A Geophysical Survey of
Duloe Stone Circle
Duloe
Cornwall

View of Duloe stone circle looking northeast (Heritage Gateway)

By

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Southeast Kernow Archaeological Survey
Report No.**7**
SMC No. C094
Historic England License Nos. **SL00065477** and **SL00134028**

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1.0 Introduction

A magnetometer survey and resistivity survey (License nos. SL00065477 and SL00134028) of Duloe Stone Circle (NGR SX 23545 58320; SMC No. C094), Duloe, Cornwall was undertaken by Peter Nicholas and Les Dodd from the Tamarside Archaeology Group and Cornwall Archaeological Society on behalf of Dr Catherine Frieman of the Australian National University (ANU), Canberra, and James Lewis, Glasgow University. The survey took place during 2013 and 2016 with the consent of the landowners Mr Ashley Taylor, Assistant Land Steward, on behalf of the Duchy of Cornwall. The survey was carried out as part of a wider project of the Southeast Kernow Archaeology Survey (SEKAS).

Duloe Stone Circle is the smallest of all the stone circles found in East Cornwall and is the only identified stone circle in the area located south of the edge of Bodmin Moor and between the rivers Fowey and Tamar.

1.1 Rationale

Despite many generations of archaeological fieldwork in Britain's southwestern peninsula and Cornwall's central role in later prehistoric exchange networks, the prehistory of the south-eastern part of the county has not been exposed to the same amount of modern archaeological investigation. The SEKAS project aims to develop a better understanding of the prehistoric landscape of this region which links the metal-rich uplands to the English Channel. The study region for the SEKAS project comprises of the area between the Tamar and the Fowey rivers and south of the A38, and the period from the Neolithic through to the later Iron Age.

The site at Duloe is a Scheduled Monument (SMC No. C094) and as such any archaeological investigation requires a Section 42 License. The license was obtained from Mr Daniel Ratcliffe, Inspector of Ancient Monuments of the South West Office Historic England on the 20th December of when 2016 (Historic England Ref: AA/071000/5).

1.2 Objectives

The objectives of the geophysical survey were to:

Undertake a full magnetic and resistivity survey of the monument.

Establish the character and extent of subsurface remains within the Scheduled area.

1.3 Site Location

Duloe Stone Circle is located at the southern end of the village of Duloe, in the parish of Duloe and is situated in the district of Caradon in southeast Cornwall (Fig. 1).

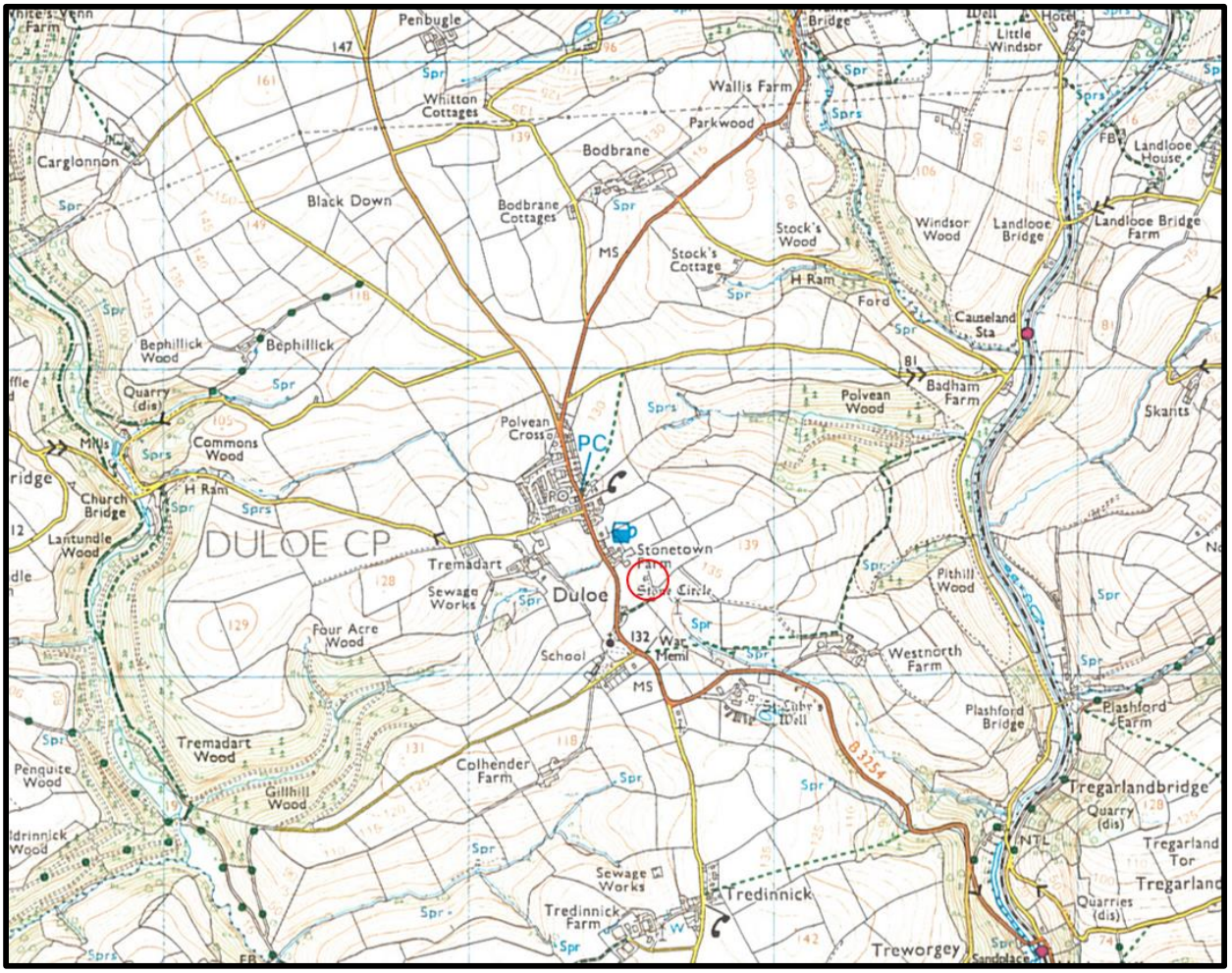

Figure 1: The site location circled red (© Ordnance Survey).

The monument comprises eight quartz stones, seven of which are still upstanding, and is sited on a gentle southwest-facing slope on a ridge above a small stream which leads into the East Looe River. The village of Duloe is located *c*.400m to the north. The surrounding landscape is characterised by irregularly shaped fields which are used for a mixture of arable and pasture farming. The landscape is bisected by several river valleys, and the stone circle is located within an area that has been defined by the Historic Landscape Character Assessment (HLC) as Medieval Farmland (Herring, 1998). In the immediate vicinity, small farms and villages predominate and are linked by narrow lanes and roads which are usually enclosed by high hedges.

