

# LONDON GATEWAY CLEARANCE PROGRAMME

## DIVING INVESTIGATIONS

### FIELD REPORT 84350

Zone 9 - 11  
Data Sheet 2  
Ref: 7021

#### 1. INTRODUCTION

Sidescan sonar and magnetometer evidence: The site consists of an area of seafloor disturbance (**7021**) containing a prominent dark reflector with shadow within a relatively featureless seabed. The dimensions of feature **7021** are 24m long by 17m wide with a discernable height of 0.4m. It is associated with a 99nT magnetic anomaly. The area of seafloor disturbance and the dark reflector is possibly indicative of debris located just beneath the superficial sediment. The large associated magnetic anomaly possibly indicates ferrous debris, or the remains of badly degraded structure.

Previous investigation: The site is not known to be previously identified by the UKHO or PLA, and is not mapped as a feature or obstruction.

Dive objectives: Establish the nature and character of the sidescan sonar anomaly and identify any further finds in the area and the association of the finds to the anomaly, *i.e.* identify the type/character of the site; confirm the extent of the site; establish the presence/absence of coherent structures and features, and of further small finds; undertake light cleaning, probing and spot sampling (if applicable) to confirm the nature of the material; and achieve a basic record of the layout of the site by annotating sidescan sonar records.

#### 2. DIVE DETAILS

Date: 14<sup>th</sup> February 2012

Location: Towards the northern edge of the dredged channel

Position of shot: 33368E, 5708530N

Duration in minutes: 53 minutes bottom time

Underwater visibility: nil

General description of dive: High water slack

#### 3. EVIDENCE

The diver made bottom 4m to the north-east of feature **7021** and proceeded to carry out circular searches from the base of the shot out to 20m. The diver located a hard layer of flint approximately 5-7m south of the shot. The layer of flint was nodular forming a hard surface no more than 1m in length. The diver located a larger feature approximately 2-5m further south. This feature consisted of a section of rebar (iron

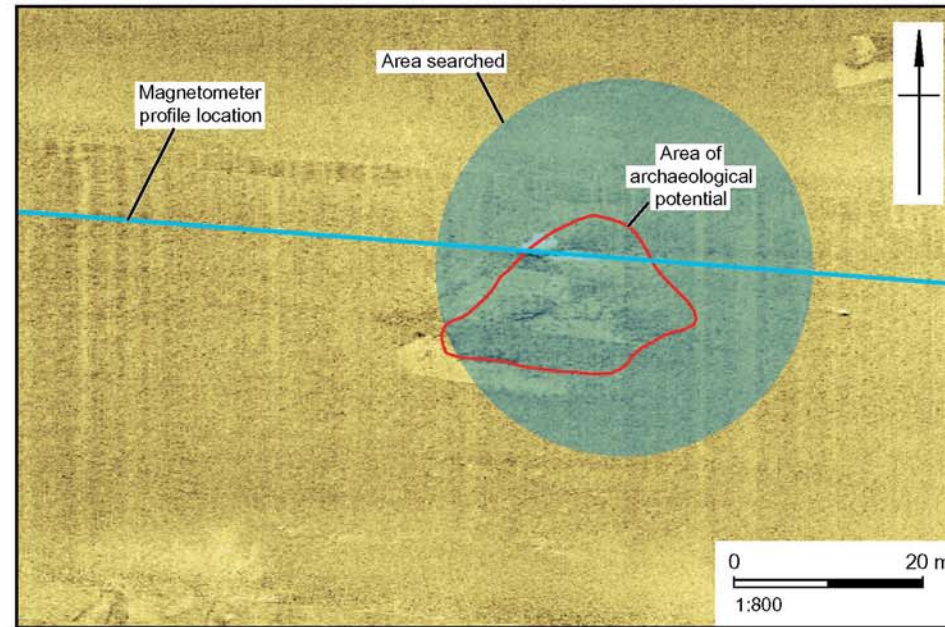
reinforcing bars) protruding diagonally up from the seabed. The length of exposed rebar was approximately 1m and rising above bed level by no more than 0.5m. At the base of the rebar was a hard layer approximately 1-1.5m across lying flush with the seabed. The rebar was securely embedded into this layer and not moveable. The surface of the rebar was smooth and free from concretion or marine growth. There were no other features located. The seabed was generally flat and featureless consisting of sand and gravel.

#### **4. INTERPRETATION**

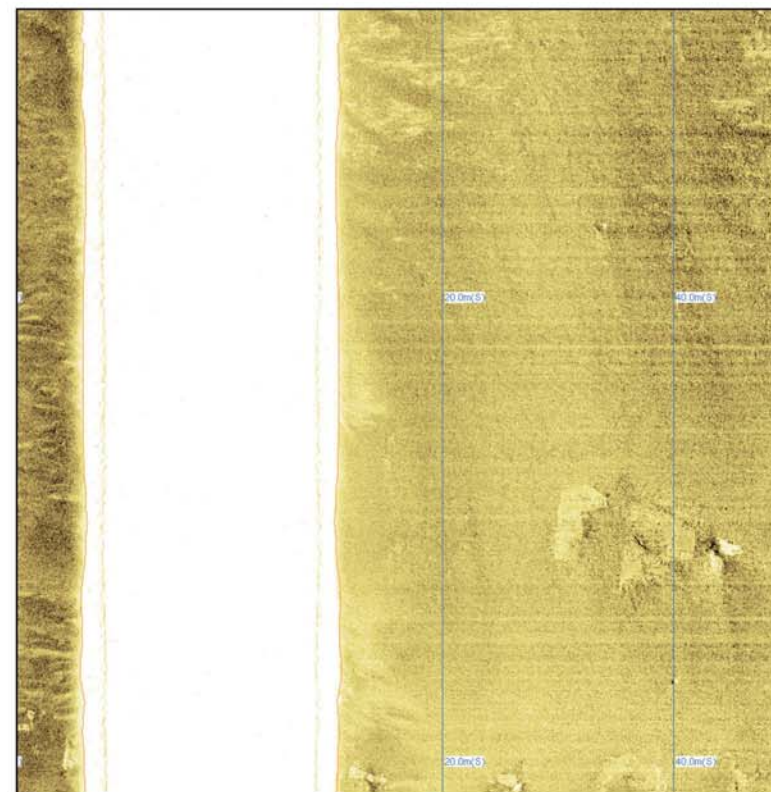
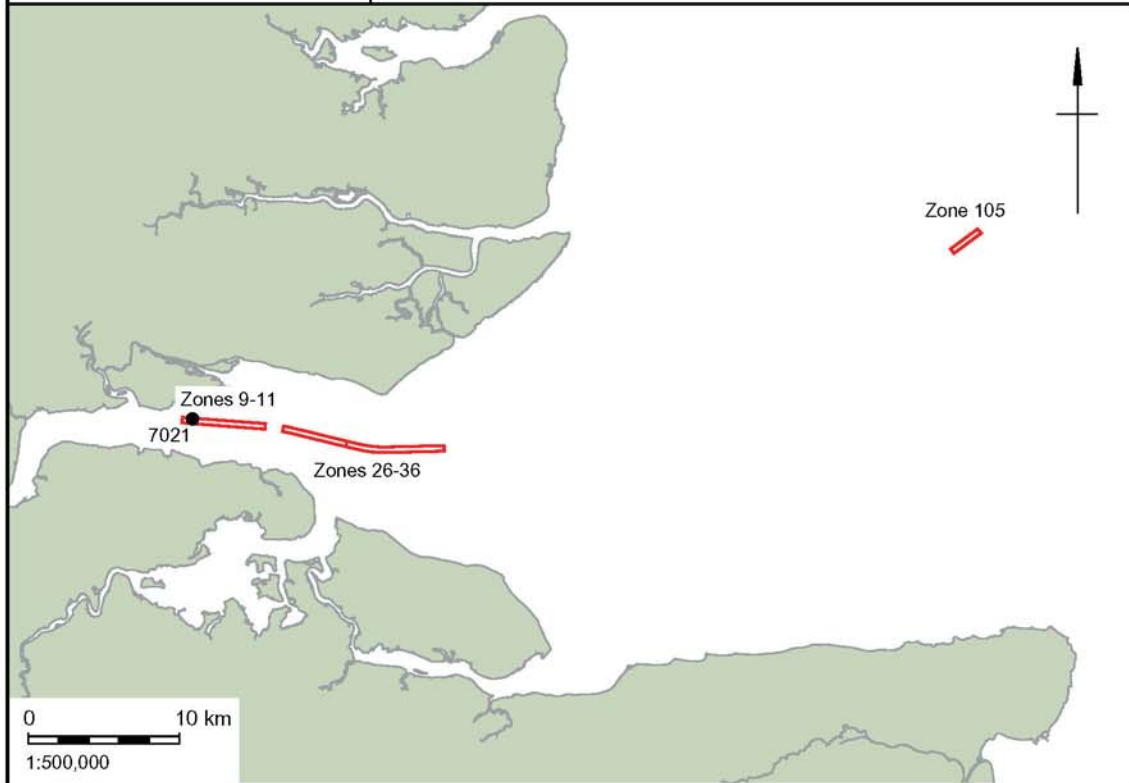
The feature identified by the diver was in the location of the geophysical anomaly. The evidence gathered by the diver would suggest this is a piece of modern debris most probably a section rebar attached to concrete which is predominantly buried beneath the seabed. There was no other evidence of any further debris located in the area.

SHEET 2: WA ID 7021 DEBRIS

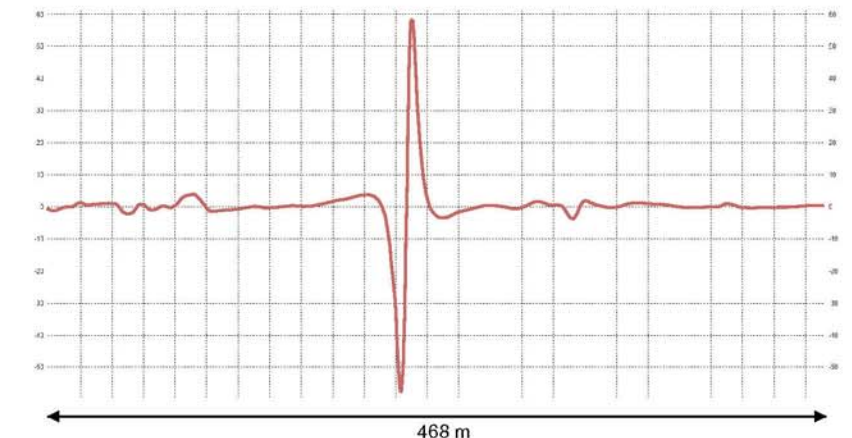
<b>Location</b>		333679 E, 5708527 N (UTM31N)	<b>Zone</b>	9-11
<b>Archaeological Importance</b>		High (New site)		
<b>Geophysical survey dimensions and notes</b>		Dimensions: 24.0m x 17.0m x 0.4m. Area of seafloor disturbance containing a prominent dark reflector with shadow, associated with a 99nT magnetic anomaly. Located close to the edge of a dredged area, but in relatively featureless seabed.		
<b>Build</b>	<b>Type</b>	Not confirmed as a structure.		
	<b>Construction</b>			
	<b>Dimensions</b>			
	<b>Shipyard</b>			
<b>Loss</b>	<b>Cause</b>			
<b>Extent of Survival</b>		Not known to have been previously identified by UKHO or PLA, and not mapped as a feature or obstruction. Located towards the northern edge of the dredged channel. Area of seafloor disturbance and dark reflector possibly indicative of debris located just beneath the superficial sediment. The large associated magnetic anomaly possibly indicates ferrous debris, or the remains of a badly degraded structure.		



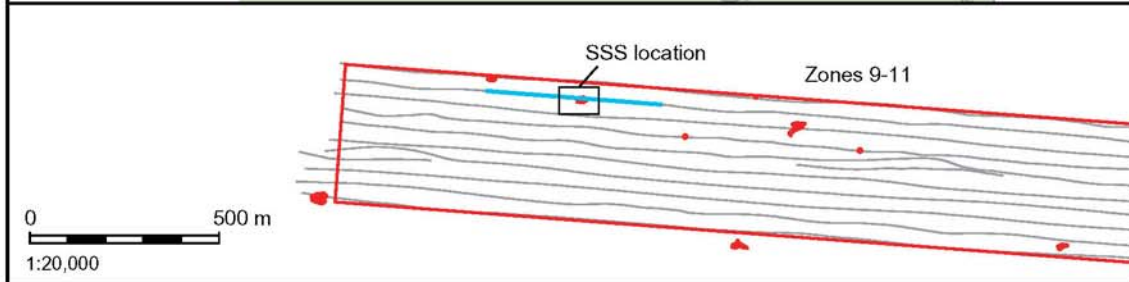
7021: Sidescan sonar mosaic



7021: Sidescan sonar waterfall



7021: Magnetometer profile



- Study Areas
- Track plot
- Magnetometer profile location
- ▲ Anomalies of archaeological potential
- Area searched

# LONDON GATEWAY CLEARANCE PROGRAMME

## DIVING INVESTIGATIONS

### FIELD REPORT 84350

Zone 9 -11  
Data Sheet 3  
Ref: 7034

## 1. INTRODUCTION

Sidescan sonar and magnetometer evidence: The site consists of a relatively indistinct dark reflector (**7034**) with a large shadow and a surrounding area of seabed disturbance. The dimension of the feature is 5.4m long by 3.9m wide with a discernable height above the seabed of 0.8m. The feature is associated with a large 236nT magnetic anomaly. It could be a piece of ferrous debris, though the amplitude of the magnetic anomaly indicates the possibility of a large amount of buried debris in the vicinity.

Previous investigation: The site is not known to be previously identified by the UKHO or PLA, and not mapped as a feature or obstruction.

Dive objectives: Establish the nature and character of the sidescan sonar anomaly and identify any further finds in the area and the association of the finds to the anomaly, *i.e.* identify the type/character of the site; confirm the extent of the site; establish the presence/absence of coherent structures and features, and of further small finds; undertake light cleaning, probing and spot sampling (if applicable) to confirm the nature of the material; and achieve a basic record of the layout of the site by annotating sidescan sonar records.

## 2. DIVE DETAILS

Date: 15<sup>th</sup> February 2012

Location: Within the northern edge of the dredged channel

Position of shot: 334136E, 5708533E

Duration in minutes: 42 minutes bottom time

Underwater visibility: nil

General description of dive: Low water slack

## 3. EVIDENCE

The diver made bottom just to the north of feature **7034** and proceeded to carry out circular searches from the base of the shot. The diver located a scour with a large ferrous object 3-5m south of the shot. The position of the object corresponded with the position of feature **7034** identified in the geophysics. The object described by the diver fitted the description of a large stockless anchor. The surface of the object was smooth and consisted of two exposed sections sloping up 0.5m above bed level

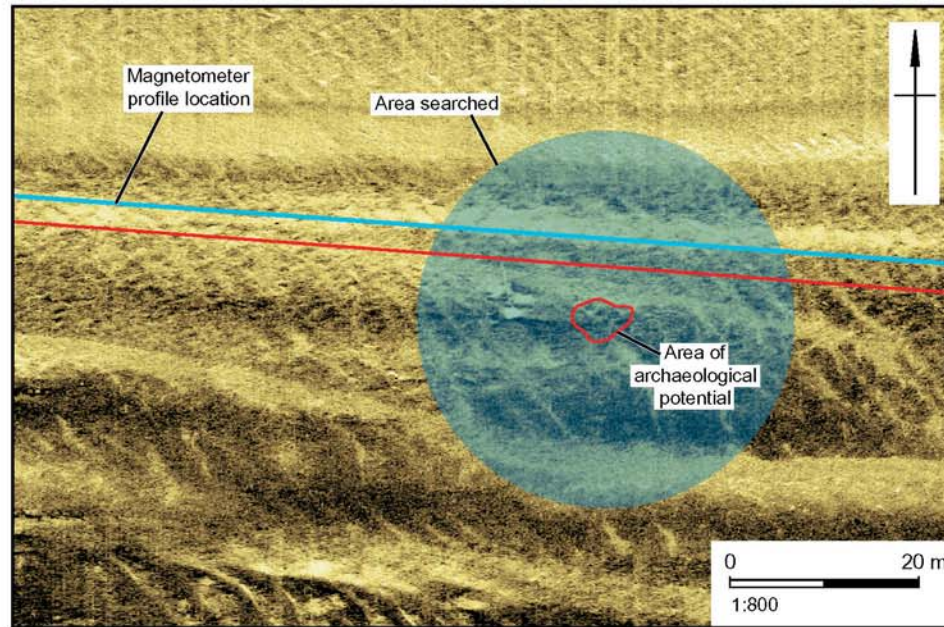
(flukes) with a central linear section (shank) running horizontally across the seabed. The horizontal section was approximately 2m in length and the two sections sloping up from the seabed were c. 1m in length. The overall width of the object was 1.5m. There was a scour pit all round the object c. 0.5m wide. Therefore, the dimensions of the object including the scour pit around it approximately match the dimensions of the feature described in the geophysics.

