing south.

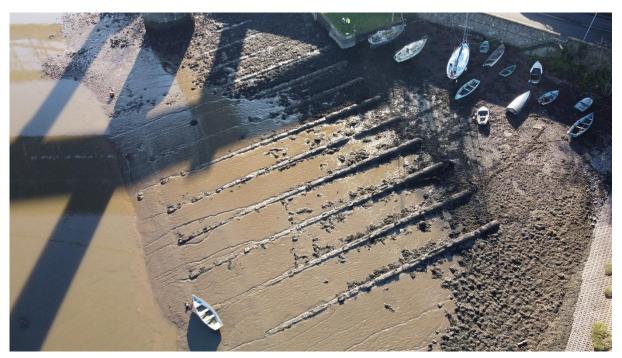


Fig 22 Saltash Gridirons – oblique aerial view facing south-south-west.



Fig 23 Saltash Gridirons – oblique aerial view facing south-west.

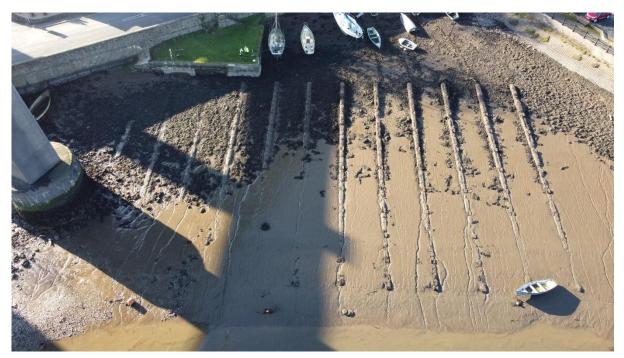


Fig 24 Saltash Gridirons - oblique aerial view facing west.

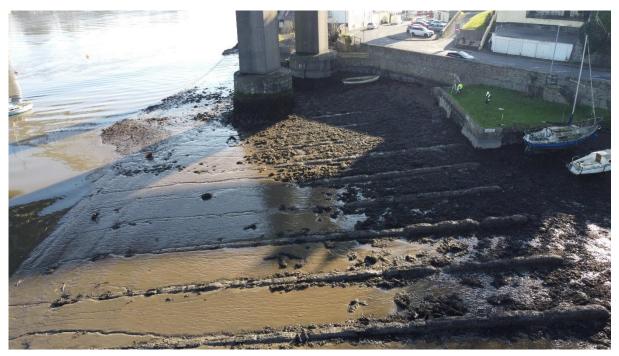


Fig 25 Saltash Gridirons – low level oblique aerial view facing south.



Fig 26 Saltash Gridirons – oblique aerial view facing north-north-east.



Fig 27 Saltash Gridirons – oblique aerial view facing north-west.



Fig 28 Saltash Gridirons – overhead view of gridirons (south to top).



Fig 29 Saltash Gridirons – detail of gridirons and brackets facing north.



Fig 30 Saltash Gridirons – detail of gridirons facing south (Gridiron 2 in foreground).



Fig 31 Saltash Gridirons – detail of gridiron 1 erosion.



Fig 32 Saltash Gridirons – well-preserved south face of gridiron 2 with adjacent erosion.



Fig 33 Saltash Gridirons - well-preserved south face of gridiron 4 with adjacent erosion.



Fig 34 Saltash Gridirons – well-preserved south face of gridiron 3 with erosion around bracket.



Fig 35 Saltash Gridirons – gridiron 8 showing erosion of concrete around brackets.



Fig 36: Saltash Gridirons - Displaced gridiron (32) on gridiron 4.



Fig 37 Saltash Gridirons – poorly preserved gridirons 11 and 12.



Fig 38 Saltash Gridirons – brackets with eroding concrete on gridiron 8.



Fig 39 Saltash Gridirons – line of brackets facing north.



Fig 40 Saltash Gridirons – Lower sections submerged in river mud.



Fig 41 Saltash Gridirons – gridiron 8 mooring chain and rope secured to bracket.



Fig 42 Saltash Gridirons – bracket re-used as a boat mooring.



Fig 43 Saltash Gridirons – anchor next to bracket.



Fig 44 Saltash Gridirons – foreground showing extensive damage western end gridiron 6.

7 References

7.1 Primary sources

Ordnance Survey, MasterMap Topography

Ordnance Survey, c1880. 25 Inch Map First Edition (licensed digital copy at CAU)

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7.3 Websites

British Geological Survey 2023. *Geology of Britain Viewer* Geology of Britain viewer | British Geological Survey (BGS)

Heritage Gateway 2012. Heritage Gateway - Home *

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