The site lies *c*.131m OD and the underlying geology is Bovisand Formation consisting of slaty mudstone, with thin sandstone beds and sporadic thin limestone beds. Packets of quarzitic sandstone beds are present in the form of the Upper and Lower Longsands Sandstone members. The Bovisand Formation is a sub-group of the Meadfoot Formation (British Geological Survey, 2002).

2.0 Archaeological Background

2.1. Duloe Stone Circle

Stone Circles in Ireland and Britain date from *c*.3500 BC to *c*.1500 BC (Burl, 2000), although recent evidence from Ireland indicate their construction extends into the Late Bronze Age (O'Brien in Bradley and Sheridan 2005: 278). There are 16 stone circles on Bodmin moor (Johnson and Rose 1994: 31) and southeast Cornwall and only one, at Duloe, is found south of the moor. The circle is the smallest in Cornwall, is slightly oval in plan and measures 11.7m by 10.2m. The circle is comprised of eight white quartz stones of varying height. Today it is located within a field used for pasture on the southern edge of the village of Duloe. The antiquarian reports concerning the stone circle can be divided into two periods: during the first half of the 19th century the monument was described and mapped before a hedge which bisected it was removed. After its removal in the mid-19th century we find reports describing the removal of the hedge and what was found during that process as well as the publication of several detailed plans.

2.2. Early 19th Century Accounts

The site was first mentioned in 1801 by Britton and Brayley who wrote,

> Within a furlong north-east of the church [of Duloe], is a small Druidical Circle, that has not hitherto been noticed. It consists of seven or eight stones, one of which is about nine feet in height: four are upright, the others are either broken, or concealed by a hedge, which divides the circle part being in an orchard, and part in an adjoining field. We are unable to state its dimensions accurately, but its diameter does not appear to exceed twenty or twenty'-five feet (cited in Dymond 1882: 149-50).

After this, the circle is mentioned several times in the first half of the 19th century in Bond's *Looe* (1832), Penaluna's *Survey of Cornwall* (1838) and Allen's *Liskeard* (1856); although each of these descriptions was based upon Britton and Brayley's 1801 observations with no new material added (Dymond 1882: 149; Tregelles 1906: 400). It was in 1856 with the publication of Murry's *Handbook of Devon and Cornwall* that a new observation was added. The first of Murry's descriptions is in Dymond 1882,

> At Duloe, 2 m [miles]. beyond the village of St. Keyne, on a farm opposite the church., and in a field, a gun-shot…of the road, are the remains of an ancient circle of large upright stones, about 30 feet in diameter. The old monument, however, is in a very mutilated condition. A hedge bisects it, one stone lies prostrate in the ditch, five only stand (Murry 1856: 5 cited in Dymond 1882: 149).

The second is found in Tregelles's *The Stone Circles', Victoria County History, Cornwall* (1906),

> A hedge bisects it, one stone lies prostrate in the ditch, five only stand upright, and three appear to be wanting to complete the circle. The stones, which are rough and unhewn, are principally composed of white quartz, and one is about 9 ft. in height (Murry 1856: 5 cited in Tregelles 1906:401).

The site is first depicted on Mclauchlan's estate map in 1845/46 (see Figure 3, below) and is described, as Britton and Brayley did, as a 'Druidical Circle'. Mclauchlan was a trained surveyor and a member of the Corps of Military Surveyors and Draftsmen; and, following their disbandment, he worked for the newly established Ordnance Survey. He spent two periods working in Cornwall, the first in the 1830's, adding geological information to the first Ordinance Survey Sheets and the second in the mid 1840's for the Accessional Manors Commission which was concerned in Cornwall with the landholdings of the Duchy of Cornwall. The map below (Figure 3) was drawn during his second stint in Cornwall and depicts Duloe Stone circle with seven upstanding stones and bisected by a hedge. Mclauchlan describes the circle as follows,

> The Druidical Circle is a small one and stands about two hundred and sixty yards to the North East of the Church. It appears there were eight stones, six of which are still standing; the destruction of the others proclaims the overthrow of the altars of Baal. The width of the circle may have been about fifteen feet (Mclauchlan 1846).

As can be seen there exist discrepancies between the descriptions, and these mainly focus around the size of the circle from between 15 to 30 feet and the number of stones which are standing, either four (Britton and Brayley), five (Murry) or six (Mclauchlan) depending on who is writing. In the case of Mclauchlan, a trained surveyor, there is inconsistency between the number of stones and the size of the circle described above and the number depicted on the map.

There are several reasons for these discrepancies. First, as noted above, during the first half of the 19th century the monument was bisected by hedge and half of the circle was located within an orchard. The hedge and the orchard could effectively have obscured some of the stones and made measuring the circle almost impossible. Second, the individuals describing the monument might not have been allowed onto both the field and the orchard and so were left trying to estimate the size and number of stones which comprised the circle. Finally, some of these visits could have been written down at some point after the event which might have affected the accurate ability to recall the visit.