#### **4. INTERPRETATION**

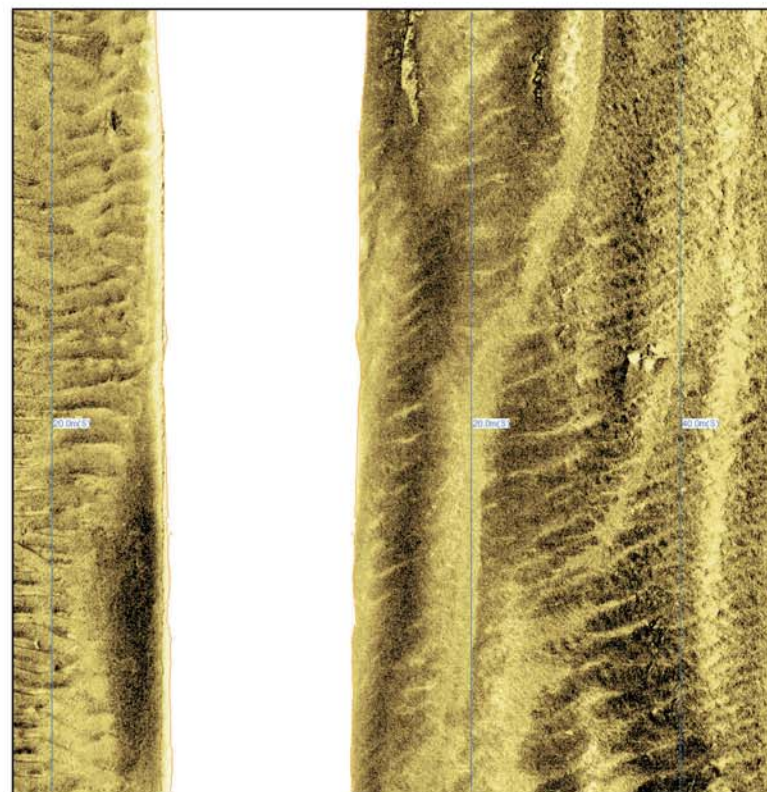
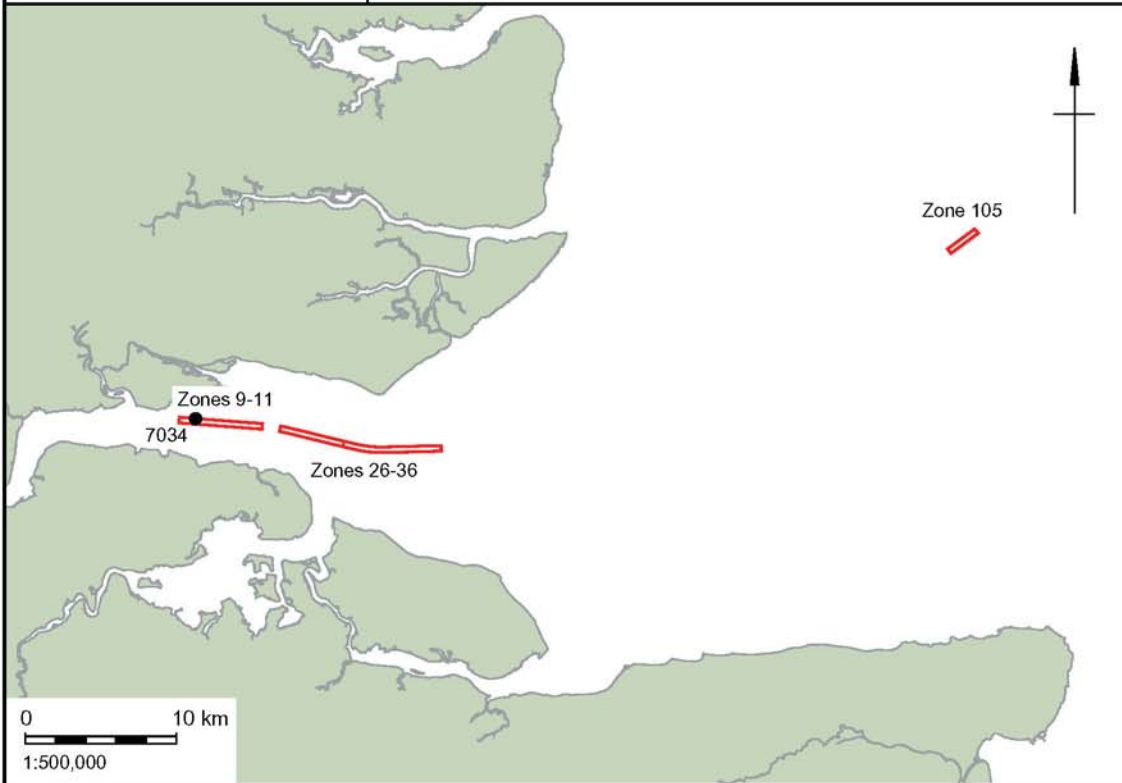
The object located on the seabed fits the description of a fairly large stockless anchor typically used on large vessels from the late 19<sup>th</sup> century and up to the present day. The smooth surface and lack of concretion or marine growth on the anchor would suggest this is fairly modern rather than late 19<sup>th</sup> century. The anchor is mostly likely to be an accidental loss or a redundant mooring that was not recovered.

SHEET 3: WA ID 7034 DEBRIS

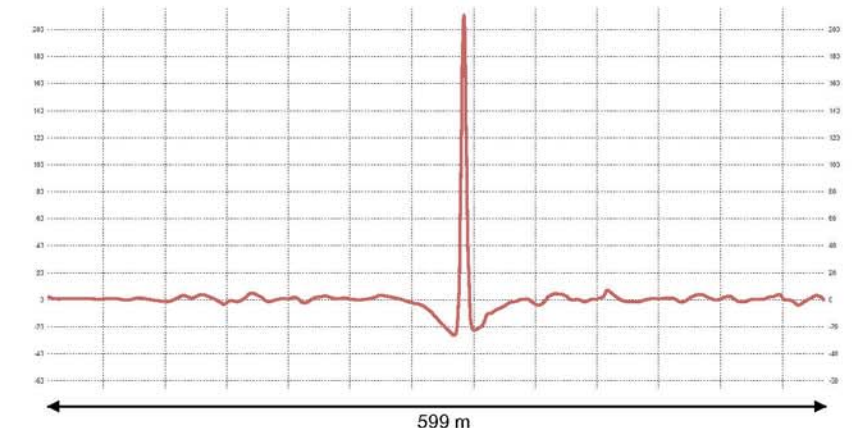
<b>Location</b>		334136 E, 5708533 N (UTM31N)	<b>Zone</b>	9-11
<b>Archaeological Importance</b>		High (New site)		
<b>Geophysical survey dimensions and notes</b>		Dimensions: 5.4m x 3.9m x 0.8m. A relatively indistinct dark reflector with large shadow and a surrounding area of seafloor disturbance. Associated with a large 236nT magnetic anomaly.		
<b>Build</b>	<b>Type</b>	Not confirmed as a structure.		
	<b>Construction</b>			
	<b>Dimensions</b>			
	<b>Shipyard</b>			
<b>Loss</b>	<b>Cause</b>			
<b>Extent of Survival</b>		Not known to have been previously identified by UKHO or PLA, and not mapped as a feature or obstruction. Located on the northern edge of the dredged channel. Possibly a piece of ferrous debris, though the amplitude of the magnetic anomaly indicate the possibility of a large amount of buried ferrous debris in the vicinity.		



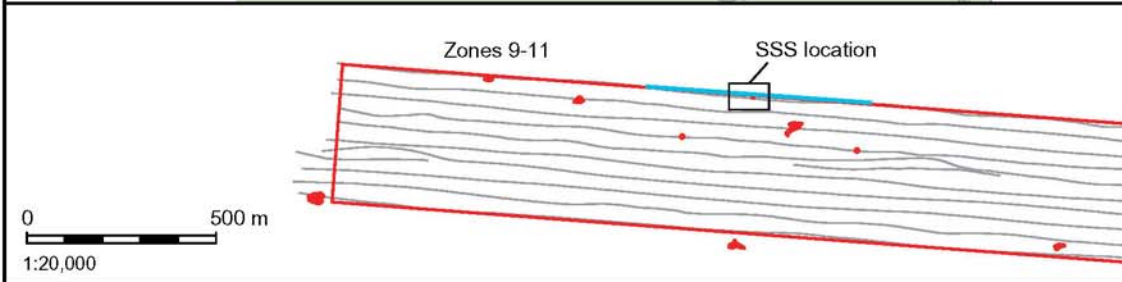
7034: Sidescan sonar mosaic



7034: Sidescan sonar waterfall



7034: Magnetometer profile



- Study Areas
- Track plot
- Magnetometer profile location
- Anomalies of archaeological potential
- Area searched

# LONDON GATEWAY CLEARANCE PROGRAMME

## DIVING INVESTIGATIONS

### FIELD REPORT 84350

Zone 9 - 11  
Data Sheet 5  
Ref: 7060

#### 1. INTRODUCTION

Sidescan sonar and magnetometer evidence: The site consists of one feature (**7060**), a distinct dark reflector with a large shadow. It is associated with a large 103nT magnetic anomaly. It is therefore presumed to be a piece of ferrous debris, though the large associated magnetic anomaly possibly indicates further buried ferrous material. The dimension of feature **7060** is 1.5m long by 0.3m wide and with a discernable height of 0.7m.

Previous investigation: The site is not known to be previously identified by the UKHO or PLA, and not mapped as a feature or obstruction.

Dive objectives: Establish the nature and character of the sidescan sonar anomaly and identify any further finds in the area and the association of the finds to the anomaly, *i.e.* identify the type/character of the site; confirm the extent of the site; establish the presence/absence of coherent structures and features, and of further small finds; undertake light cleaning, probing and spot sampling (if applicable) to confirm the nature of the material; and achieve a basic record of the layout of the site by annotating sidescan sonar records.

#### 2. DIVE DETAILS

Date: 16<sup>th</sup> February 2012  
Location: Within the centre of the dredged channel  
Position of shot: 334408E, 5708398N  
Duration in minutes: 31 minutes bottom time  
Underwater visibility: nil  
General description of dive: Low water slack

#### 3. EVIDENCE

The diver made bottom 5m north of the position of feature **7060** and proceeded to carry out circular searches from the base of the shot out to c. 20m. The diver located a feature approximately 10-15m west of the shot. The feature located on the seabed was a large circular slab-like feature. The feature had a diameter of c. 1.5m and a depth of 0.3m with vertical sides. The upper surface was flat and lying at an angle of c. 20 degrees from the horizontal. It was lying on a gravel and sand seabed and was partially buried, although the entire upper surface was exposed.

The side of the feature facing the shot was partly scoured revealing a flat or very slightly convex surface underneath. All surfaces had a slightly rough feel which suggests that it was probably concrete rather than ferrous. At the centre of the upper face was what felt like a semi-flush circular metal base plate for a fixing. The diver was unable to move this feature by hand and the feature was not attached to anything. However, the feature was not scoured enough to determine whether it was attached to anything underneath. The area around the feature was thoroughly searched and nothing was found. The object located by the diver corresponds with the image and description of feature **7060** identified in the geophysics.

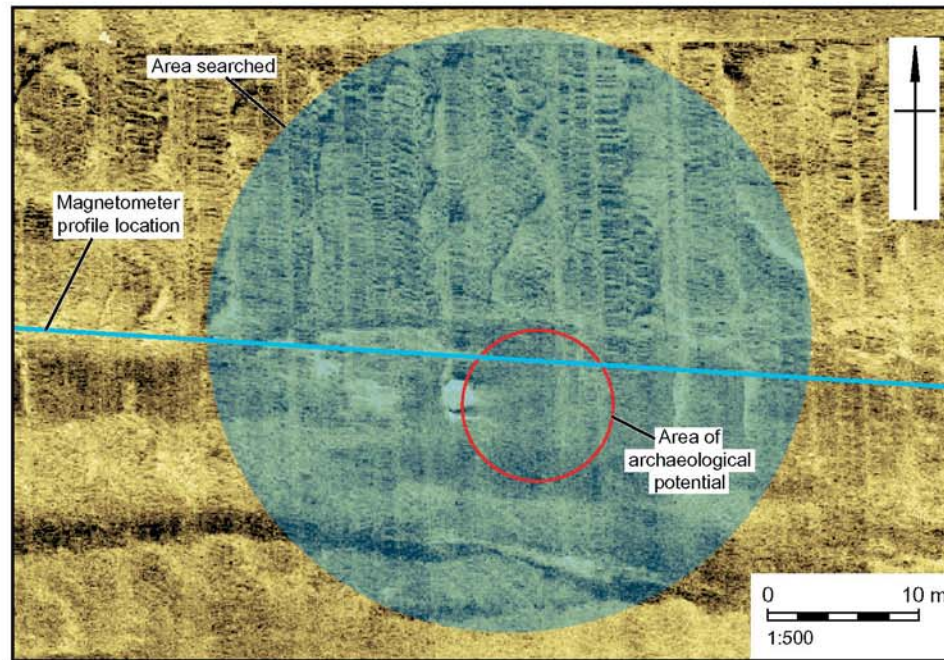
#### **4. INTERPRETATION**

The object located by the diver is a probable concrete sinker. The metal feature in the centre of the upper surface is likely to be the lower end of a bolt or similar fixing. This would suggest that the sinker is upside down and that there is likely to be a metal eye attached to the lower face. The object also matches the description and location of the geophysical anomaly. As no other objects were found within the search area, there is a very high probability that feature **7060** was located and is a modern sinker, possibly of a type used for buoyage. As such it is considered to be of no archaeological interest.

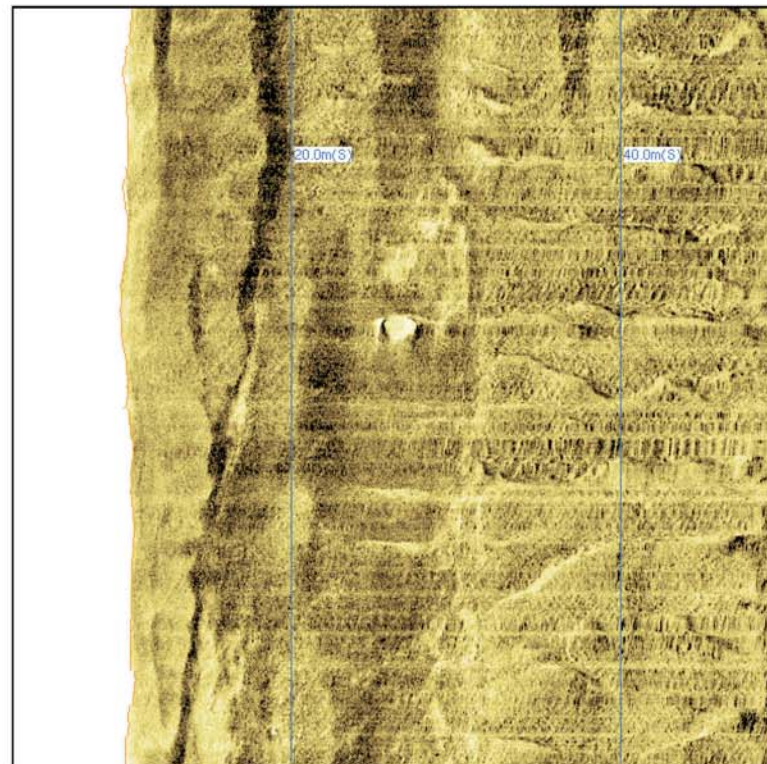


SHEET 5: WA ID 7060 DEBRIS

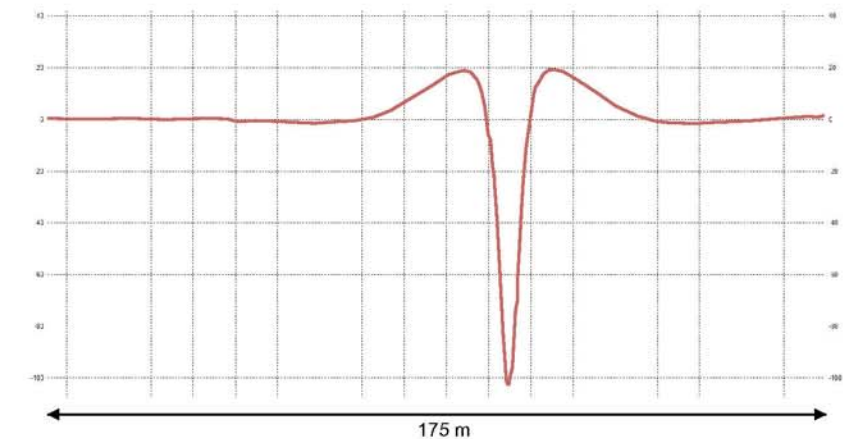
<b>Location</b>		334410 E, 5708393 N (UTM31N)	<b>Zone</b>	9-11
<b>Archaeological Importance</b>		High (New site)		
<b>Geophysical survey dimensions and notes</b>		Dimensions: 1.5m x 0.3m x 0.7m. A distinct dark reflector with a large shadow, though data is unclear and could be a circular feature with a central depression. Associated with a large 103nT magnetic anomaly.		
<b>Build</b>	<b>Type</b>	Not confirmed as a structure.		
	<b>Construction</b>			
	<b>Dimensions</b>			
	<b>Shipyard</b>			
<b>Loss</b>	<b>Cause</b>			
<b>Extent of Survival</b>		Not known to have been previously identified by UKHO or PLA, and not mapped as a feature or obstruction. Located towards the centre of the dredged channel, south of Chapman Shoal. Possible piece of ferrous debris, though the large associated magnetic anomaly possibly indicates further buried ferrous debris in the vicinity.		



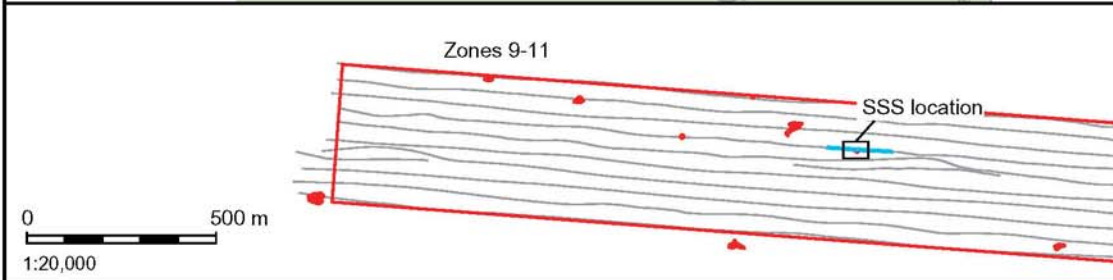
7060: Sidescan sonar mosaic



7060: Sidescan sonar waterfall



7060: Magnetometer profile



- Study Areas
- Track plot
- Magnetometer profile location
- Anomalies of archaeological potential
- Area searched

# LONDON GATEWAY CLEARANCE PROGRAMME

## DIVING INVESTIGATIONS

### FIELD REPORT 84350

Zone 9 - 11  
Data Sheet 6  
Ref: 7072

#### 1. INTRODUCTION

Sidescan sonar and magnetometer evidence: The site consists of an area of irregular dark reflectors, possibly seafloor disturbance and contains a distinct dark reflector with shadow (**7072**). The dimensions of feature **7072** are 29.5m long by 10.3m wide and with a discernable height of 0.5m. It is associated with a large 411nT magnetic anomaly. The feature is very poorly defined, apart from the main dark reflector, though the large magnetic anomaly suggests the presence of a large amount of buried ferrous debris within the immediate vicinity.

Previous investigation: The site is not known to be previously identified by the UKHO or PLA, and not mapped as a feature or obstruction.

Dive objectives: Establish the nature and character of the sidescan sonar anomaly and identify any further finds in the area and the association of the finds to the anomaly, *i.e.* identify the type/character of the site; confirm the extent of the site; establish the presence/absence of coherent structures and features, and of further small finds; undertake light cleaning, probing and spot sampling (if applicable) to confirm the nature of the material; and achieve a basic record of the layout of the site by annotating sidescan sonar records.

#### 2. DIVE DETAILS

Date: 17<sup>th</sup> February 2012  
Location: Within the dredged channel  
Position of shot: 334942E, 5708183N  
Duration in minutes: 45 minutes bottom time  
Underwater visibility: nil  
General description of dive: High water slack

#### 3. EVIDENCE

The diver made bottom within the location of feature **7072** and proceeded to carryout a circular search from the base of the shot to c. 20m. The diver located an area of disturbed gravel seabed with numerous depressions up to 1.5m deep. This is consistent with the north-south alignment of the sand-waves as seen on the sidescan data. Some sandy patches and edges of exposed compacted gravel were also noted by the diver up to 8m in length. The diver also located two concretions which were

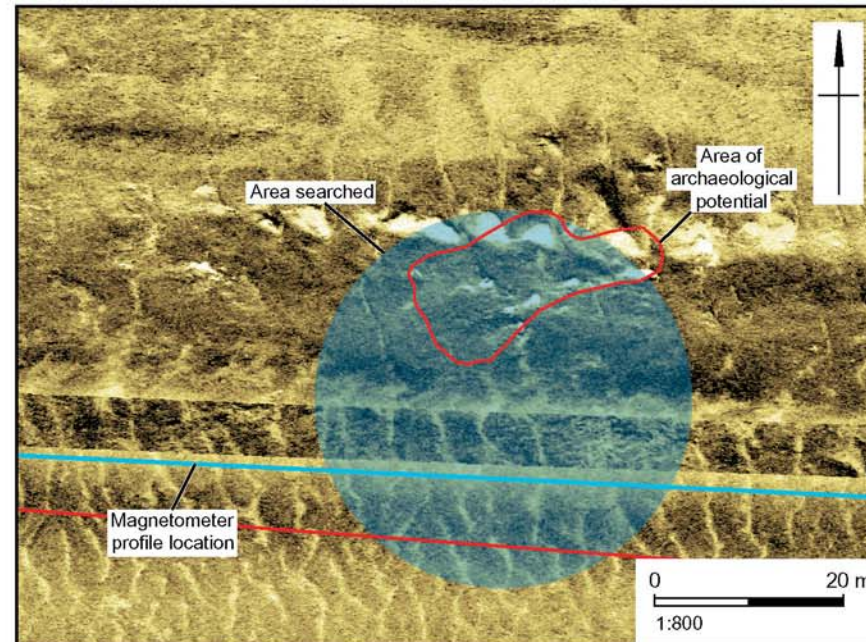
irregular with no obvious shape. There was no evidence of the large magnetic anomaly and no wreck or material of archaeological interest was found by the diver.

#### **4. INTERPRETATION**

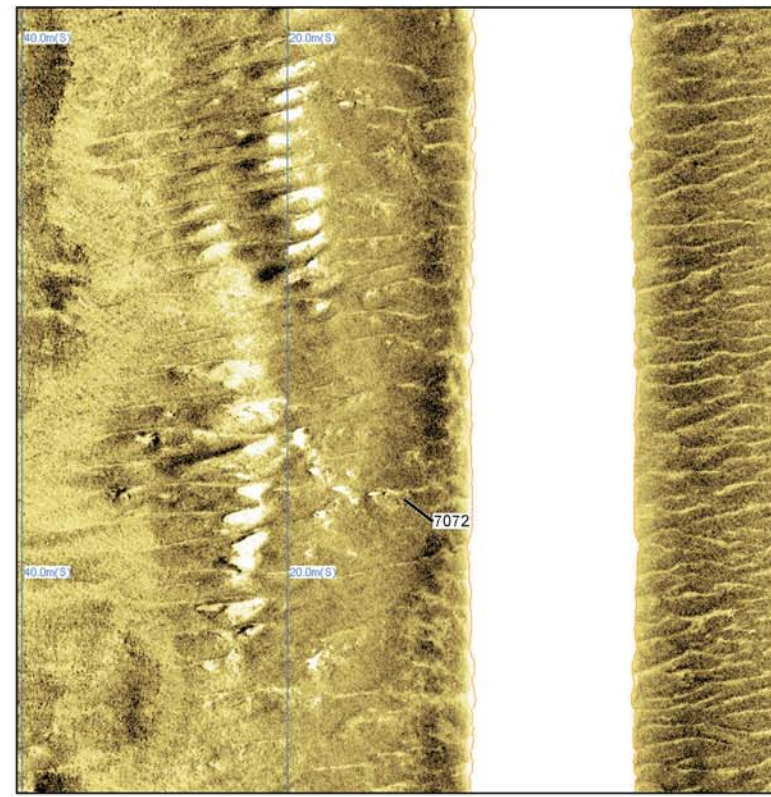
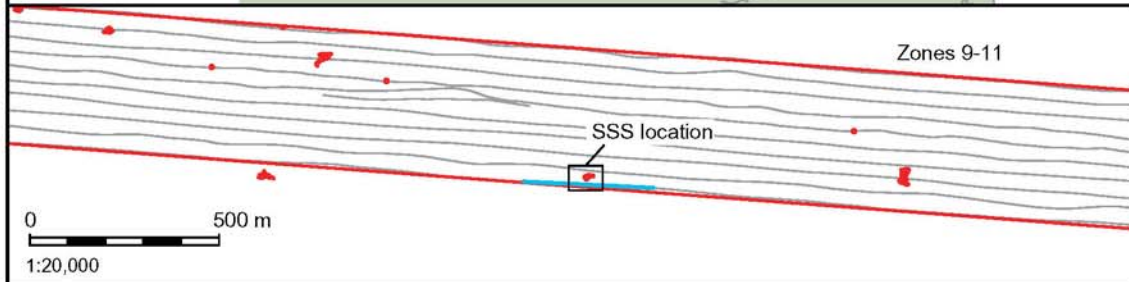
All of the features observed by the diver can be explained as natural features with some evidence of disturbance, most probably from dredging related activities.

SHEET 6: WA ID 7072 DEBRIS

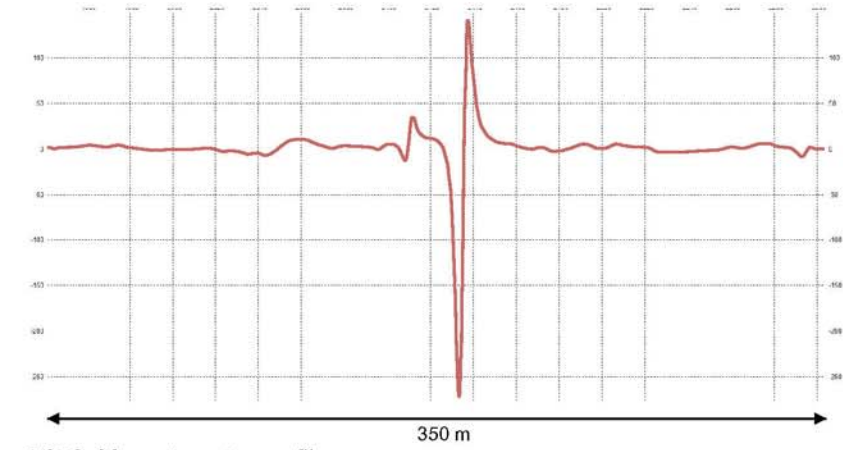
<b>Location</b>		410399 E, 5968036 N (UTM30N)	<b>Zone</b>	9-11
<b>Archaeological Importance</b>		High (New site)		
<b>Geophysical survey dimensions and notes</b>		Dimensions: 29.5m x 10.3m x 0.5m. An area of irregular dark reflectors, possibly seafloor disturbance, containing a distinct dark reflector with shadow measuring up to 0.5m in height. Associated with a large 411nT magnetic anomaly.		
<b>Build</b>	<b>Type</b>	Not confirmed as a structure.		
	<b>Construction</b>			
	<b>Dimensions</b>			
	<b>Shipyards</b>			
<b>Loss</b>	<b>Cause</b>			
<b>Extent of Survival</b>		Not known to have been previously identified by UKHO or PLA, and not mapped as a feature or obstruction. Located on the southern edge of the dredged channel. The feature is very poorly defined, apart from the main dark reflector, though the large magnetic anomaly suggests the presence of a large amount of buried ferrous debris within the immediate vicinity.		



7072: Sidescan sonar mosaic



7072: Sidescan sonar waterfall



7072: Magnetometer profile

- Study Areas
- Track plot
- Magnetometer profile location
- ▲ Anomalies of archaeological potential
- Area searched

# LONDON GATEWAY CLEARANCE PROGRAMME

## DIVING INVESTIGATIONS

### FIELD REPORT 84350

Zone 26-36  
Data Sheet 10  
Ref: 7257

## 1. INTRODUCTION

Sidescan sonar and magnetometer evidence: The site consists of an area of well-defined curvilinear dark reflectors (**7257**), possibly associated with a number of other nearby anomalies, mainly **7253**, **7254**, **7255** and **7259**. **7253**, a straight, linear dark reflector, appears to be associated with a 17nT magnetic anomaly suggesting it is at least ferrous in nature. The spread of the anomalies are over a distance of 41m by 10.3m but there is no discernable height. Feature **7257** is possibly a length of rope or chain, but other surrounding pieces of debris suggest it could represent a small exposed section of a larger buried structure. The lack of a large magnetic anomaly suggests it is likely to be mainly non-ferrous in nature.

Previous investigation: The site is not known to be previously identified by the UKHO or PLA, and is not mapped as a feature or obstruction. Although it has not been previously recorded as a feature or obstruction, it is situated between locations of the known 'iron bar wreck' (**WA ID 7245**, 330m to the WNW) and the wreck of the London (**WA ID 7296**, 460M to the ESE) and could possibly be debris from either one of these sites.

Dive objectives: Establish the nature and character of the sidescan sonar anomaly and identify any further finds in the area and the association of the finds to the anomaly, *i.e.* identify the type/character of the site; confirm the extent of the site; establish the presence/absence of coherent structures and features, and of further small finds; undertake light cleaning, probing and spot sampling (if applicable) to confirm the nature of the material; and achieve a basic record of the layout of the site by annotating sidescan sonar records.

## 2. DIVE DETAILS

Due to the distance between features **7257** and **7253** two separate dives were necessary to investigate the spread of features.

Dive: 34 on feature **7257**

Date: 18<sup>th</sup> February 2012

Location: On the northern edge of dredged channel

Position of shot: Close proximity to anomaly

Duration in minutes: 42 minutes bottom time

Underwater visibility: nil

General description of dive: High water slack

Dive: 48 on feature **7253**

Date: 28<sup>th</sup> February 2012

Location: On the northern edge of the dredged channel

Position of shot: 342180E, 5707476N

Duration of dive: 36 minute bottom time

Underwater visibility: Nil

General description of dive: Low water slack

### 3. EVIDENCE

#### Dive 34

The diver made bottom close to feature **7257** and proceeded to carry out circular searches from the base of the shot. No features were encountered by the diver during the 5m search. The seabed was flat consisting of fine sand with gravel inclusions. Along the 10m search the diver observed a slight linear depression extending c.10m and between 0.5-1m wide. One side of the depression consisted of fine sand and the other gravel, a scattering of flint nodules were located within the centre of the depression. During the 15m search the diver located a section of chain. The chain was of a medium gauge with links c. 150mm long and 100mm wide. The chain ran east-west along the seabed and had a distinct scour along one side. The length of chain on the seabed was c. 20m. The west end of the chain was found with nothing attached. At the eastern end the chain ended in a bundle c. 1-1.5m across. The chain was situated on a sand and gravel seabed along its entirety. There was no other debris within a 2m area either side of the chain and searches extended past either end of the chain found no other debris.

#### Dive 48

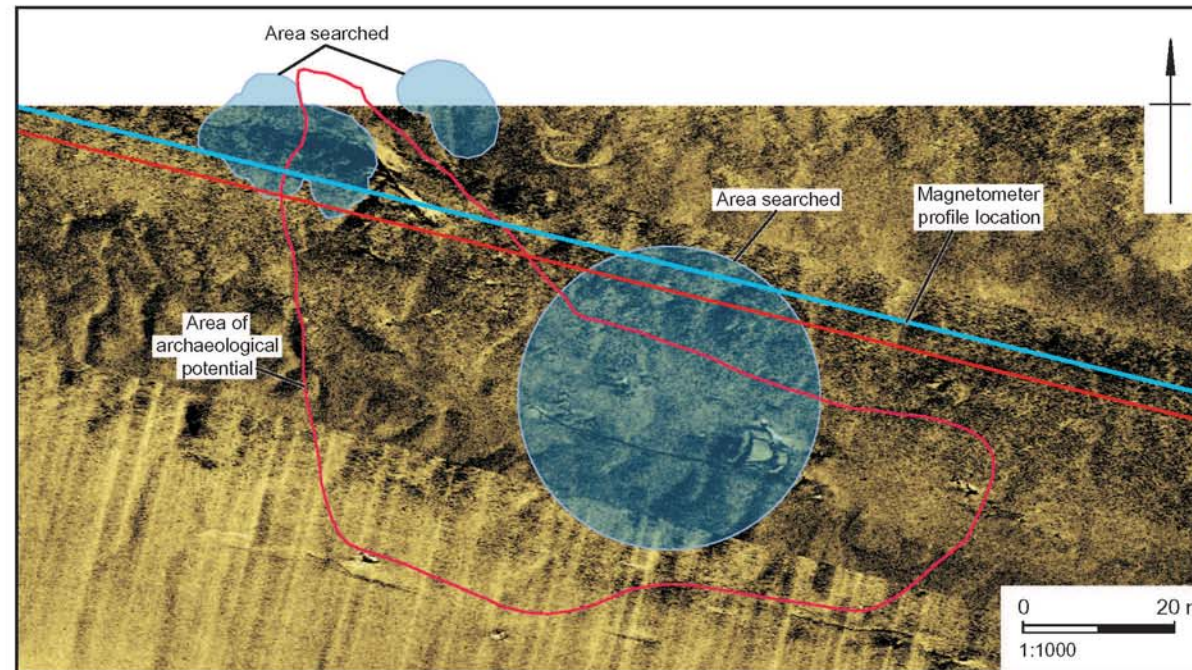
The diver made bottom 4m west of feature **7253** and proceeded to carry out circular searches from the base of the shot with assistance from diver tracking. A large section of chain was located c. 10m west of the shot. The chain was similar to the chain found in the location of **7257**. The individual links were c. 150-200mm long. There was a distinct scour on one side of the chain c. 200mm-300mm deep. The diver located the end of the chain towards the east. The diver tracked back westwards c. 10m until directed away from the chain to investigate surrounding area. The length of chain observed by the diver was c. 10-15m but is believed to extend further west. Between 2-5m south of the chain an area of loose debris c. 2m<sup>2</sup> was located consisting of rubble and fragments of wire hawser. The seabed around the chain and the area of rubble was flat consisting of fine sand and silt. No other features were located during the dive.

### 4. INTERPRETATION

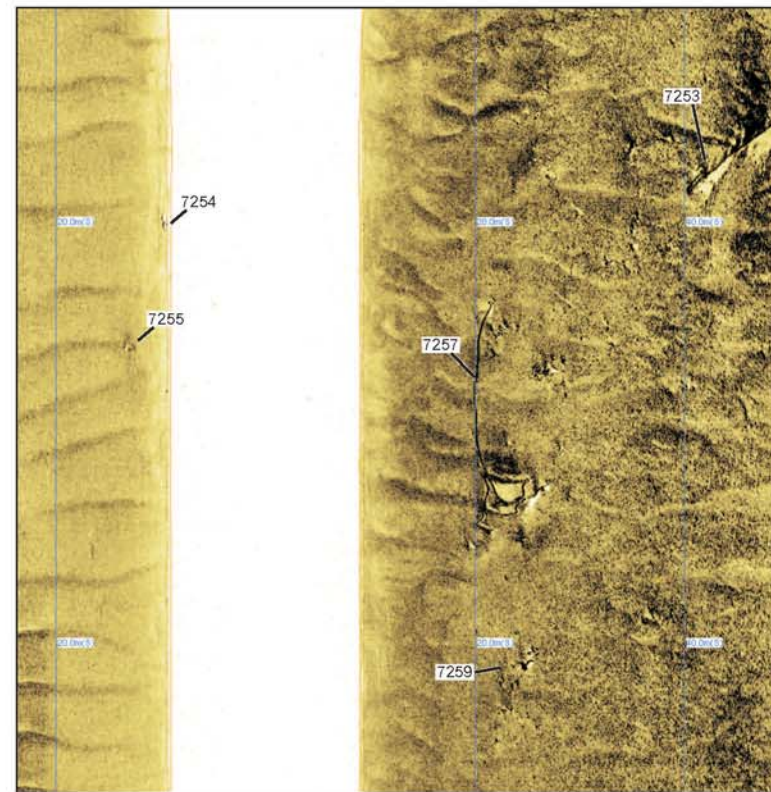
During the diver investigations of features **7253** and **7257**, in both instances a large section of modern chain was located. The chain was sizeable enough to cause a distinct scour on one side which is consistent with the straight, linear dark reflectors seen on the sidescan data. The only other feature recorded by the diver was a small area of scattered rubble and loose debris close to feature **7253**. The site consists of two areas of modern chain that could be connected, probably an accidental loss or associated with an abandoned buoy. As such it is considered of no archaeological interest.

SHEET 10: WA ID 7257 DEBRIS

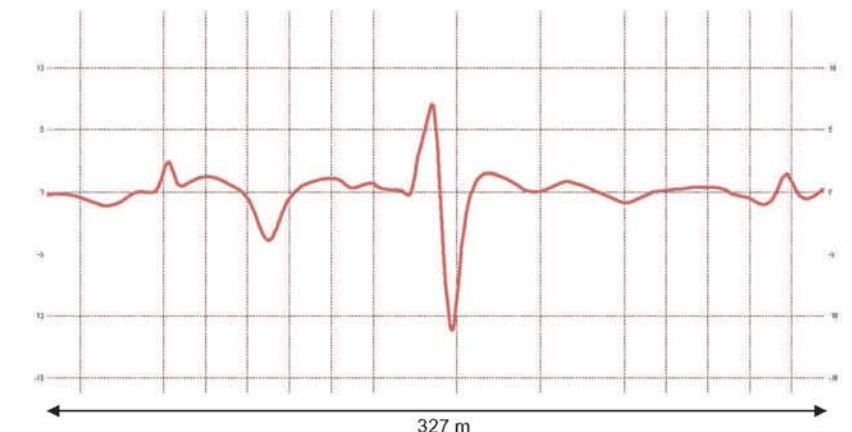
<b>Location</b>		342223 E, 5707441 N (UTM31N)	<b>Zone</b>	26-36
<b>Archaeological Importance</b>		High (New site)		
<b>Geophysical survey dimensions and notes</b>		Dimensions: 41.0m x 10.3m x 0.0m. Area of well-defined curvilinear dark reflectors possibly associated with a number of other nearby anomalies, mainly 7253, 7254, 7255 and 7259. 7253, a straight, linear dark reflector, appears to be associated with a 17nT magnetic anomaly (illustrated) suggesting it is at least partially ferrous in nature.		
<b>Build</b>	<b>Type</b>	Not confirmed as a structure.		
	<b>Construction</b>			
	<b>Dimensions</b>			
	<b>Shipyard</b>			
<b>Loss</b>	<b>Cause</b>			
<b>Extent of Survival</b>		Not previously known to have been identified by UKHO or PLA, and not mapped as a feature or obstruction. Feature 7257 is possibly mainly lengths of rope or chain, but other surrounding pieces of debris suggest it could represent a small exposed section of a larger buried structure. The lack of a large magnetic anomaly suggests any structure is likely to be mainly non-ferrous in nature. Although it has not been previously recorded as a feature or obstruction, it is situated between the locations of the known "Iron Bar Wreck" (WA ID 7245, 330m to the WNW) and the wreck of the London (King) (WA ID 7296, 460m to the ESE) and could possibly be debris from either one of these sites, or be another site in itself.		