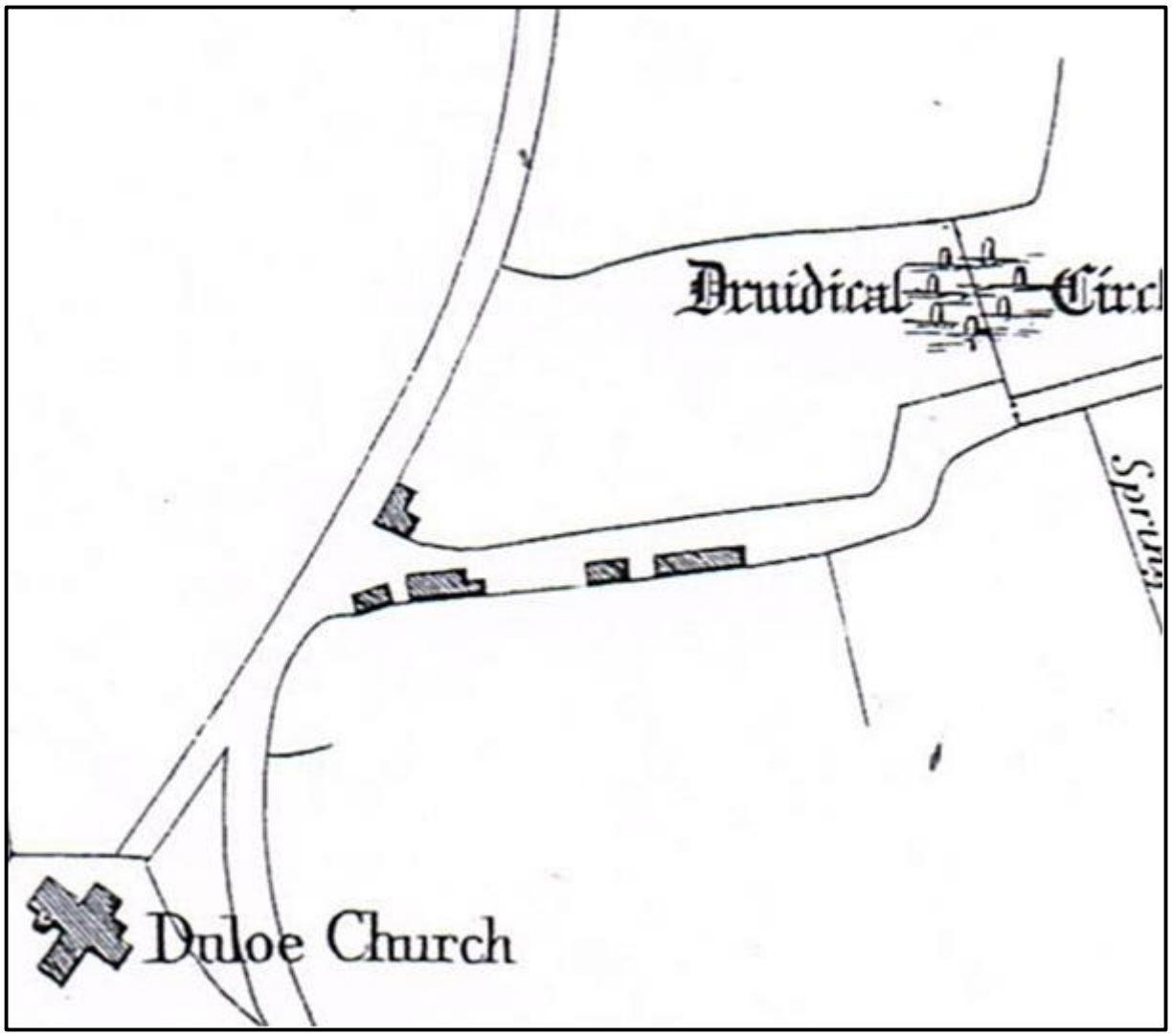

Figure 2: Mclauchlan's Map of Duloe indicating the site in *c.*1845/46

Mclauchlan's description and map appear to be the last records of the monument before the hedge was removed. What these early descriptions inform us of is that the circle was in a very damaged state. Stones had been knocked down and a hedge had been constructed through the circle which clearly shows a lack of respect for the monument.

2.3. Accounts from the mid-19th century and after

In 1858 the hedge which bisected the circle was removed (Dymond 1882: 150) and archaeological deposits were uncovered.

> About the year 1858 the hedge was removed, and in 1861 (or 1863) the fallen stones were set up, all but the largest (No. i), which was broken in the process. When digging to raise this stone the workmen discovered, at about 3 feet deep, a small cinerary urn, buried in loose earth by the side of the stone, and containing human bones, some entire and 3 inches long, which crumbled to dust on exposure to the air. (Tregelles 1906: 401)

Borlase (1872: 128 & 129) relates two more accounts of the finding of the urn and the removal of the hedge. The first was from Mr. Pedler who told him that, in the year 1861 "an attempt was made to set up the fallen stones" and further underneath one of these was found "cinerary urn" (Borlase 1872: 129). A Mr. Lawrence from Launceston added further information by recording an 'internment' was found during the removal of the hedge. Although it is possible Mr. Lawrence was not referring to the 'urn' but another burial. Borlase concludes that the hedge covered a barrow 'raised within the circle'(1872: 129).

Borlase also depicted a drawn sherd of potter purportedly from the pot recovered at Duloe (Borlase 1872: 127-128). This was identified by Patchett as Class G Deverel-Rimbury style pot dating to after 750BC (Patchett 1946: 47). Today it is now known that Deverel-Rimbury ware appeared at the end of the Early Bronze Age and is found both on domestic sites and in cremation cemeteries (Gibson 2002: 104-05), but is extremely rare in the south west peninsula. Patchett's classification has been replaced and following more recent ceramic study would now be reclassified as Trevisker ware (see Quinnell 2012; Jones *pers comm*). Trevisker Ware was used during the Early Bronze Age in barrows and ceremonial monuments (Gibson 2002; Parker-Pearson 1990: 5) and so we can say that at least one phase of activity at the site dates to the Early Bronze Age in the first half of the second millennium cal BC.

William Collins Lukis was a cleric and noted archaeologist and antiquarian who surveyed many monuments in both England and France and published his surveys. Lukis, along with his friend Henry Dryden, recorded many stone circles and prehistoric monuments in Britain, notably in Scotland. Their work is characterized by employing a standardized format. They produced very detailed plans comparable with those produced today using modern equipment (Sebire 2009:129).

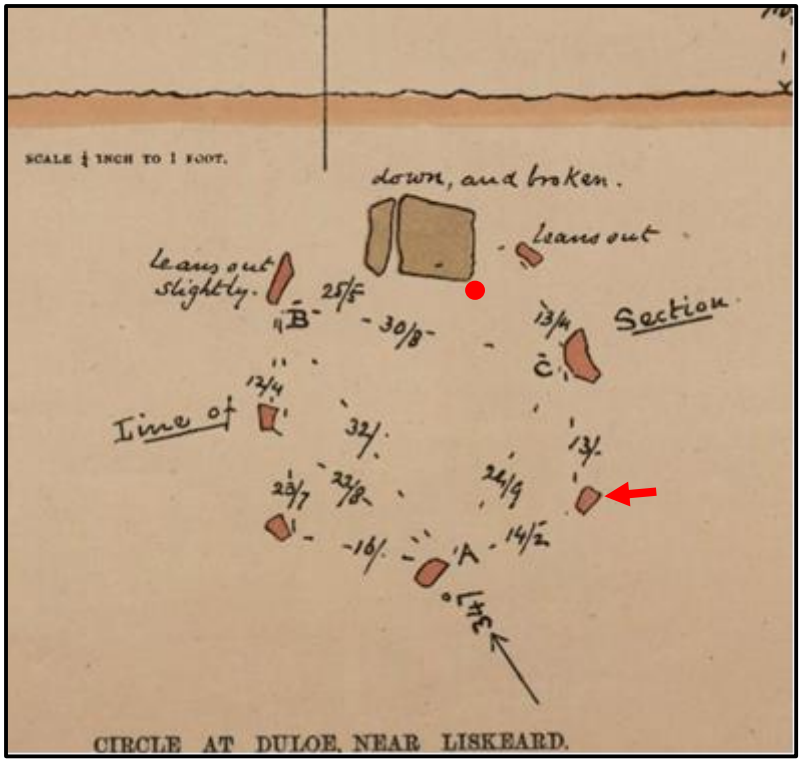

Figure 3: Lukis's plan of Duloe Stone Circle (Lukis, 1885). Arrow indicates small stone likely covered by hedge until its 1858 removal. Red dot is the presumed find location of the cinerary urn based on Dymond's (1882: 151) account.

By the time, Lukis drew this plan, the hedge had been removed and the monument looks much like it does today (although the bearing on the plan should read 327dgr). The broken stone at the top of the plan is a buff colour and the upstanding stones are brown. The two stones either side of the broken one still lean out, as can be seen on the picture on the cover of this report. The stone referenced by the red arrow is much smaller than the other and it too can clearly be seen on the right side of the front cover picture.