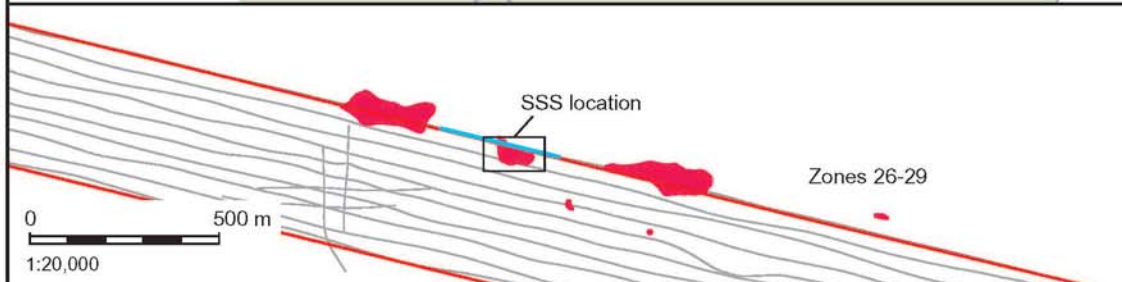
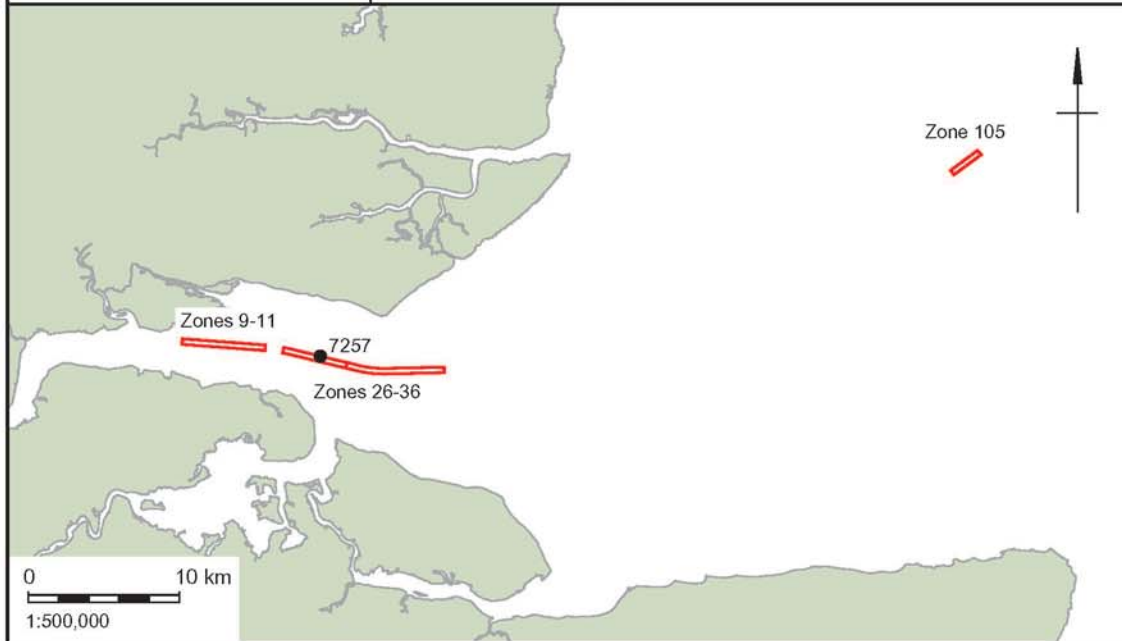
7257: Sidescan sonar mosaic



7257: Sidescan sonar waterfall



7257: Magnetometer profile



- Study Areas
- Track plot
- Magnetometer profile location
- Anomalies of archaeological potential
- Area searched

# LONDON GATEWAY CLEARANCE PROGRAMME

## DIVING INVESTIGATIONS

### FIELD REPORT 84350

Zone 26-36  
Data Sheet 11  
Ref: 7262, 7263 and 7264

## 1. INTRODUCTION

Sidescan sonar and magnetometer evidence: The site consists of three separate features **7762**, **7263** and **7264** within the same area. Feature **7262** is a poorly defined, irregular dark reflector with a shadow. Feature **7263** is an area of irregular dark reflectors centred on a larger curvilinear dark reflector. Feature **7264** is an irregular dark reflector with shadow. The features have been associated with a 93nT magnetic anomaly. The dimensions of feature **7262** are 5m long by 0.7m wide with a discernable height of 0.3m. Feature **7263** is 4.3m long by 5.8m wide with no discernable height. Feature **7264** is 0.7m by 0.4m with a height of 0.2m. Feature **7263** is most likely to be an area of debris, with **7272** and **7264** being associated pieces of debris. The identification of a large magnetic anomaly indicates any debris is probably ferrous in origin, with the possibility of more buried beneath the seabed.

Previous investigation: The site is not known to be previously identified by the UKHO or PLA, and is not mapped as a feature or obstruction.

Dive objectives: Establish the nature and character of the sidescan sonar anomaly and identify any further finds in the area and the association of the finds to the anomaly, *i.e.* identify the type/character of the site; confirm the extent of the site; establish the presence/absence of coherent structures and features, and of further small finds; undertake light cleaning, probing and spot sampling (if applicable) to confirm the nature of the material; and achieve a basic record of the layout of the site by annotating sidescan sonar records.

## 2. DIVE DETAILS

Date: 19<sup>th</sup> February 2012

Location: Towards the centre of the dredged channel

Position of shot: 5-10m north of **7263**

Duration in minutes: 58 minutes bottom time

Underwater visibility: nil

General description of dive: High water slack

## 3. EVIDENCE

The diver made bottom 5-10m to the north of feature **7263** and proceeded to carry out circular searches from the base of the shot out to 20m. The diver located a large



ferrous object on one side of a low sand/silt mound 10-15m SSW of the anchor position. This was in the correct area for the location of feature **7263**. The object was aligned c. north-east to south-west and was approximately 3m long and 1.2m wide. The north-east end was buried. The object consisted of a small diameter tube c. 200-300mm attached to a fragment of a much larger diameter curved plate. The object had a flanged-like lip at the south-west end and another flange in the centre. It had the appearance of a fragment of a larger cylinder that is open at least at one end with a smaller pipe attached to its outer surface. It appears to be a fragment of modern machinery, possibly part of a pressure vessel, such as a boiler. A metal frame-like object with rounded ends c. 100mm wide and 2m long was found lying next to it.

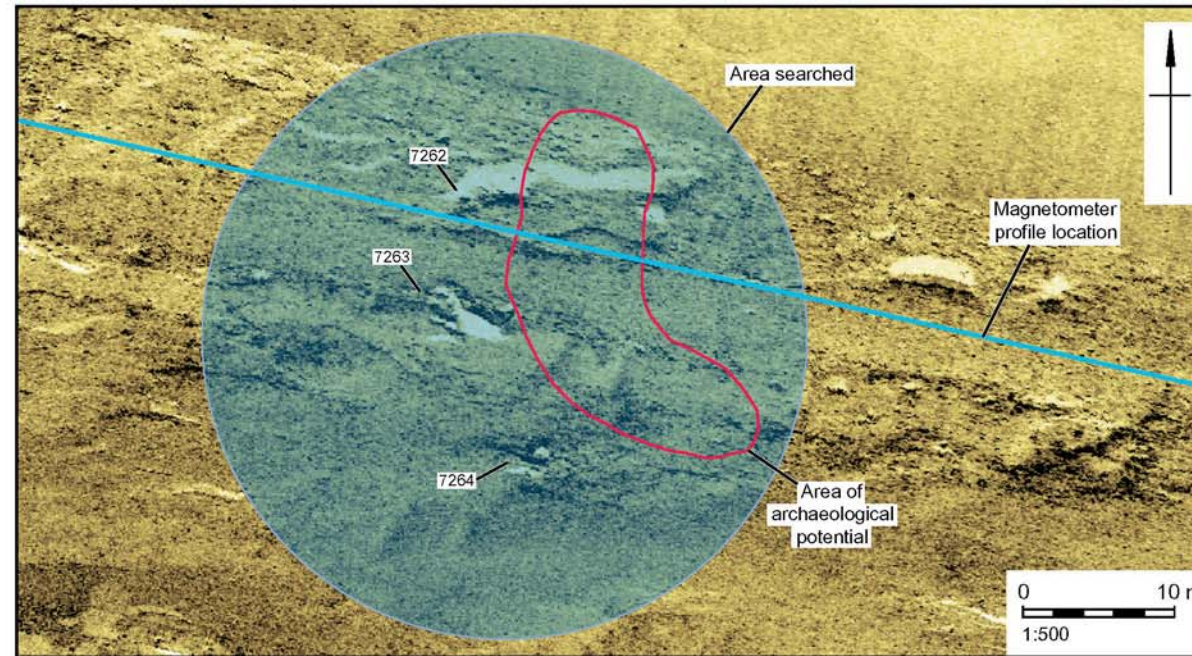
Searches to the north in the area of feature **7262** located a low, fine sand or silt mound but no archaeological features. Nothing was located to the SE in the locality of feature **7264** suggesting that this feature maybe buried.

#### **4. INTERPRETATION**

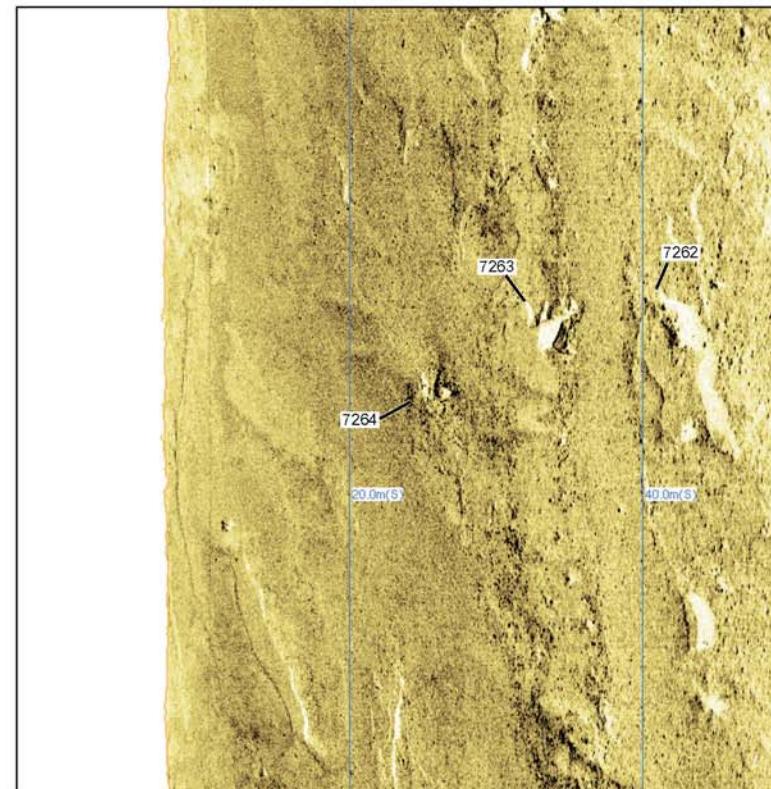
The diver searches covered the areas of all the geophysical features. Nothing of archaeological interest was found at either **7262** or **7264**. Feature **7263** appears to be a section of piping with flanges associated with modern machinery and therefore of no real archaeological interest.

SHEET 11: WA ID 7262, 7263 & 7264 DEBRIS

<b>Location</b>		342359 E, 5707314 N (UTM31N) 342538 E, 5707305 N (UTM31N) 342364 E, 5707297 N (UTM31N)	<b>Zone</b>	26-36
<b>Archaeological Importance</b>		High (New site)		
<b>Geophysical survey dimensions and notes</b>		7262 Dimensions: 5.0m x 0.7m x 0.3m 7263 Dimensions: 4.3m x 5.8m x 0.0m 7264 Dimensions: 0.7m x 0.4m x 0.2m Three separate features within the same area. 7262 is a poorly defined, irregular dark reflector with a shadow. 7263 is an area of irregular dark reflectors centered around a larger curvilinear dark reflector. 7264 is an irregular dark reflector with shadow. The features have been associated with a 93nT magnetic anomaly.		
<b>Build</b>	<b>Type</b>	Not confirmed as a structure.		
	<b>Construction</b>			
	<b>Dimensions</b>			
	<b>Shipyards</b>			
<b>Loss</b>	<b>Cause</b>			
<b>Extent of Survival</b>		Not known to have been previously identified by UKHO or PLA, and not mapped as a feature or obstruction. Located towards the centre of the dredged channel. 7263 is most likely to be an area of debris, with 7262 and 7264 being associated pieces of debris. The identification of a large magnetic anomaly indicates any debris is possibly ferrous in origin, with the possibility of more buried beneath the seabed sediment.		



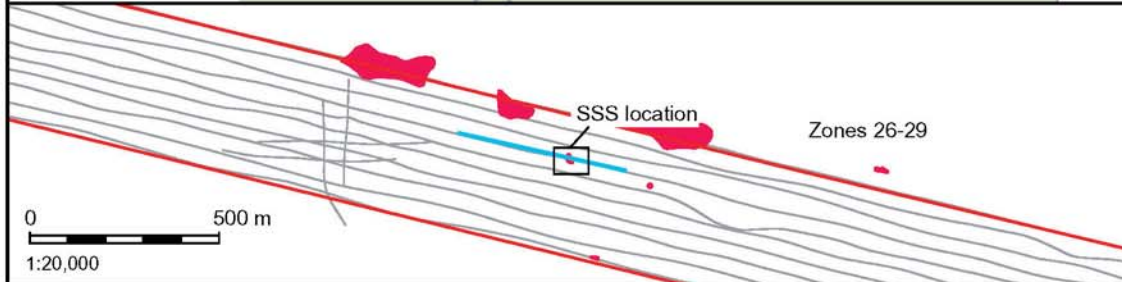
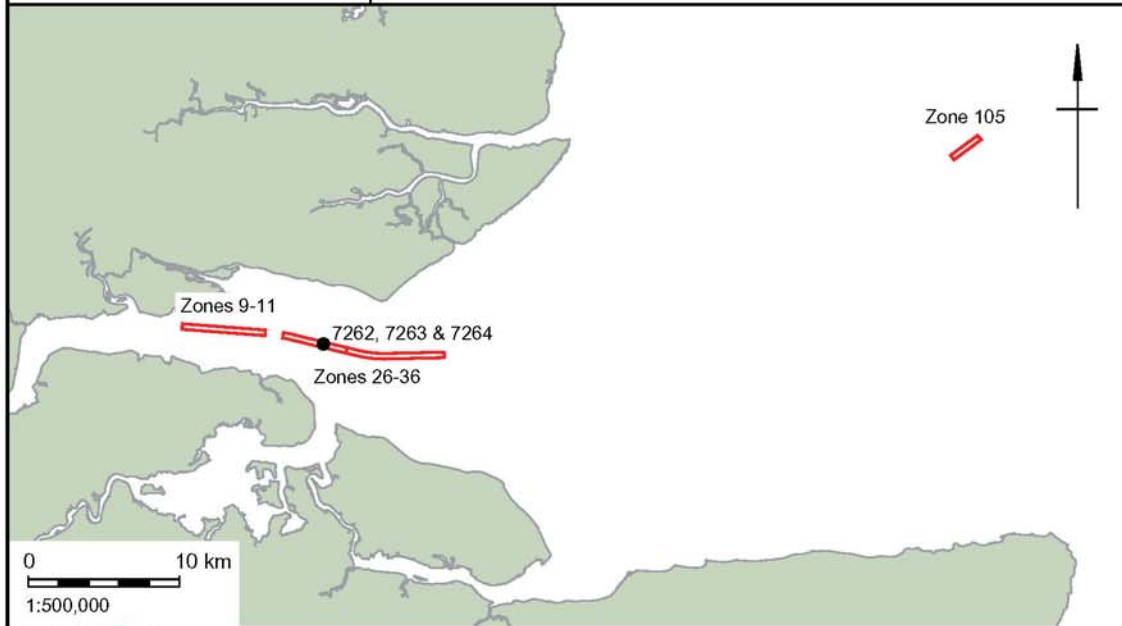
7262, 7263 & 7264: Sidescan sonar mosaic



7262, 7263 & 7264: Sidescan sonar waterfall



7262, 7263 & 7264: Magnetometer profile



- Study Areas
- Track plot
- Magnetometer profile location
- Anomalies of archaeological potential
- Area searched



Drawing projection: UTM WGS84 z31N.  
 Contains Ordnance Survey data © Crown Copyright and database right 2012.  
 This material is for client report only © Wessex Archaeology. No unauthorised reproduction.

Date:	08/03/12	Revision Number:	0	Illustrator:	KJF
Path:	W:\Projects\London Gateway\LG 2012\Drawing Office\Report figs\Diving Clearance				

# LONDON GATEWAY CLEARANCE PROGRAMME

## DIVING INVESTIGATIONS

### FIELD REPORT 84350

Zone 26-36  
Data Sheet 14  
Ref: 7274

#### 1. INTRODUCTION

Sidescan sonar and magnetometer evidence: The site consists of a scatter of irregular dark reflectors with shadows (**7274**) associated with a 41nT magnetic anomaly. The dimensions of the site are 30.1m long by 5.4m wide with a discernable height of 0.3m. The site is possibly a debris field of partially buried remains of a degraded structure. The identified magnetic anomaly indicates at least some of the debris is ferrous in nature.

Previous investigation: The site is not known to be previously identified by the UKHO or PLA, and is not mapped as a feature or obstruction.

Dive objectives: Establish the nature and character of the sidescan sonar anomaly and identify any further finds in the area and the association of the finds to the anomaly, *i.e.* identify the type/character of the site; confirm the extent of the site; establish the presence/absence of coherent structures and features, and of further small finds; undertake light cleaning, probing and spot sampling (if applicable) to confirm the nature of the material; and achieve a basic record of the layout of the site by annotating sidescan sonar records.

#### 2. DIVE DETAILS

Date: 21<sup>st</sup> February 2012

Location: On the southern edge of the dredged channel

Position of shot: 342431E, 5707035N

Duration in minutes: 60 minutes bottom time

Underwater visibility: nil

General description of dive: low water slack

#### 3. EVIDENCE

The diver made bottom 10m south-east of feature **7274** and proceeded to carry out searches from the base of the shot out to 15m. The diver located a scattering of loose debris and large pieces of coal within 15m of the anchor position. The largest area of debris was found between 5-15m west of the anchor. In this area numerous small unidentifiable irregular fragments were found; numerous pipes of 200-300mm diameter and up to 1.5m long, some with flanges and T-section joints; a small section of a girder, c. 1m long and 200mm wide; a flat ferrous bar c. 1m long and thin ferrous

plates, heavily buckled. Within close proximity to the anchor a number of slab-like objects up to 400mm across appear to be large fragments of coal.