The plan also depicts another hedge running close to its northern side, but this has since been removed. Dymond recorded the stone circle with considerable accuracy; however, his plan can add little to the above except to indicate where the 'cinery urn' was found (1882: 151) during the removal of the hedge. As noted above, his corresponds with the red spot on Figure 3.

2.4. Archaeological work in the wider area

Within the wider area, there has been little archaeological work; however, notable excavations include a Middle to Late Bronze Age enclosure that was found during construction work at Liskeard Junior and Infant School. The enclosure ditch was heavily truncated, and it was not possible to identify an associated bank. The monument was dated based upon pottery and charcoal which produced a date range of 1396-840 BC (Jones 1998-99:67). During excavations on St. George's Island (Looe Island) in 2009, Channel Four's programme 'Time Team' found evidence for a Romano-British enclosure (Wessex Archaeology 2009: 22). A multivallate hillfort at Bury Down Lanreath, was investigated through geophysical survey and excavation by Keith Ray in the 1990s (Ray, 1994a; 1994b; 2001). Ray's geophysical survey revealed evidence of interior features and the segmentation of the outer ditch, interpreted as the remains of a Neolithic causewayed enclosure which, in turn, surrounds the extant later Iron Age enclosure (Ray 2001:55). Stabilisation work was undertaken along the inner bank; however, no excavation was carried out but localised plans and sections were drawn (Preston-Jones 1996). A complete magnetometer and resistivity survey of the monument has recently been undertaken which found little evidence of internal structure or a causewayed enclosure (Nicholas *et al* 2016).

In recent years, geophysical surveys have been undertaken at the multivallate hillfort at Padderbury Top, Menheniot, and enclosures at Bake Rings and Hall Rings, Pelynt. The features recorded within these monuments include enclosure ditches, roundhouses and pits (Lewis and Frieman 2014; Lewis

and Frieman 2015; Lewis and Frieman 2016). In 2013, a small geophysical survey and evaluation was carried out very close to the hillfort at Padderbury Top, in advance of a solar farm. This found evidence from a number of periods including, Bronze Age, Roman and Medieval periods (Hood 2013).

3.0 Methodology

3.1. Magnetometry Survey

The magnetometry survey employed 9 grids measuring 20 x 20m. The grids were sited using an EDM and extended in a north-south direction. The total area surveyed measured 0.2432ha. The survey used a Geoscan FM256 gradiometer. The zig-zag method was used and readings were taken at 0.25m intervals along traverses 1m apart. The units used were nano-Tesla (nT). The magnetometer data was processed using Geoscan's Geoplot software using standard processing methods as required.

Anomalies detected using the magnetometer are depicted as either negative or positive. The interpretation of the results is based on previous experience of the surveyors and comparison with other sites.

3.2. Resistivity Survey

The resistivity survey employed 20 x 20m grids, sited using an EDM and extending in a north-south direction. A total of 9 grids were surveyed, 6 initial grids and 3 further grids which were added later. In order to avoid the standing stones and cover the greatest area, the latter 3 grids in part overlap the original 6, meaning that the area surveyed covers a total area of 0.36 hectares. The survey used a Geoscan RM15 Resistance meter and the survey was conducted using parallel and zig zag traverses at 1 metre separation and sample intervals of 1metre. Post processing of the data was carried out using Geoscan's Geoplot Software and standard processing methods as required.

The raw resistance data was collected in units of Ohms. After downloading, the data was subject to initial review and processing to identify spikes and geological noise. The data was then clipped to 3SD, noise spikes were removed and the grids edge matched. The data was then converted to resistivity data (units of Ohm/metres) using the standard multiplier of 1.5707. Further processing was then carried out using a High Pass filter to remove gradient and Interpolation to smooth and enhance the data presentation. Anomalies detected using resistivity are depicted as either negative or positive. The interpretation of the results is based on previous experience of the surveyors and comparison with other sites. The results are presented in this report in greyscale format.

4.0 Results
4.1. Magnetometer Survey

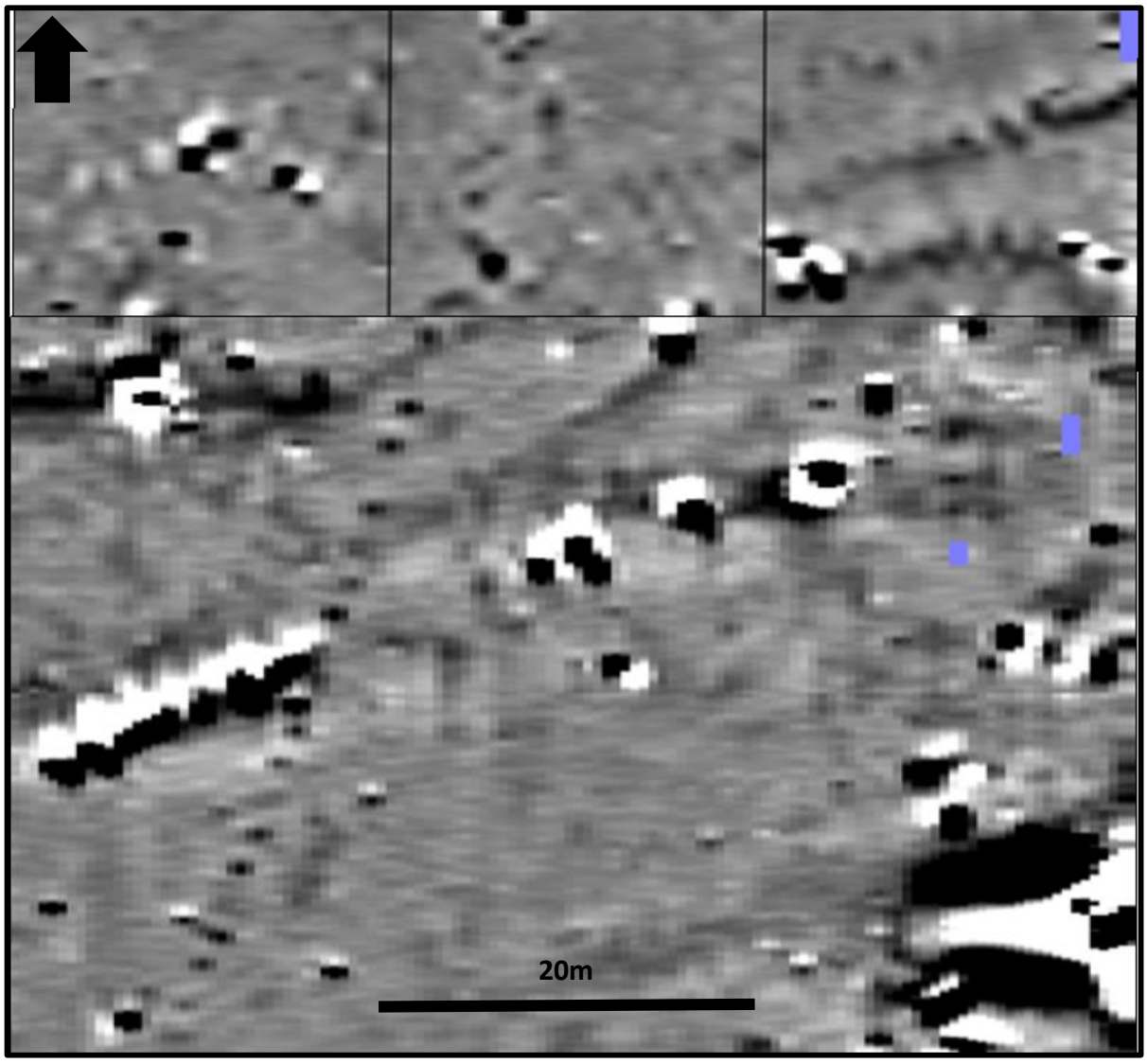

Fig 4: Raw results of the magnetic survey.

The results are presented in greyscale format. The three squares at the top of the figure are the three 20m grids and represent the final survey of the site.

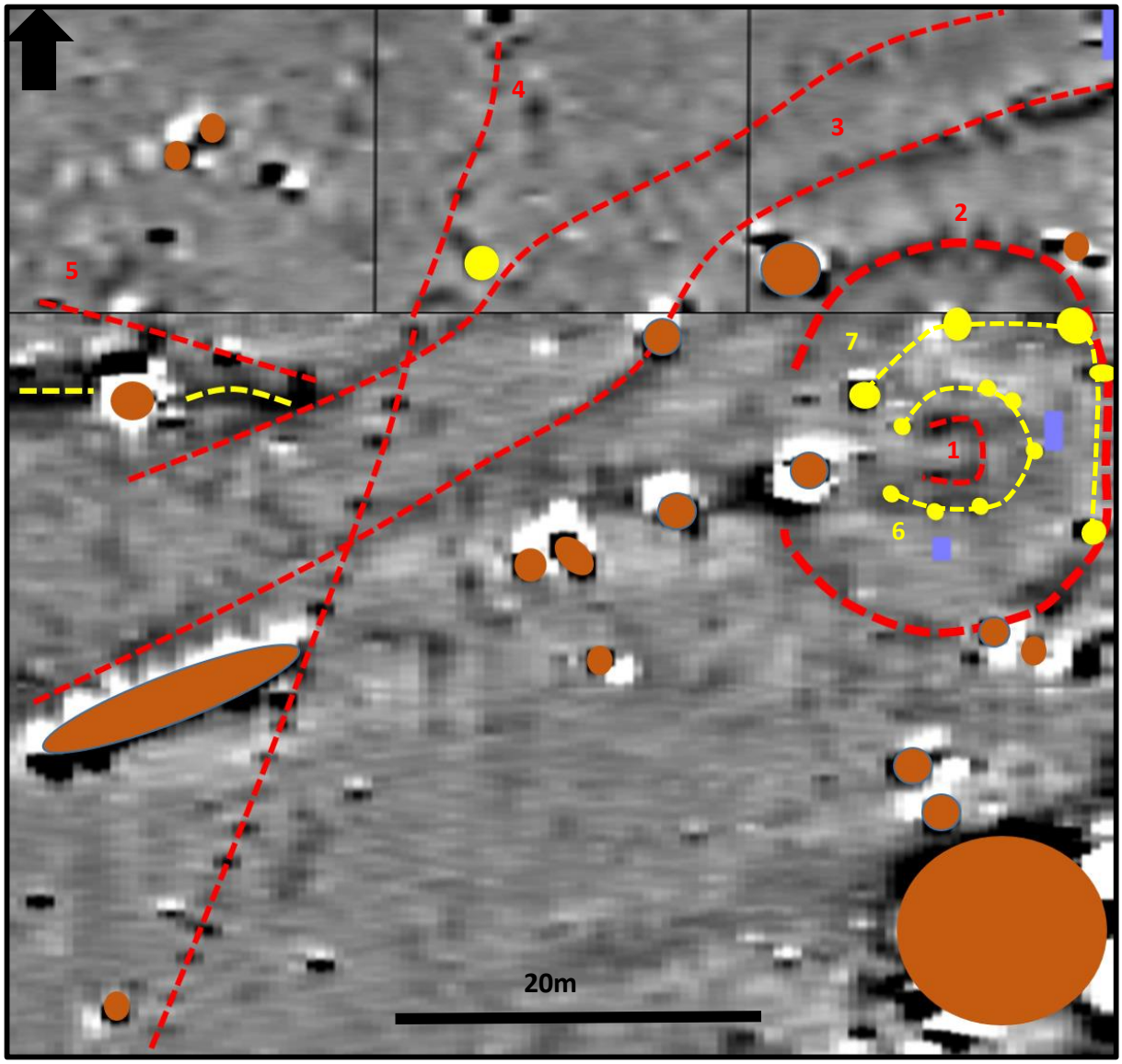

Figure 5: Identified and possible archaeological anomalies.
Red- Archaeological Features
Yellow- possible archaeological features
Brown-ferrous or evidence of burning

4.2. Archaeological Anomalies

Anomaly **1** presents a strong response and is located within the centre of the circle. It is U-shaped and measures *c*.2.5 E-W by 3m N-S. The location, shape and strength of the signal possibly suggest it is the remains of a stone setting, possibly a cist. **Two** is a circular anomaly and measures *c*.18m E-W and *c*.21m N-S and is the remains of a ditch. The ditch presents its strongest signals in the north and southern half of the monument and appears to be located *c*.4-5m beyond the stone circle. There is a possible gap at the western and on its eastern side the signal becomes less strong. This may be due to proximity of a metal fence running along a hedge.

Anomaly **3** comprises two parallel linear anomalies, is aligned NE-SW and measures at least 45m long. The anomaly extends beyond the northern and western side of the limit of survey and is probably the hedge illustrated in Lukis's drawing (see Figure 3). Anomaly **4**, represents a linear feature which is aligned NNE-SSW and measures at least 60m long. It extends beyond the northern and southern limit of the survey. **Five** is a NNW-SSE aligned linear anomaly which extends at least 16m. It appears to connect to **4** and probably contemporary. Both anomalies probably represent the remains of modern fence lines.

4.3. Potential Archaeological Anomalies

Anomalies **6-7** represent features which might signify archaeological deposits. Anomaly **6** comprises of seven small circular anomalies which surround the central feature (**1)**. They measure no more than one metre in diameter and are possibly prehistoric, representing a sequence of pits or postholes. Anomaly **7** represent five larger circular features which are located to the north and east of anomalies **1** and **6**. These again maybe prehistoric and represent the remains of pits.

Signals which have been interpreted as ferrous or possible episodes of burning are spread across the survey area. These will be discussed below; however, the large ferrous response in the southeast corner of the survey is attributed to a buried metalled road which was known to be in the vicinity as illustrated on Figure 5 (above).