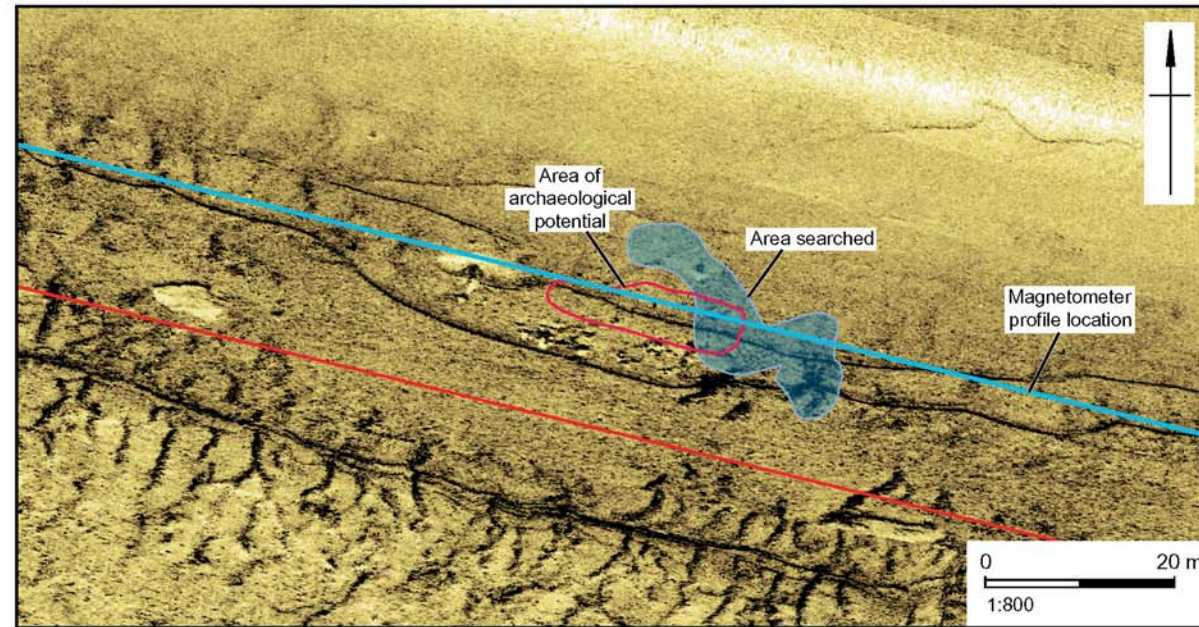
The seabed consisted of a fine silt. It was mainly flat but slightly undulating within the debris field, probably as a result of scour and deposition around debris. A number of prominent silt ledges with vertical edges running roughly WNW-ESE were observed. These were up to 0.5m in height and are likely to be dredge features.

#### **4. INTERPRETATION**

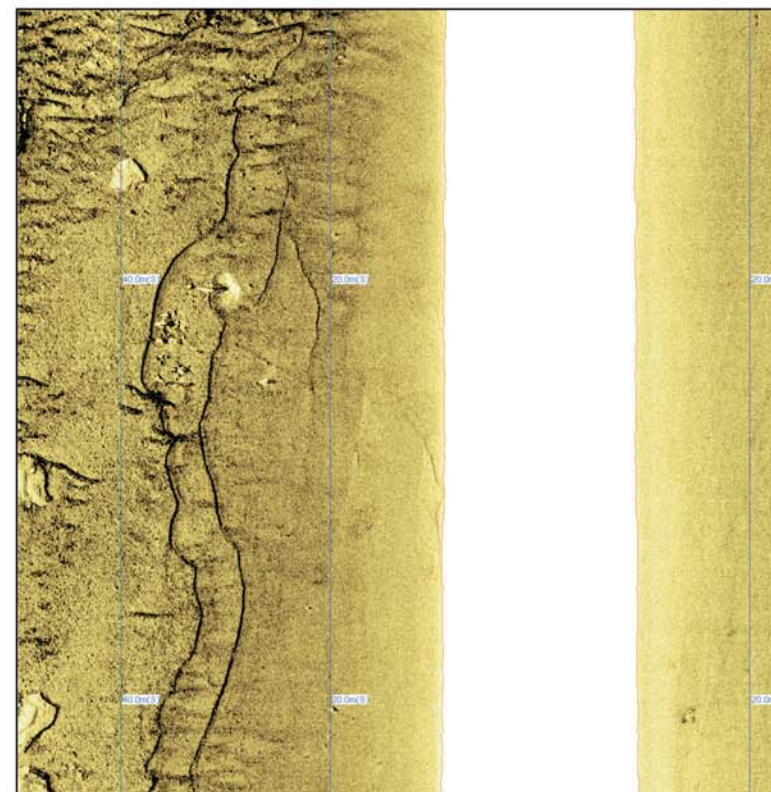
There was no evidence of wreck located by the diver. Feature **7274** and the immediate area around it, appears to consist of a dump of modern debris and therefore, is of no archaeological interest.

SHEET 14: WA ID 7274 DEBRIS

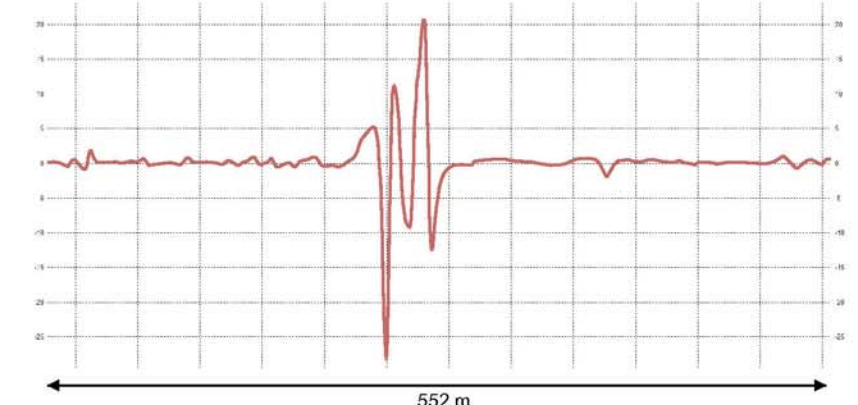
<b>Location</b>		342426 E, 5707044 N (UTM31N)	<b>Zone</b>	26-36
<b>Archaeological Importance</b>		High (New site)		
<b>Geophysical survey dimensions and notes</b>		Dimensions: 30.1m x 5.4m x 0.3m Scatter of irregular dark reflectors with shadows, up to 0.3m in height. Associated with a 41nT magnetic anomaly.		
<b>Build</b>	<b>Type</b>	Not confirmed as a structure.		
	<b>Construction</b>			
	<b>Dimensions</b>			
	<b>Shipyard</b>			
<b>Loss</b>	<b>Cause</b>			
<b>Extent of Survival</b>		Not known to have been previously identified by UKHO or PLA, and not mapped as a feature or obstruction. On the southern edge of the dredged channel. Possibly a debris field or partially buried remains of a degraded structure. The identified magnetic anomaly indicates at least some of the debris is ferrous in nature.		



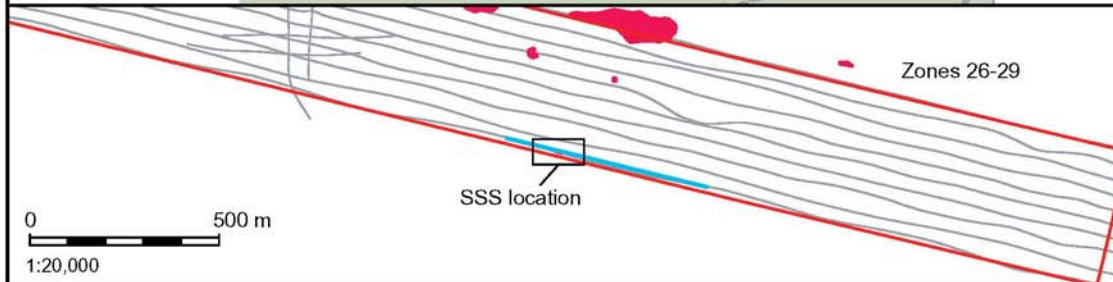
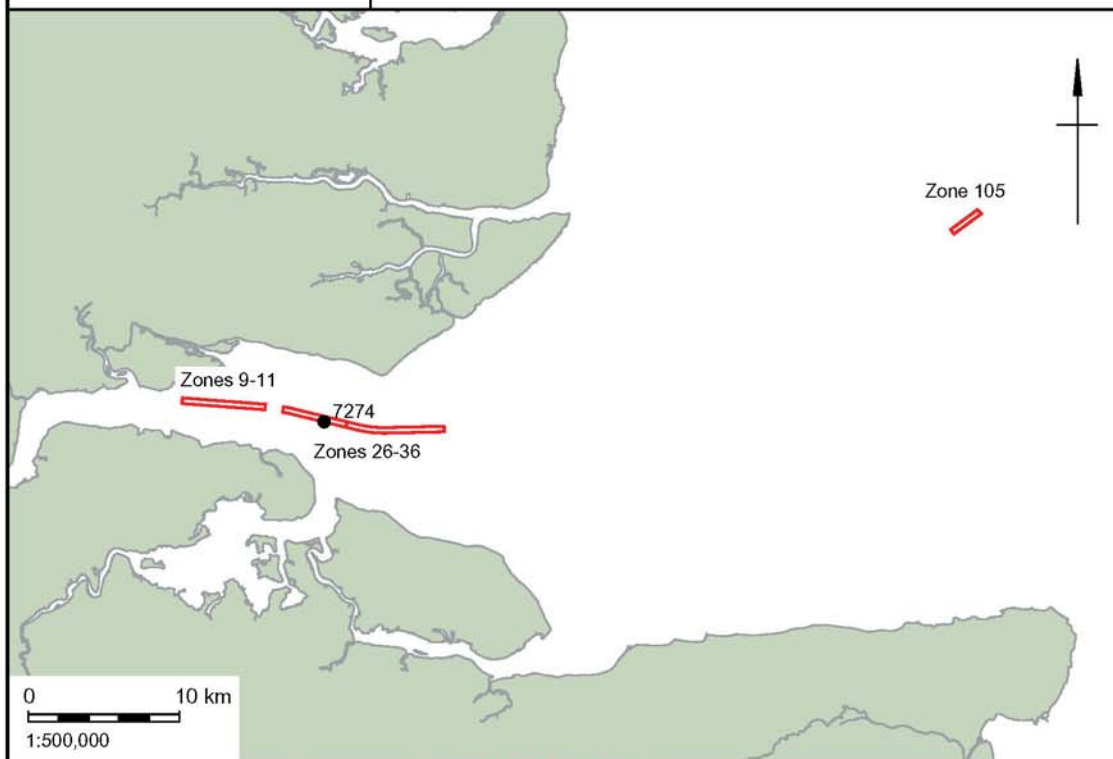
7274: Sidescan sonar mosaic



7274: Sidescan sonar waterfall



7274: Magnetometer profile



- Study Areas
- Anomalies of archaeological potential
- Track plot
- Area searched
- Magnetometer profile location

# LONDON GATEWAY CLEARANCE PROGRAMME

## DIVING INVESTIGATIONS

### FIELD REPORT 84350

Zone 26-36  
Data Sheet 13  
Ref: 7283

## 1. INTRODUCTION

Sidescan sonar and magnetometer evidence: The site consists of a small, linear dark reflector (**7283**) with a small shadow located within a large but shallow seabed depression. There are numerous indistinct, straight, dark reflectors also identified within the vicinity. It is associated with a 91nT magnetic anomaly. The dimension of the anomaly is 1.7m by 0.1m with a discernable height of 0.1m.

Previous investigation: The site is not known to be previously identified by the UKHO or PLA, and is not mapped as a feature or obstruction.

Dive objectives: Establish the nature and character of the sidescan sonar anomaly and identify any further finds in the area and the association of the finds to the anomaly, *i.e.* identify the type/character of the site; confirm the extent of the site; establish the presence/absence of coherent structures and features, and of further small finds; undertake light cleaning, probing and spot sampling (if applicable) to confirm the nature of the material; and achieve a basic record of the layout of the site by annotating sidescan sonar records.

## 2. DIVE DETAILS

Date: 18<sup>th</sup> February 2012

Location: Towards the centre of the dredged channel

Position of shot: Close proximity to **7283**

Duration in minutes: 39 minutes bottom time

Underwater visibility: nil

General description of dive: High water slack

## 3. EVIDENCE

The diver made bottom close to feature **7283** and proceeded to carry out circular searches from the base of the shot out to 20m. The diver located a scatter of small, irregular and largely unidentifiable concretions on the surface of a shallow depression close to the position of the shot. This scattering of debris covered an area c. 5m by 3m. Within this area a partly buried and heavily concreted 1.5m long fragment of wire hawser up to 25mm thick was found. Other objects found and recovered by the diver were a small bracket-like concretion (Find **005**), this could be a fitting, and a small glazed earthenware pottery sherd (Find **006**), probably modern. The seabed

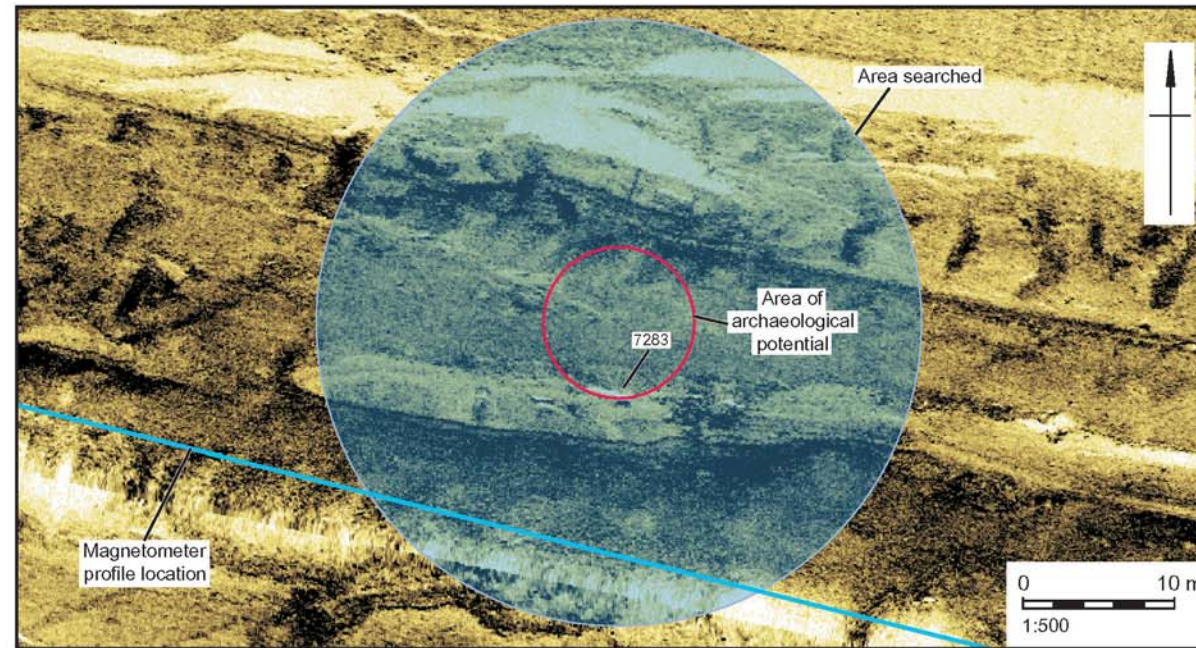
consisted of ridges of silt with very smooth and firm surface running roughly east-west with shallow linear depressions of softer silt. The ridges had vertically stepped sides in places which suggests that the depressions are not natural and are the result of the dredging programme in the channel.

#### **4. INTERPRETATION**

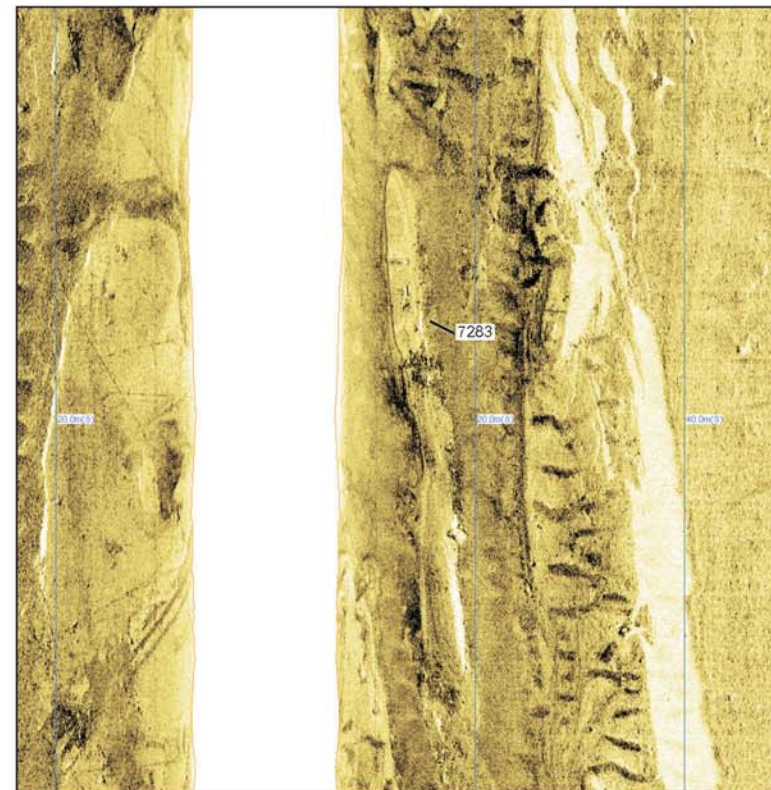
The diver searches covered the area of the anomaly **7283** and the location of the prominent anomaly just to the east of the site position. Only a scattering of small modern debris was located and shallow ridges and depressions with vertical sides, mostly likely caused by the dredge head. It is possible that there has been some infilling of the shallow depressions observed during the geophysical survey and the anomalies recorded (max height 0.1m) have become buried. The site does not appear to represent the remains of a shipwreck or aircraft. It would appear the site is a scattering of loose debris associated with a possible dump of material and therefore of no archaeological interest.