4.4. Resistivity Survey

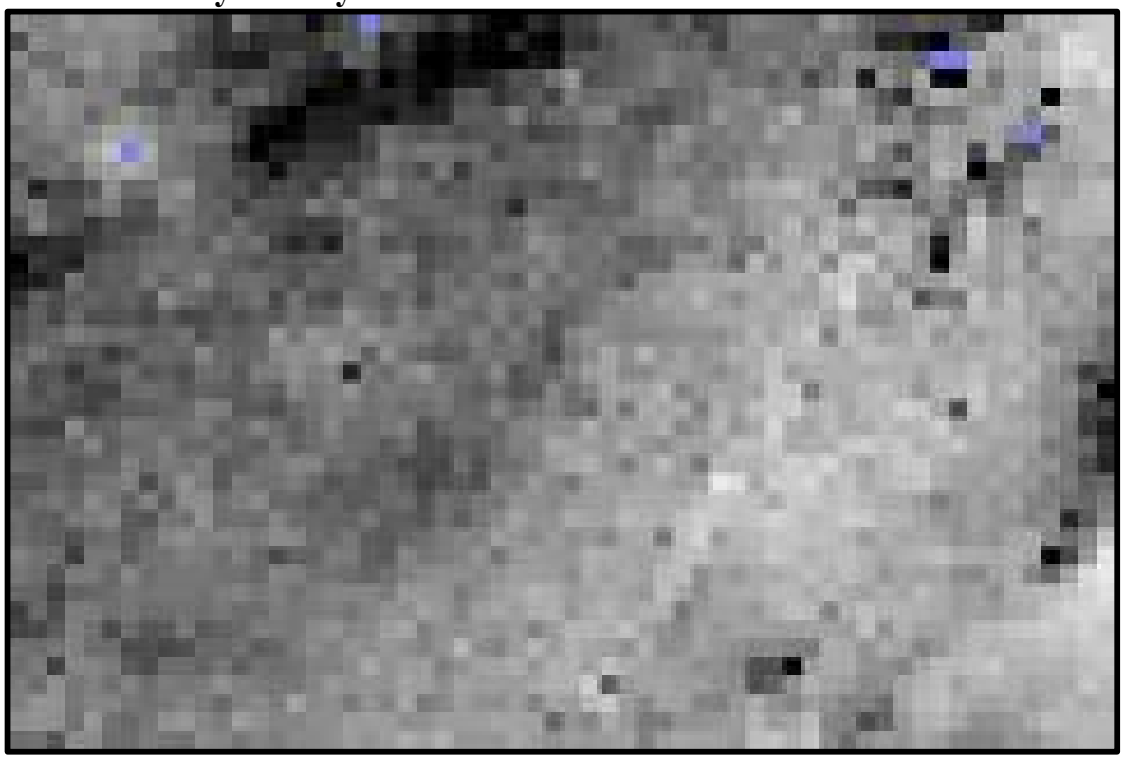

Figure 6: The results of the resistivity survey.

Only six grids were surveyed for the resistivity survey. The results were so unclear that it was decided not to extend the survey into the three northern grids. The pixelated image is due to the amount of debris within the survey area. The 1882 Ordnance Survey map depicts five structures (**A** & **B**), a road, at least three altered or lost field boundaries and a pond (**C**) within or immediately next to the survey area (**D**) (see Figure 7, below).

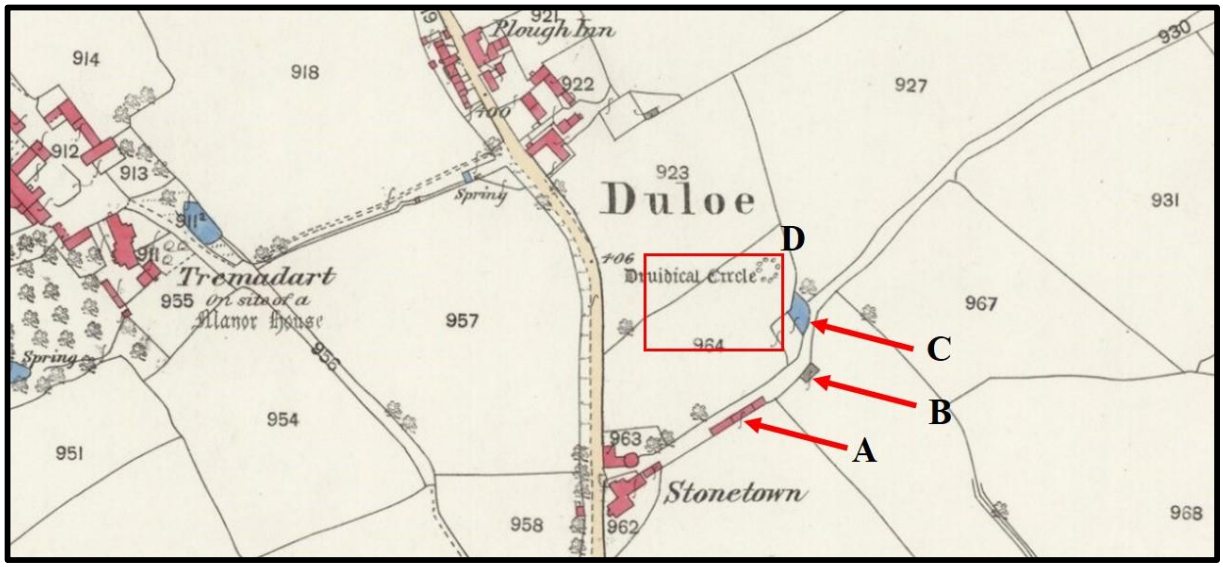

Figure 7: 1882, Ordnance Survey Map, (National Library of Scotland).

Since this map was surveyed, the structures, road and pond have been removed. The destruction of these features probably resulted in a considerable amount of debris and compaction across the site which has resulted in the pixelated image above.

It is, therefore, impossible to identify anomalies to the accuracy of the magnetometry survey so figure 8 below presents general observations of the results.