SHEET 13: WA ID 7283 DEBRIS

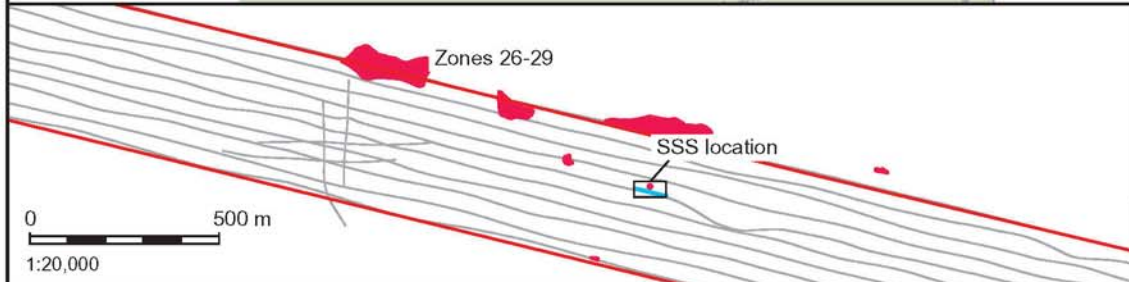
<b>Location</b>		342574 E, 5707233 N (UTM31N)	<b>Zone</b>	26-36
<b>Archaeological Importance</b>		High (New site)		
<b>Geophysical survey dimensions and notes</b>		Dimensions: 1.7m x 0.1m x 0.1m Very small, linear dark reflector with a small shadow located within a large but shallow seabed depression. Numerous indistinct, straight dark reflectors also identified within the vicinity. Associated with a 91nT magnetic anomaly.		
<b>Build</b>	<b>Type</b>	Not confirmed as a structure.		
	<b>Construction</b>			
	<b>Dimensions</b>			
	<b>Shipyard</b>			
<b>Loss</b>	<b>Cause</b>			
<b>Extent of Survival</b>		Not known to have been previously identified by UKHO or PLA, and not mapped as a feature or obstruction. Located towards the centre of the dredged channel. A very small feature, but associated with a large magnetic anomaly suggesting it is a piece of ferrous debris. The size of the magnetic anomaly also suggests other pieces of buried ferrous debris are present within the vicinity.		



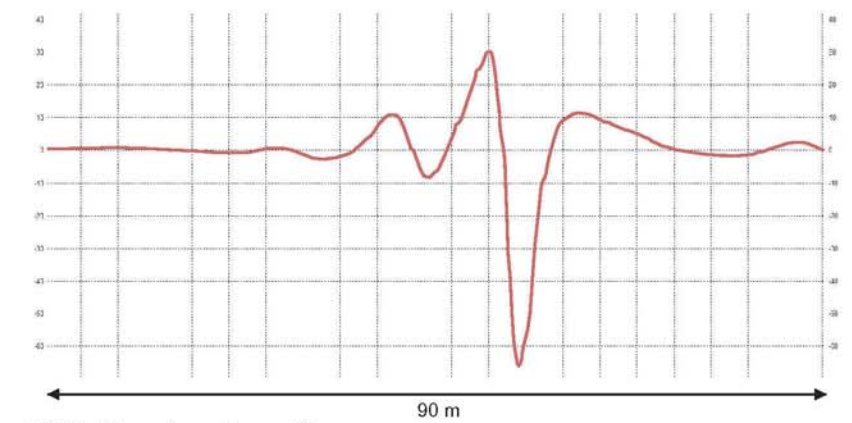
7283: Sidescan sonar mosaic



7283: Sidescan sonar waterfall



- ▭ Study Areas
- Anomalies of archaeological potential
- Track plot
- Area searched
- Magnetometer profile location



7283: Magnetometer profile



Drawing projection: UTM WGS84 z31N.  
Contains Ordnance Survey data © Crown Copyright and database right 2012.  
This material is for client report only © Wessex Archaeology. No unauthorized reproduction.

Date:	08/03/12	Revision Number:	0	Illustrator:	KJF
Path:	W:\Projects\London Gateway\LG 2012\Drawing Office\Report figs\Diving Clearance				



# LONDON GATEWAY CLEARANCE PROGRAMME

## DIVING INVESTIGATIONS

### FIELD REPORT 84350

Zone 26-36  
Data Sheet 17  
Ref: 7435

## 1. INTRODUCTION

Sidescan sonar and magnetometer evidence: The site consists of a relatively large area of scattered, irregular dark reflectors, approximately centred on feature **7435**. The feature is associated with a large 179nT magnetic anomaly. A concentrated scatter of different pieces of debris, small debris fields and the large magnetic anomaly possible indicate a significant amount of buried ferrous material. It is possibly the remains of a degraded structure, similar in appearance to the known remains of the 'iron bar wreck' (**WA ID 7245**).

Previous investigation: The site is not known to be previously identified by the UKHO or PLA, and is not mapped as a feature or obstruction.

Dive objectives: Establish the nature and character of the sidescan sonar anomaly and identify any further finds in the area and the association of the finds to the anomaly, *i.e.* identify the type/character of the site; confirm the extent of the site; establish the presence/absence of coherent structures and features, and of further small finds; undertake light cleaning, probing and spot sampling (if applicable) to confirm the nature of the material; and achieve a basic record of the layout of the site by annotating sidescan sonar records.

## 2. DIVE DETAILS

Date: 20<sup>th</sup> February 2012

Location: On the northern edge of the dredged channel

Position of shot: 347316E, 5706673N

Duration in minutes: 54 minutes bottom time

Underwater visibility: nil

General description of dive: low water slack

## 3. EVIDENCE

The diver made bottom 10m to the south of feature **7435** and proceeded to carry out circular searches from the base of the shot out to 20m. The dive located a bundle of wire hawser cable spread over an area of at least 3m ESE of the shot in the location of feature **7435**. Some of the cable was upstanding 0.5m from the seabed. There was a distinct build up of silt and fine sand around it forming a low mound. The cable had an approximate diameter of 20-25mm. It was not possible to find an end of the

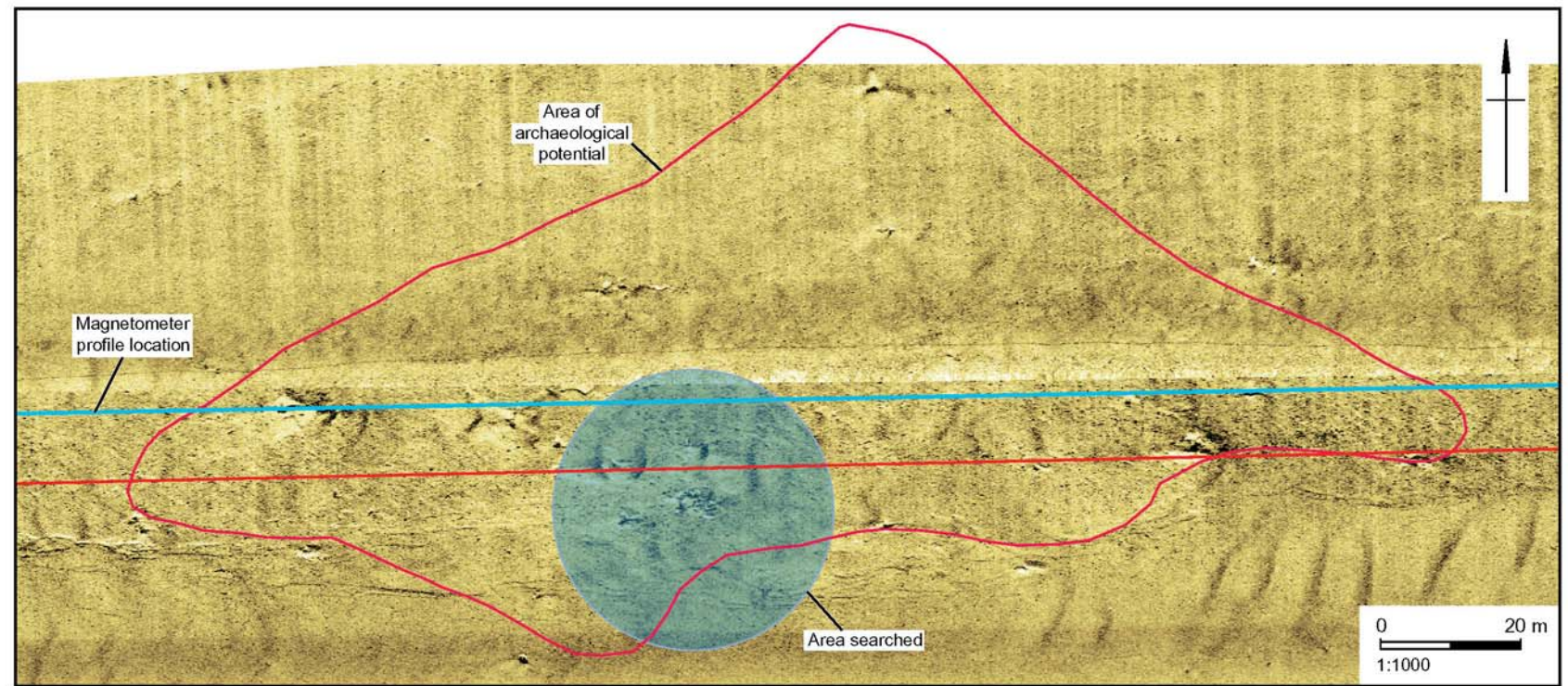
cable, therefore more material may be buried beneath the seabed. A second bundle of wire cable was found close to the anchor. It was of a similar size and could possibly be connected to the bundle located at the position of **7435**. No other features were found on the seabed. The seabed was predominantly flat consisting of fine sand and silt.

#### **4. INTERPRETATION**

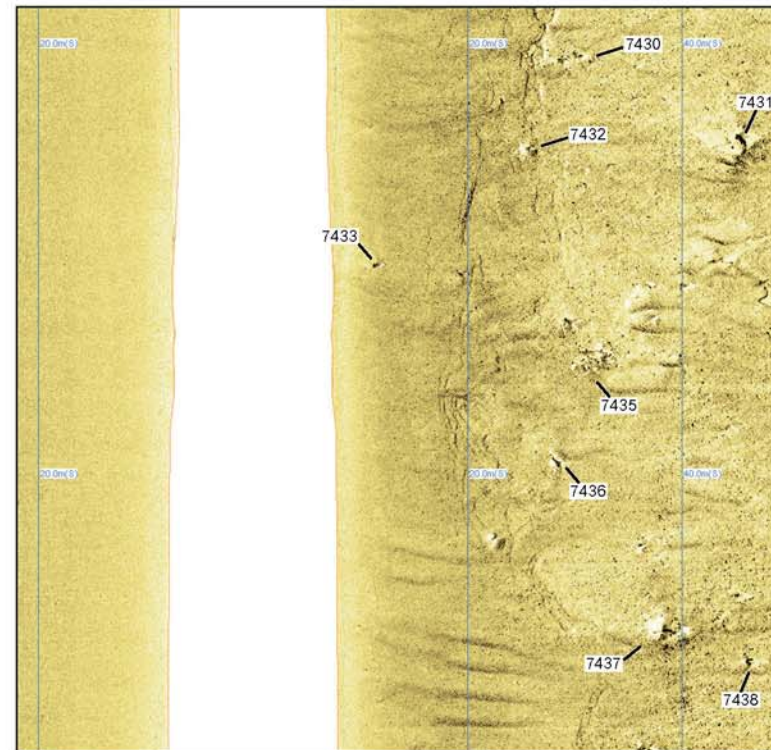
Although only a relative small proportion of the total area of archaeological potential was investigated, the diver searches covered the area around **7435**, which consisted of at least two bundles of modern steel cable. From the limited dive substantiation, there was no evidence to suggest the cable was attached to anything but they could be connected to one another. The cable has most probably been dumped or abandoned and is of no archaeological interest.

SHEET 17: WA ID 7435 DEBRIS

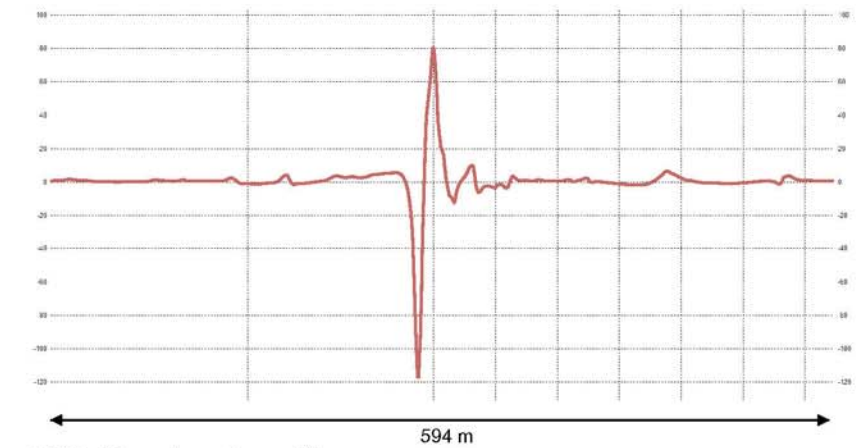
<b>Location</b>		347316 E, 5706677 N (UTM30N)	<b>Zone</b>	26-36
<b>Archaeological Importance</b>		High (New site)		
<b>Geophysical survey dimensions and notes</b>		Dimensions: 16.0m x 8.1m x 0.0m. Relatively large area of scattered, irregular dark reflectors, approximately centred on feature 7435. The anomalies differ in appearance, from small debris fields to stronger, isolated reflectors with shadows. The central four features (7433, 7434, 7435 and 7436) area associated with a large 179nT magnetic anomaly.		
<b>Build</b>	<b>Type</b>	Not confirmed as a structure.		
	<b>Construction</b>			
	<b>Dimensions</b>			
	<b>Shipyard</b>			
<b>Loss</b>	<b>Cause</b>			
<b>Extent of Survival</b>		Not known to have been previously identified by UKHO or PLA, and not mapped as a feature or obstruction. Located on the northern edge of the dredged channel, partially outside of the study area. A concentrated scatter of different pieces of debris and small debris fields, the magnetic anomaly indicating a significant amount of ferrous debris is possibly buried in the vicinity. Possibly the remains of a degraded structure, similar in appearance to the known remains of the "Iron Bar Wreck" (WA ID 7245).		



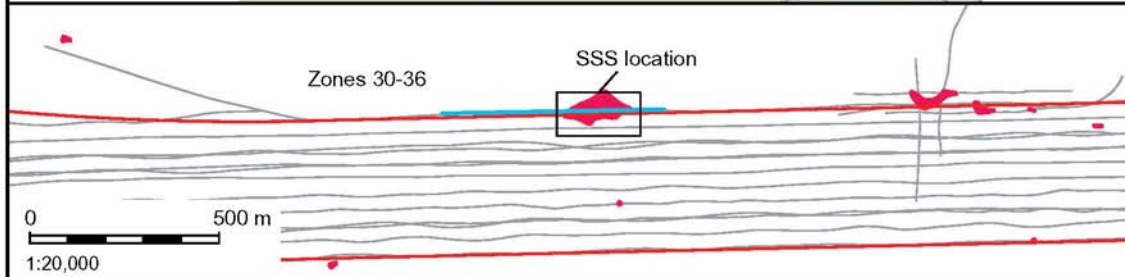
7435: Sidescan sonar mosaic



7435: Sidescan sonar waterfall



7435: Magnetometer profile



- ▭ Study Areas
- Track plot
- Magnetometer profile location
- ◆ Anomalies of archaeological potential
- Area searched

# LONDON GATEWAY CLEARANCE PROGRAMME

## DIVING INVESTIGATIONS

### FIELD REPORT 84350

Zone 26-36  
Data Sheet 19  
Ref: 7458, 7459 and 7460

## 1. INTRODUCTION

Sidescan sonar and magnetometer evidence: The site consist of two separate features (**7459** and **7460**) located within the same area. Feature **7459** is an area of an irregular seabed or a low mound. It is poorly defined on the sidescan sonar data but more visible on the multibeam bathymetry data. Feature **7460** is a small depression containing a curvilinear dark reflector, possibly a length of rope or chain. Both are located close to a large 135nT magnetic anomaly (**7458**). The dimensions of feature **7459** are 11m long by 5m wide with a discernable height of 0.2m. Feature **7460** is 12.5m long by 6.5m wide with a scour of 0.4m.

Previous investigation: The site is not known to be previously identified by the UKHO or PLA, and is not mapped as a feature or obstruction.

Dive objectives: Establish the nature and character of the sidescan sonar anomaly and identify any further finds in the area and the association of the finds to the anomaly, *i.e.* identify the type/character of the site; confirm the extent of the site; establish the presence/absence of coherent structures and features, and of further small finds; undertake light cleaning, probing and spot sampling (if applicable) to confirm the nature of the material; and achieve a basic record of the layout of the site by annotating sidescan sonar records.

## 2. DIVE DETAILS

Due to the distance between features **7459** and **7460** it was not possible to investigate both during the dive. Thus, feature **7459** was deemed more archaeological promising and chosen for investigation.

Date: 27<sup>th</sup> February 2012

Location: On the northern edge of the dredged channel

Position of shot: 10m north-west of feature **7459**

Duration in minutes: 43 minutes bottom time

Underwater visibility: nil

General description of dive: low water slack

### **3. EVIDENCE**

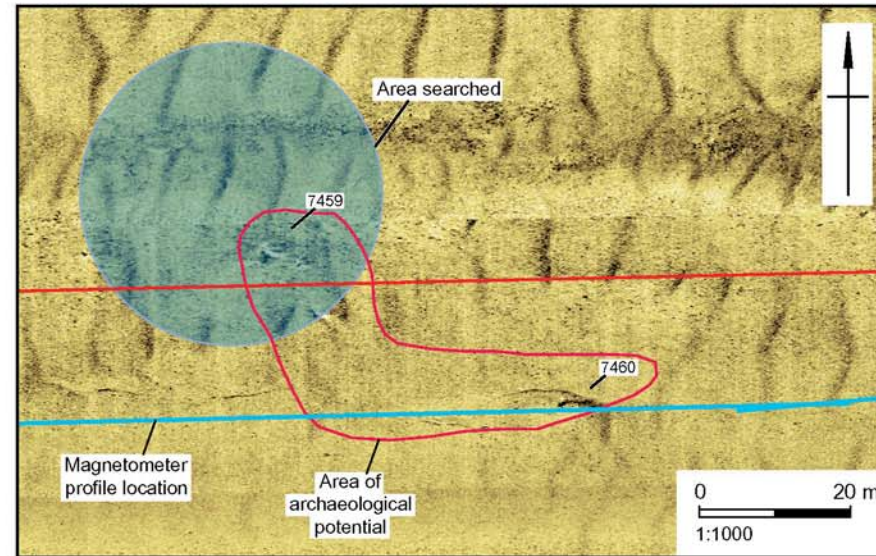
The diver made bottom 10m north-west of the feature **7459** and proceeded to carry out circular searches from the base of the shot out to 20m with assistance from diver tracking. The diver located feature **7459** 15m south-east of the shot. The seabed sloped up at a shallow incline towards the feature forming a low mound. The feature was a large tyre partly buried lying flat on the seabed. The tyre was c. 1-1.5m in diameter, and the deposition built up around it forming a shallow mound gave the feature a total width of c. 2-2.5m. This would appear consistent with semi-circular dark reflector shown in the sidescan data. There was no other debris around it and nothing appeared to be attached to it.

### **4. INTERPRETATION**

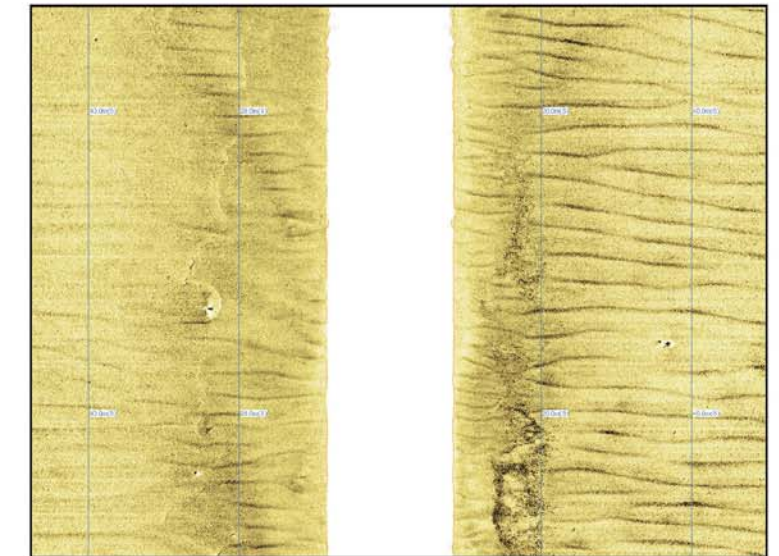
The anomaly found by the diver was in the location of feature **7459** as identified in the geophysical data. Feature **7459** is a large modern tyre with a build up of sediment around it forming a low mound no more than 0.5m above the general seabed level. As such this feature is of no archaeological interest.

SHEET 19: WA ID 7458, 7459 & 7460 DEBRIS

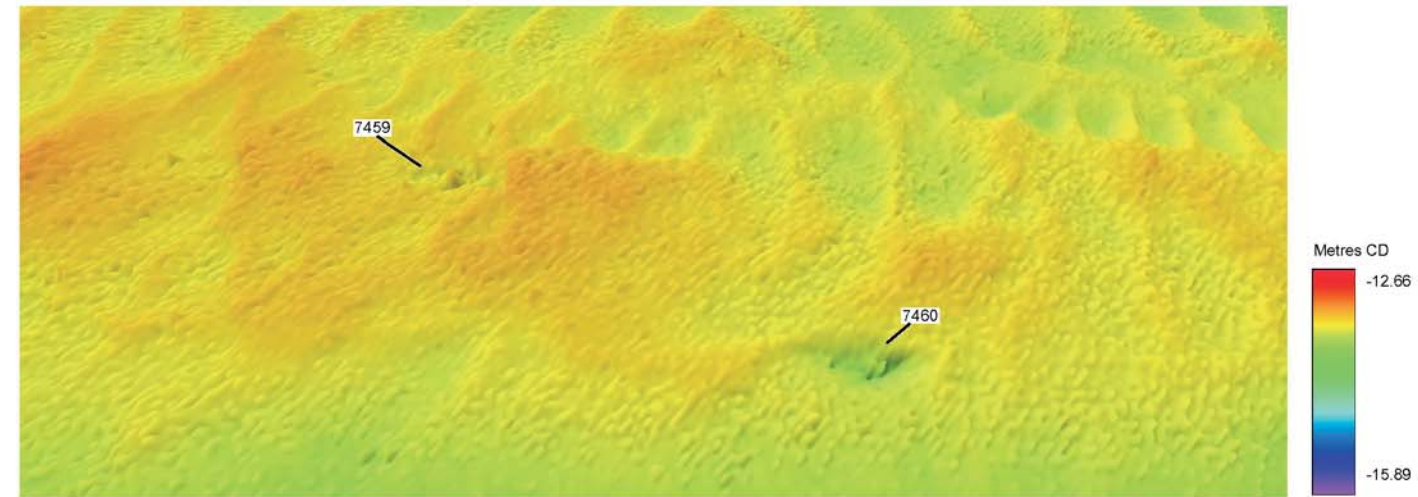
<b>Location</b>		348325 E, 5706706 N (UTM31N) 348365 E, 5706687 N (UTM31N)	<b>Zone</b>	26-36
<b>Archaeological Importance</b>		High (New site)		
<b>Geophysical survey dimensions and notes</b>		7459 Dimensions: 11.0m x 5.0m x 0.2m. 7460 Dimensions: 12.5m x 6.5m x -0.4m. Two separate features located within the same area. 7459 is an area of irregular seabed or small low mound, poorly defined on sidescan sonar data but more visible on multibeam bathymetry data. 7460 is a small depression containing a curvilinear dark reflector, possibly a length of rope or chain, and an associated dark reflector. Both are located close to a large 135nT magnetic anomaly (7458).		
<b>Build</b>	<b>Type</b>	Not confirmed as a structure.		
	<b>Construction</b>			
	<b>Dimensions</b>			
	<b>Shipyard</b>			
<b>Loss</b>	<b>Cause</b>			
<b>Extent of Survival</b>		Not known to have been previously identified by UKHO or PLA, and not mapped as a feature or obstruction. Located on the northern edge of the dredged channel. The features are prominent enough to be identified by multibeam bathymetry, and are associated with a large magnetic anomaly, indicating they area possibly ferrous debris. The size of the magnetic anomaly indicates there may be other buried ferrous debris in the vicinity.		



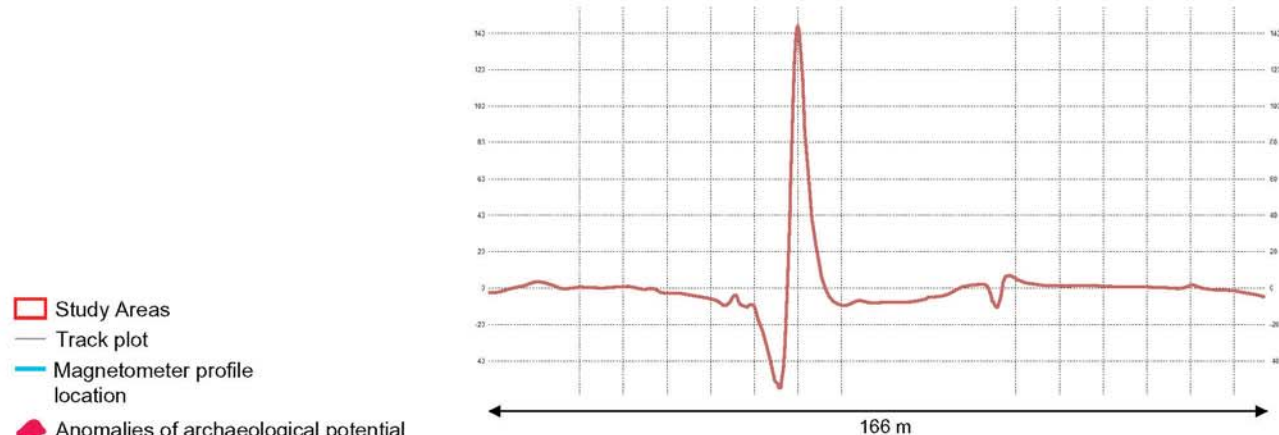
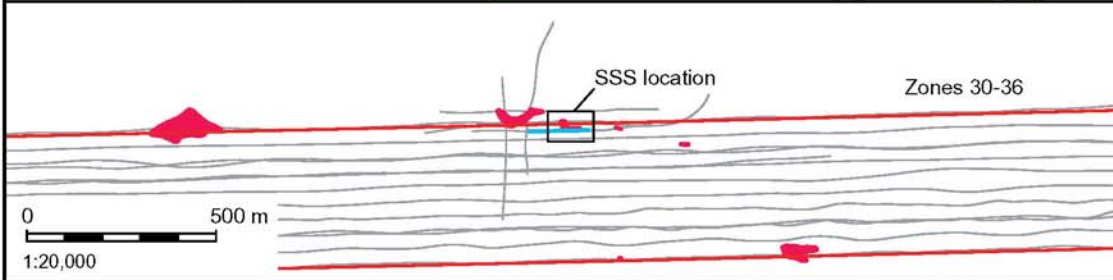
7458, 7459 & 7460: Sidsescan sonar mosaic



7458, 7459 & 7460: Sidsescan sonar waterfall



7458, 7459 & 7460: Multibeam bathymetry image, x10 vertical exaggeration, facing north



7458, 7459 & 7460: Magnetometer profile

- Study Areas
- Track plot
- Magnetometer profile location
- ◆ Anomalies of archaeological potential
- Area searched



Drawing projection: UTM WGS84 z31N.  
Contains Ordnance Survey data © Crown Copyright and database right 2012.  
This material is for client report only © Wessex Archaeology. No unauthorised reproduction.

Date:	08/03/12	Revision Number:	0	Illustrator:	KJF
Path:	W:\Projects\London Gateway\LG 2012\Drawing Office\Report figs\Diving Clearance				

# LONDON GATEWAY CLEARANCE PROGRAMME

## DIVING INVESTIGATIONS

### FIELD REPORT 84350

Zone 105  
Data Sheet 24  
Ref: 7530

## 1. INTRODUCTION

Sidescan sonar and magnetometer evidence: The site consists of an unusual shaped seabed mound (**7530**), possibly a curvilinear feature with sediment deposited over it. It mainly stands out on the sidescan sonar data but very tentatively identified by the multibeam bathymetry. The feature appears isolated in an area of poorly defined sand ripples and is orientated at 90 degrees to the direction of the crests of sand waves. The dimensions of feature **7530** are 21m long by 4.3m wide with a discernable height of 0.4m

Previous investigation: The site is not known to be previously identified by the UKHO or PLA, and is not mapped as a feature or obstruction.

Dive objectives: Establish the nature and character of the sidescan sonar anomaly and identify any further finds in the area and the association of the finds to the anomaly, *i.e.* identify the type/character of the site; confirm the extents of the site; establish the presence/absence of coherent structures and feature, and of further small finds; undertake light cleaning, probing and spot sampling (if applicable) to confirm the nature of the material; and achieve a basic record of the layout of the site by annotating sidescan sonar records.

## 2. DIVE DETAILS

Date: 27<sup>th</sup> February 2012  
Location: Within the dredged channel  
Position of shot: 384314E, 5719914N  
Duration in minutes: 28 minutes bottom time  
Underwater visibility: nil  
General description of dive: High water slack

## 3. EVIDENCE

The diver made bottom 5m north of the geophysical position of feature **7530** and proceeded to carry out circular searches from the base of the shot out to 20m with assistance from diver tracking. The diver found a small fragment of worked wood loose on the seabed c. 5m south-east of the shot (Find **004**). No other debris or

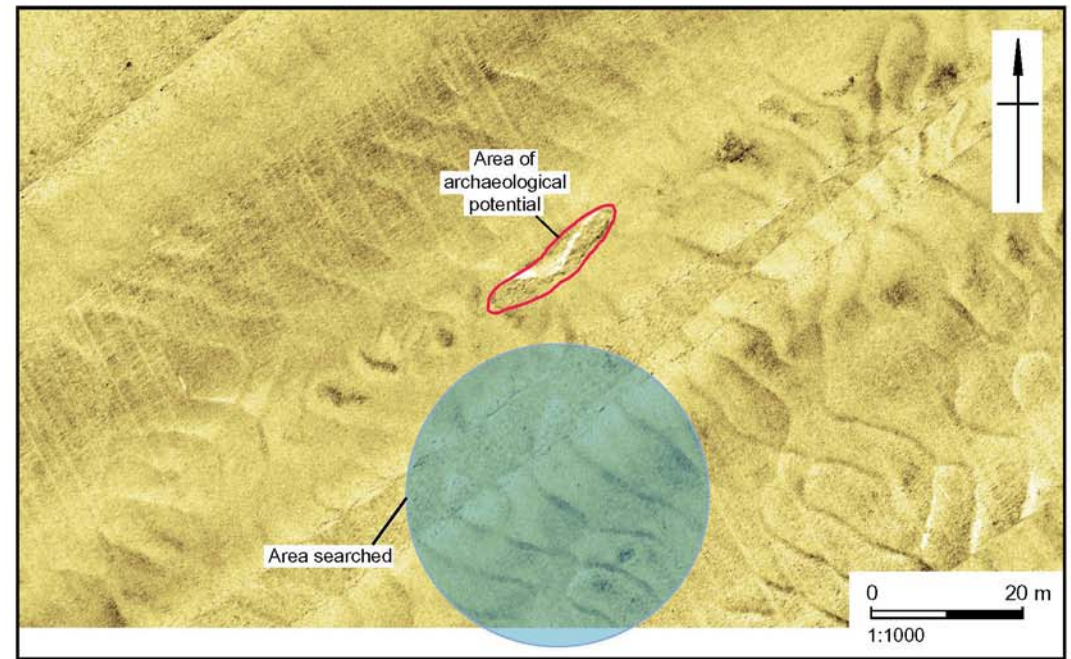
features were located during the dive. The seabed in the search was made up of small sand waves consisting of fine sand. This is consistent with the general seabed as seen in the sidescan data. Find **004** was a small fragment of worked wood 300mm long with evidence of a small iron nail. The wood was water worn but there was no evidence of gribble deterioration. It was loose on the surface of the seabed and therefore probably a stray piece of timber.

#### **4. INTERPRETATION**

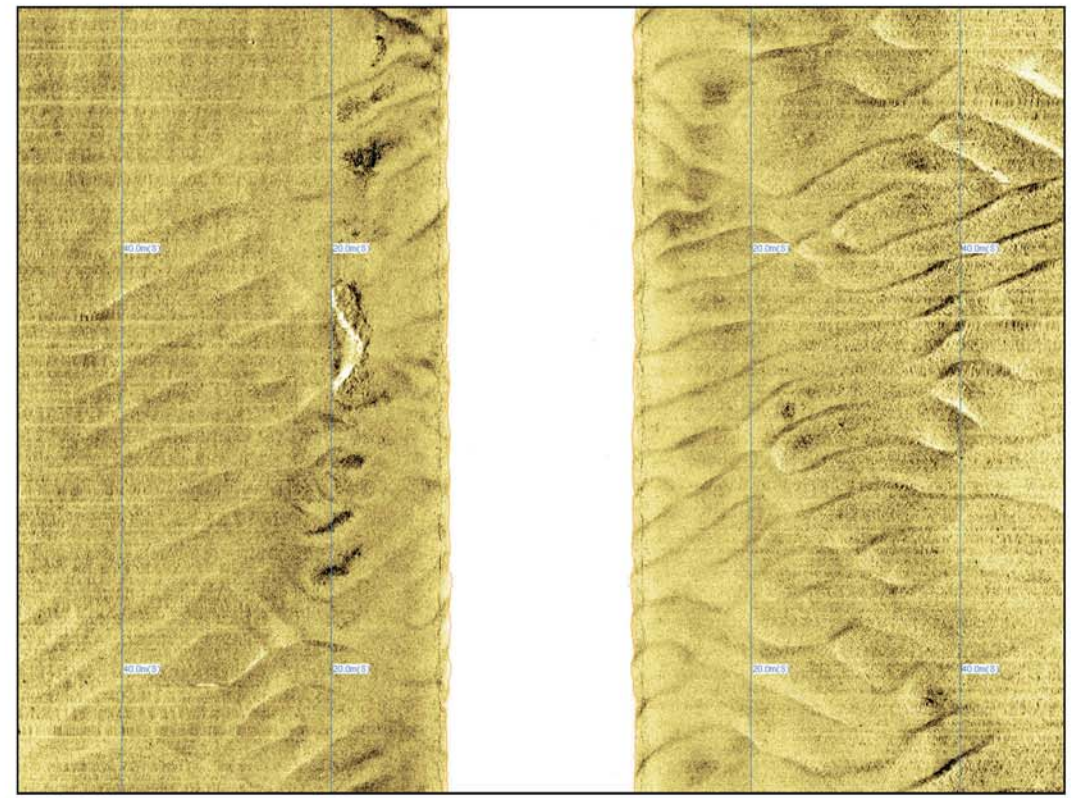
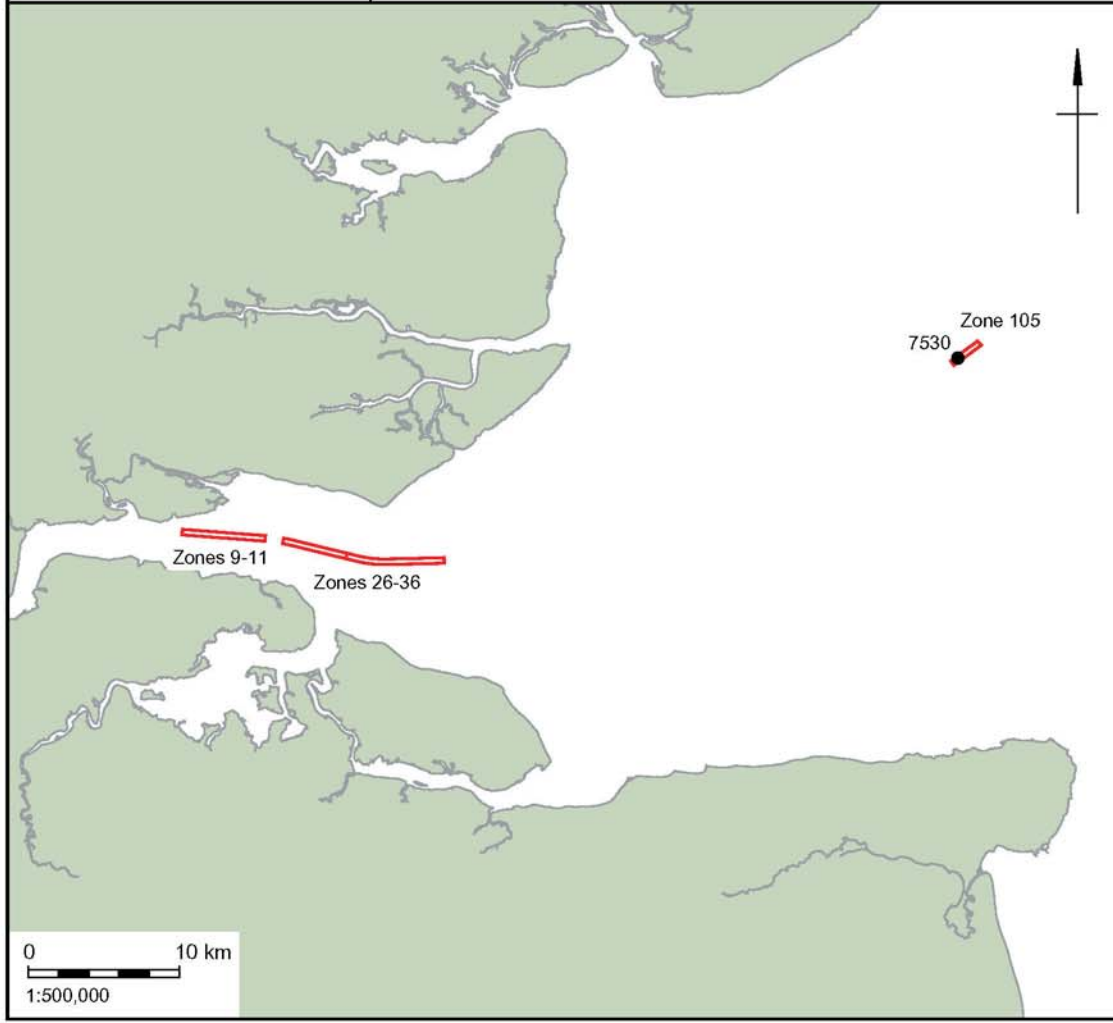
A 20m radius was searched around the geophysical position of feature **7530** and no substantial features were observed through out the dive other than a small fragment of wood. This would suggest the feature is no longer present on the seabed or has been buried. However, since the diving fieldwork was undertaken it has been found that there was an error made in the positioning of the geophysical feature **7530**. The result has been that the position dived was not the position of the feature identified in the sidescan, and was in fact some 30m to the south of the anomaly identified in the geophysics. Thus, the correct position of the feature has not been investigated.