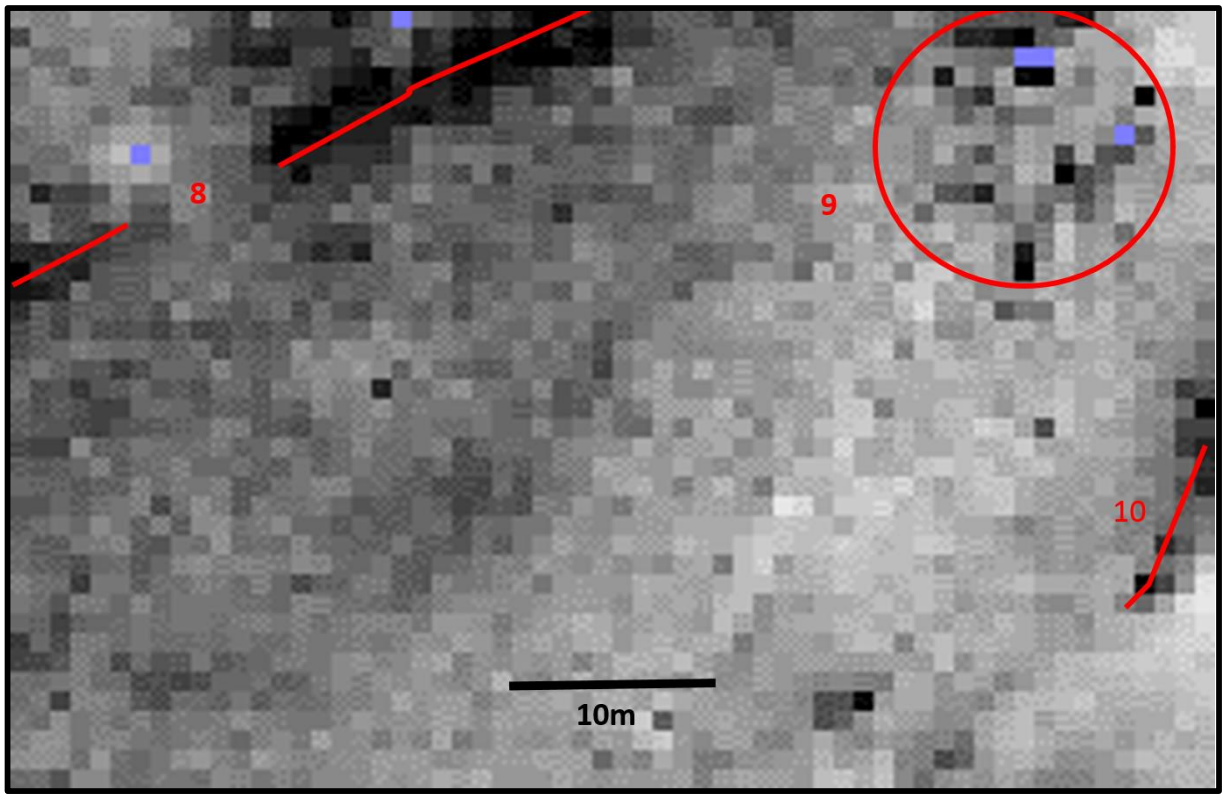

Figure 8: Identified and possible archaeological anomalies.

4.5. Archaeological Anomalies

In the top northwest corner (**8**) is a northeast-southwest aligned linear anomaly that measures *c*.35m long with a break which measures *c*.7.5m. This is anomaly is on the same alignment and location as **3**,

which was identified in the magnetometry survey. In the northeast corner of the survey is a cluster of anomalies (**9**) which are in the same location as the stone circle (**1**, **2**, **6** & **7**), unfortunately the image presents no further information concerning the sub-surface remains in that area. Finally, in the eastern area of the survey another anomaly (**10**) was identified, however, the distortion of the image prevents any discussion other than noting its presence.

5.0 Discussion
5.1 Introduction
The monument appears to be in good condition and strong positive responses were recorded throughout the site. Both inside and outside the stone circle several archaeological and possible archaeological anomalies have been identified.

5.2 Inside the monument
The monument here is defined as the area within the ditch (**2**) and comprises anomalies **1**, **2**, **6** and **7**. Anomaly **1** presents a strong response and is located within the centre of the circle, indicating it could be a cist. In Cornwall, only a very small number of stone circles have been investigated and only then even then only partially (Jones *pers comm*). Thus far, only the circle at Duloe appears to contain evidence for a cist, although, as more stone circles in Cornwall are investigated this could and probably will change.

At present one must look further to find examples of burials within stone circles, for example, burials accompanied by flint tools and pottery placed in cists have been found in Cumbria (Burl 2000: 122) and Kilmartin, Argyll where burials were also recorded located within stone circles there (Bradley 1998: 135). In both cases, the burials are thought to be later insertions into an already old monument (Burl 2000: 122; Bradley 1998: 135). The U-shaped response from the feature, if it is indeed a cist, indicates it might have been disturbed and the capstone removed. If this interpretation is correct this most likely took place when the hedge was taken down. As noted in the introduction, it is possible that Lawrence was referring to a specific interment within the cist as opposed to the recovery of the 'cinerary urn' reported by Pedler and Borlase.

Around anomaly **1**, several small circular anomalies (**6** & **7**) were recorded. Anomalies **6** & **7** might represent damage done to the monument during the removal of the hedge; however, the smaller anomalies (**6**) surround and appear to respect the central cist (**1**). These might be the remains of postholes indicating the existence of a previous structure, such as a timber circle. In several examples, evidence for previous timber circles has been found within stone circles, such as at Stonehenge (Gibson 2000:113-114; Bradley 1998: 94-95). A recent work at Croft Moraig, Scotland has found evidence for a timber structure post-dating the stone circle there (Bradley and Sheridan 2005; 278). More likely, however, these anomalies represent pits within which burial urns or other 'ritual' offerings were deposited, as has been recorded at other sites in Cornwall (Jones and Quinnell 2011: 216). Furthermore, as described above, such an 'urn' was found at the site during the 19th century. In addition, the way in which these features appear to 'respect' each other and their apparent circularity indicates that their depositors probably knew of the location of previous burial urns.

The existence of a ditch (**2**) surrounding the monument has not previously been recorded. The ditch can clearly be followed on the northern and southern side of the monument, however, on its western side, there is considerable disturbance. On the eastern side, there appears to be a gap, however, this might be more apparent than real as this side of the monument is very close to the metal fence which can distort the recording of the magnetometer. The presence of the ditch might indicate a barrow was constructed here however, elsewhere in Britain smaller stone circles have been associated with ditches Jones (pers comm) such as at Arbour Low, Peak District (Burl 2000:288). There are numerous examples of barrows defined by ditches such as on Bodmin Moor (Johnson and Rose 1994) and close by local examples include Mountain Barrows at Pelynt (Frieman and Lewis 2013) and at Ashen Cross, Pelynt (Lewis and Frieman *forthcoming*). Thus, this was a common construction method within the local area as well as the wider locality. Alternately, the ditch might represent a small henge, and whilst the clear majority of henges are in the eastern half of the Britain there are possibly two henge monuments nearby; one is *c* 17 km northeast at Castlewich, Callington (MCO6934) and the other surrounding the Stripple Stones stone circle on Bodmin Moor (Johnson and Rose 1994: 32).

No other Cornish stone circle uses only white quartz for the standing stones in its construction. Unlike the other stone circles nearby on Bodmin Moor, Duloe was not built over granite bedrock and the use

of white quartz may be only be due to the local availability of the stone (Barrett 1980: 29). Yet the use of such a specific stone might have been intentional and the practice of using white quartz on prehistoric sites has been well documented (see, Darvill 2002; Cummings 2011). It is thought that quartz might have connections to fire (Thompson 2005:130) or to the moon (Bradley, 2005; Burl, 2000) or sea (Darvill, 2002). Unfortunately, it is not possible to source quartz, however, an investigation of the local quartz deposits may discover where the stones were sourced.