<b>Location</b>		384314 E, 5719914 N (UTM31N)	<b>Zone</b>	105
<b>Archaeological Importance</b>		High (New site)		
<b>Geophysical survey dimensions and notes</b>		Dimensions: 21.0m x 4.3m x 0.4m. An unusual shaped seabed mound, possibly a curvilinear feature with sediment deposited over it, mainly identified on the sidescan sonar data though very tentatively identified by the multibeam bathymetry. The feature appears isolated in an area of poorly defined sand ripples, and is orientated at 90 degrees to the direction of the crests of the sand ripples.		
<b>Build</b>	<b>Type</b>	Not confirmed as a structure.		
	<b>Construction</b>			
	<b>Dimensions</b>			
	<b>Shipyard</b>			
<b>Loss</b>	<b>Cause</b>			
<b>Extent of Survival</b>		Not previously known to have been identified by UKHO or PLA, and not mapped as a feature or obstruction. Located within the dredged channel, the feature is within an area of mobile sand and could represent a mound of partially buried debris or a small structure. The lack of an associated magnetic anomaly indicates any structure or debris present is likely to be non-ferrous in nature.		



7530: Sidescan sonar mosaic



7530: Sidescan sonar waterfall

- Study Areas
- ◆ Anomalies of archaeological potential
- Area searched



Drawing projection: UTM WGS84 z31N.  
Contains Ordnance Survey data © Crown Copyright and database right 2012.  
This material is for client report only © Wessex Archaeology. No unauthorised reproduction.

Date:	08/03/12	Revision Number:	0	Illustrator:	KJF
Path:	W:\Projects\London Gateway\LG 2012\Drawing Office\Report figs\Diving Clearance				

# LONDON GATEWAY CLEARANCE PROGRAMME

## DIVING INVESTIGATIONS

### FIELD REPORT 84350

Zone 105  
Data Sheet 25  
Ref: 7534, 7535

## 1. INTRODUCTION

Sidescan sonar and magnetometer evidence: The site consists of two irregular dark reflectors (**7534** and **7535**) located approximately 25m apart and associated with a small but distinct 8nT magnetic anomaly. Despite their small size and lack of measurable height, both stand out clearly from the surrounding featureless seabed and were identified on more than one survey line. The dimensions of feature **7534** are 5.4m long by 2.7m with no discernable height. The dimensions of **7535** are 4.1m long by 2.7m wide with no discernable height. There is a smaller feature 34m to the north-west of feature **7534** that - in light of dredged material from the area - has also been considered worthy of underwater investigations.

Previous investigation: The site is not known to be previously identified by the UKHO or PLA, and not mapped as a feature or obstruction. However, this is an area where remains associated with a World War II German Junkers Ju 88 reconnaissance aircraft have been recently recovered during dredging activities.

Material recovered from Strike **8024**: Analysis of 45 pieces of debris recovered via the dredger has been identified as originating from a heavily constructed aircraft. Five larger pieces were aluminium and steel framing pieces up to 2m in length and 10mm thick. In some instances the frames were fastened to a thinner outer layer - possibly the 'skin' of the aircraft - and an inboard layer 'T' shaped in section. Stamped close to the rivet fasteners on one piece of wreckage are a sequence of serial numbers and manufacturing markers. These serial numbers and markers have been identified as coming from a German Junkers 88, a common 'work horse' of the Luftwaffe produced in their thousands and in many variants during WWII. The most diagnostic piece recovered from the site has been an aluminium sheet with a plate fastened to it with the details of the German Lens makers Carl Zeiss, binocular lens manufacturer Busch Rathenow and the letters Fk.30. This relates to a specific aerial photographic reconnaissance system used by the Luftwaffe. This type of system was used on many aircraft including the Junkers Ju 88D.

Dive objectives: Establish the nature and character of the sidescan sonar anomaly and identify any further finds in the area and the association of the finds to the anomaly, *i.e.* identify the type/character of the site; confirm the extent of the site; establish the presence/absence of coherent structures and features, and of further small finds; undertake light cleaning, probing and spot sampling (if applicable) to confirm the nature of the material; and achieve a basic record of the layout of the site by annotating sidescan sonar records.

## 2. DIVE DETAILS

Due to the distance between each feature three separate dives were carried out on the site to ensure all of the geophysical anomalies were investigated. Each anomaly was given a dedicated dive for investigation.

Dive: 33 on feature **7534**

Date: 17<sup>th</sup> February 2012

Location: Within the dredged channel

Position of shot: 385138E, 5720618N

Duration in minutes: 42 minutes bottom time

Underwater visibility: nil – 0.2m

General description of dive: Low water slack

Dive: 50 on feature **7535**

Date: 29<sup>th</sup> February 2012

Location: Within the dredged channel

Position of shot: 385147E, 5720623N

Duration in minutes: 52 minutes bottom time

Underwater visibility: nil – 0.05m

General description of dive: Low water slack

Dive: 51 on feature north-west of **7534**

Date: 1<sup>st</sup> March 2012

Location: Within the dredged channel

Position of shot: 385144E, 5720625N

Duration in minutes: 51 minutes bottom time

Underwater visibility: nil – 0.2m

General description of dive: Low water slack.

## 3. EVIDENCE

### Dive 33

The diver made bottom c. 12m north-east of feature **7534** and proceeded to carry out circular searches from the base of the shot. During the dive, the diver located two distinct areas of exposed debris south-west of the anchor. The first area was c. 15m from the anchor consisting of a v-shaped section of a larger buried and curved thin metal object. The edge of the object had a riveted joint and appeared to be firmly buried at one end as it could not be moved. It was located in very firm sand which was difficult to excavate by hand. Within 1m of this was a piece of elastic rubber-like-tube and a thin broken end of wire that was also partly buried and could not be pulled out from the seabed.

Within 3-5m west-north-west more debris was located consisting of a large upstanding section of partly articulated metal structure. Within close proximity were other partly buried thin metal frame-like objects protruding up to 1m from the seabed at various angles. These too had evidence of riveting. More rubber tubing and other unidentifiable objects were found around this area of debris. The exposed structure

was at least 2.5m by 1.5m and appeared to extend further but insufficient time was available to investigate this fully.

Three artefacts (**001**, **002** and **003**) were recovered to the surface to assist in the identification of the site. All of the artefacts removed were loose and exposed. Artefacts **001** and **002** are small fragments of aluminium-like metal sheet with small riveted holes and evidence of dark green-grey paint on one side. These artefacts are consistent with materials used on aluminium skinned aircraft. Artefact **002** is small fragment of a shaped wooden object. It appears to be a laminate type of wood or plywood. Possibly designed to fit or support a large diameter pipe or small cylinder.

### **Dive 50**

The diver made bottom c. 10m north of feature **7535** and proceeded to carry out circular searches from the base of the shot with the assistance of diver tracking. The diver located wreckage in an area 15m -11m south of the shot. The area of exposed wreckage covered by the diver appeared to consist of various components including; thin metal riveted sheets; box shaped struts; tubular and pipe-like pieces; hinged and moveable parts; canvas material; rubber strips; electrical wiring and numerous pieces of wood fragments including a large piece that was recovered to the surface (**007**).

The most upstanding section of wreckage was 0.5m proud of the seabed. It had a clean surface, curved at one end and buried at the other. It was exposed a total length c. 1m and was c. 300mm wide. The exposed end was curved and similar in form to the edge of a wing. In close proximity was a hinged or jointed fragment of metal. This joint could be moved up and down with ease and again appeared to be attached to something beneath the sand. It is possible this fragment could be associated with an aileron, rudder or elevator assembly. Next to it and flush with the seabed was a tubular feature with a diameter of c. 100mm. This felt as if it was a component of an engine, possibly part of an exhaust as it was firmly attached to something solid. As it was flush with the seabed, the structure that it was attached to was predominantly buried. Around these two features were lots of bent and broken thin metal riveted sheets. None of this material was loose but instead was firmly attached suggesting more wreckage remains buried.

Amongst the main body of wreckage were various component parts that could be associated with the interior of an aircraft. This included numerous fragments of plywood, rubber strips and electrical cable and wiring. The rubber strips and wiring appeared to be firmly attached to structure beneath the seabed but much of the wood was loose and fragile. Also, amongst the wreckage was an area of canvas or similar type material. This was either snagged or mainly buried as it was firmly attached to the wreckage.

At the end of the dive a wooden artefact (**007**) was located loose within a shallow scour. It had the feel of an angular face, possibly being a section of a broken propeller. As the artefact was loose and exposed it was deemed necessary to recover as to avoid loss and deterioration due to mechanical and microbial action.

## **Dive 51**

The diver made bottom 5m south-west of the geophysical anomaly and proceeded to carry out circular from the base of the shot out to 25m. The diver covered the area of the geophysical anomaly but nothing was found. The seabed was firm and sandy with frequent sand ripples. As no features were located by the diver it is assumed the anomaly has been buried since the time of the geophysical survey.

## **4. INTERPRETATION**

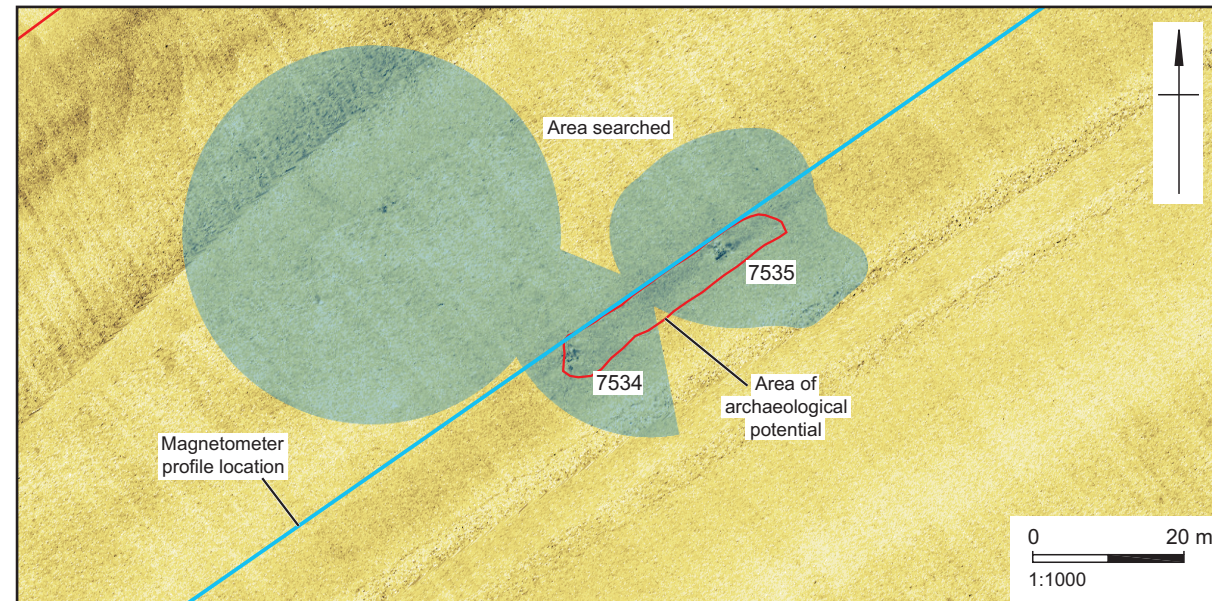
The evidence analysed from the geophysical data and three inspection dives on the site confirm there are two distinct areas of exposed wreckage. The description of the wreckage and analysis of the recovered artefacts confirm that this is the site of a crashed aircraft. The recovered finds are also similar in construction and reveal the same shades of dark green-grey paint as that found on the material recovered from strike **8024** by the dredger. Therefore it is highly likely that the site is the remains of a WWII German Junkers Ju 88 reconnaissance aircraft. The distance between the two features suggests they are separate pieces of wreckage. However, the similar components found on both features confirm they are most probably associated with the same aircraft. It has not been possible to determine if the two features became separated when the aircraft crashed or due to the movement of the dredge head through the site.

Both features **7534** and **7535** are areas of partially exposed broken-up aircraft wreckage. In both areas, wreckage which was protruding from the seabed appeared to be firmly attached to structure beneath the sand. This would suggest that more wreckage lies beneath the seabed than exposed. All the material recorded by the diver and material recovered by the dredger had clean surfaces. This suggests recent exposure. Prior to the recent disturbance of the seabed the remains of this aircraft had probably remained buried for a sustained period of time, possibly soon after it crashed.

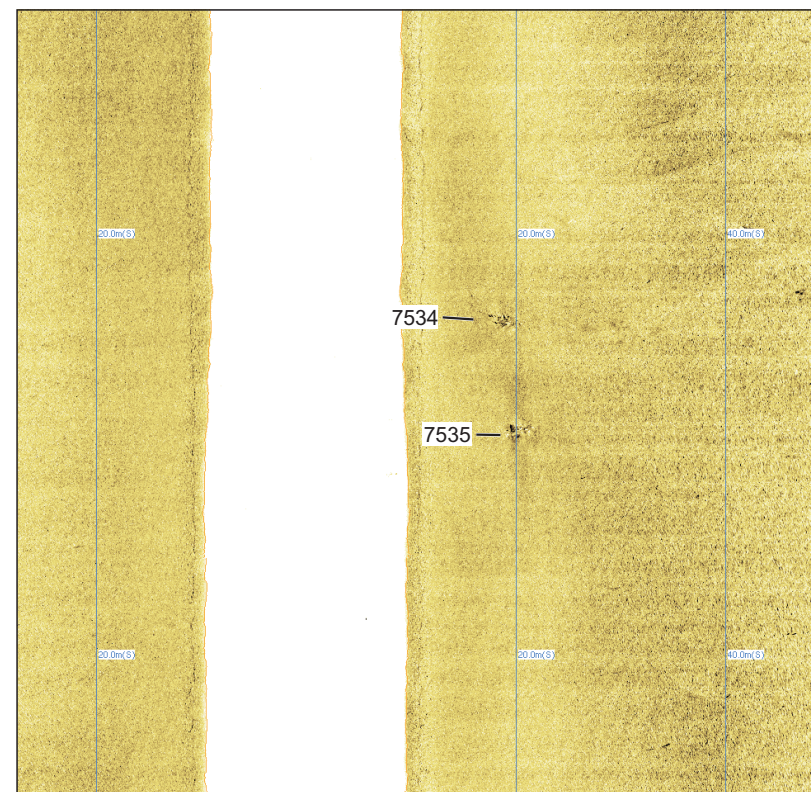
Due to the poor visibility on the site it is extremely difficult to identify exactly which parts of the plane are exposed on the seabed and how much may lie buried beneath the seabed. However, it can be assumed (due to the difficulties of moving exposed features) that more of the aircraft remains survive below the seabed than are exposed on the surface. As this is the likely site of a WWII German aircraft with the potential of further buried structure, there is the possibility of human remains existing on the site. For this reason, any further actions affecting the site should be undertaken with regard to the requirements of the Protection of Military Remains Act 1986.

SHEET 25: WA ID 7534 & 7535 DEBRIS

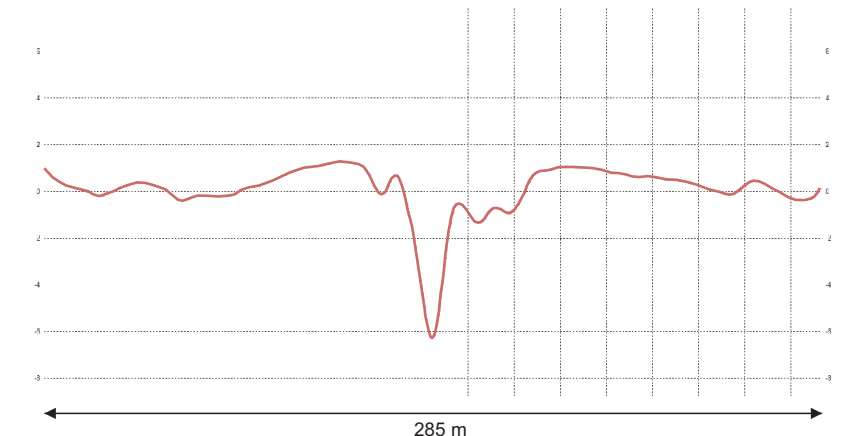
<b>Location</b>		385130 E, 5720611 N (UTM31N) 385151 E, 5720625 N (UTM31N)	<b>Zone</b>	105
<b>Archaeological Importance</b>		High (New site)		
<b>Geophysical survey dimensions and notes</b>		Dimensions: 5.4m x 2.7m x 0.0m. Dimensions: 4.1m x 2.7m x 0.0m. Two similar, irregular dark reflectors located approximately 25m apart and associated with a small but distinct 8nT magnetic anomaly. Despite their small size and lack of measurable height, both stand out clearly from the surrounding featureless seabed and were identified on more than one survey line.		
<b>Build</b>	<b>Type</b>	Not confirmed as a structure.		
	<b>Construction</b>			
	<b>Dimensions</b>			
	<b>Shipyard</b>			
<b>Loss</b>	<b>Cause</b>			
<b>Extent of Survival</b>		Not previously known to have been identified by UKHO or PLA, and not mapped as a feature or obstruction. Located within the dredged channel and area from which aircraft remains have previously been recovered (Strike 8024). The small but distinct nature of the features, alongside the small magnetic anomaly, indicates they are also possible pieces of debris from an aircraft.		



7534 & 7535: Sidescan sonar mosaic



7534 & 7535: Sidescan sonar waterfall



7534 & 7535: Magnetometer profile

- Study Areas
- Track plot
- Magnetometer profile location
- ◆ Anomalies of archaeological potential
- Area searched