A geophysical survey does not depict a chronological relationship and this must be interpreted from the data. In Cornwall, only a single circle, the one at Leskernick, has been dated, in this case to 1750-1550 cal BC (Bender in Jones and Quinnell 2011; 205). Very few have been excavated using modern techniques. In contrast, barrows are common throughout Cornwall and a large number have been excavated. The majority are thought to be constructed between *c.*2000 BC to 1500 BC (Jones and Quinnell 2011: 211). The geophysical results cannot demonstrate if the stones were erected before the cist or ditch and at this stage, without excavation it is impossible to do more than speculate about which was the original monument at the site.

5.3. Outside the monument

No definite prehistoric anomalies have been identified outside the ditch (**2**). Anomalies **3**, **4** and **5** appear to be the remains of field boundaries. **Three** is aligned NNE-SSW and appears to be the remains of the hedge which was present when Lukis drew his plan and which remained intact until at least 1937 (see Figs 3 & 7, above).

Anomaly **4** is a linear NE-SW aligned feature which extends beyond the limit of the survey. It is probably connected to **5** a WNW-SES aligned linear feature. The character of both features is comprised of similar sized and spaced posthole type anomalies that are consistent with what one would expect from a modern fence. Although, the exact relationship between **4** and **3** is impossible to determine, we suggest that **4** cuts across **3** and appears to be the remains of removed wooden fence which was constructed after the hedge (**3**) was removed.

It is worth mentioning the ferrous responses. The responses appear to be evenly spread across the surveyed area, much as one would expect from a survey of this kind. However, there is a small alignment of responses which appear to form a linear arrangement as can be observed on the blue line in Figure 9, below).

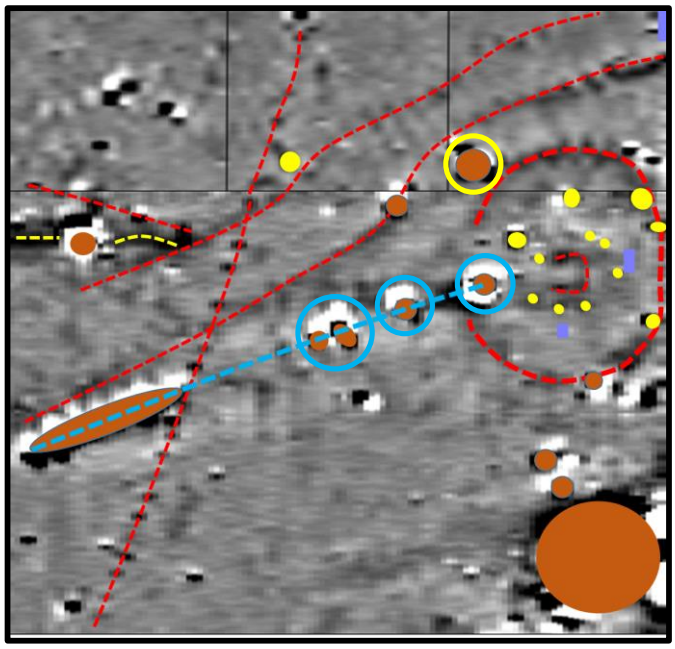

Figure 9: Linear ferrous or heat signals circled in blue

The three ferrous responses circled blue recorded maximum readings of 140nt to 204nt. These signals are considerably higher than other similar anomalies which registered less than 20nt. These high readings, could, indicate the presence of burnt material. At Sloden, New Forest, readings of 100nt were recorded for anomalies which were later excavated and found to be Romano-British kilns (Gaffney and Gater 2006: 156). Given their location so close to the stone circle, it is possible that they could be cremated burials particularly the one on the edge of the circle. Certainly, antiquarian digging at the nearby site of Mountain Barrows in Pelynt indicated that several of those barrow mounds covered areas of burning consistent with pyres on the original ground surface (Frieman and Lewis *forthcoming*).

Alternately, they might be indication of other prehistoric activity. At a few stone circles, there is evidence of later reuse of the site for specialist metal working activities. At Loanhead of Deviot, Aberdeenshire evidence was found or iron working taking place within or next to the site (Bradley 2000: 156-157). At Sindlesham, Berkshire, a prehistoric iron working site which produced *c*.21tons of slag, it was noted that the isolated nature of the site might have helped the smith enhanced the 'magical' nature of his work (Lewis *et al* 2013: 33). At Duloe, the mystical nature of the activity might well have been enhanced by the reflection of the fire against the white quartz. These examples above are presented here as possible interpretations for the strong signals; but, regardless of their origin, they should be regarded as being of high archaeological interest.

5.4. Duloe Stone Circle in the Landscape

The stone circle is positioned on the southwest slope of a hill which forms part of a ridge that is defined by the East and West Looe Rivers. This ridge runs from its southernmost point where the two Looe Rivers split and effectively ends at the village of Dobwalls *c*.13km to the north. At *c*.4.2km north from the southern tip is Duloe Stone Circle. There are deep stream valleys to the west and southeast of the circle and latter defines the south side of the hill on which slope the monument is found. At this point in the ridge, the effect of the two stream valleys is to reduce the width of the traversable land down to *c*.400m. There is no way to know for certain why this exact point was chosen to build the circle, as there are other very similar topographical locations the ridge; that said, this location is the last place where two deep stream valleys cut into the ridge and form a narrow area of land through to pass between them both.

Bradley notes that, in Scotland, there is an association between upland valley routes, mountain passes and small stone circles. He speculates that specific locations were chosen for the construction of stone circles due to their accessibility from the surrounding area and, further, that these sites were possibly distributed along routeways (Bradley 1998: 129). In this light, it is notable that the circle stands *c*.150 to the east of the modern B3254 the road which follows the top of the ridge to Dobwalls *c*.7km to the north and beyond towards Bodmin Moor. Furthermore, at the Duloe village church, 250m to the southwest of the stone circle, there is a junction of a small lane which leads from the B3452 along a west-south-west aligned spur down into the West Looe River valley where it crosses the river at location marked 'ford' on the map. While the antiquity of this 'ford' is not possible to ascertain, the Cornwall HER locates two Romano-British Enclosures immediately alongside this lane, one at Collander (SMCO 39755) and one at Gillhill (MCO 39754) and prehistoric settlement at Gillhill Wood (MCO 39756. The presence and location of these enclosures suggests that this lane was a recognised routeway in the landscape during at least later prehistory if not earlier.

The circle is in an area on the ridge where there appears to be a high concentration of recorded prehistoric-Romano-British sites. Within, *c*.1.5km of the site, based on the cropmark evidence found in the Cornwall HER, there are four Romano-British enclosures (Colhender MCO 39755, Gillhill MCO39754, Tredinnick MCO 39796 & Polvean MCO 39778), two prehistoric field systems and a boundary (Polvean Wood MCO 39776, Duloe MCO 39778 & Stocks Cottage MCO 39775), one settlement (Gillhill Wood MCO 39756) and the find spot of a Late Bronze Age ornate children's bracelet (Tremardart Wood MCO 1609). Further south along the ridge, another cluster of sites is found in the vicinity of Trenant Barton farm, including two enclosures, three flint scatters and a barrow.

Between, Polvean Wood (located c.1km northeast of the circle) and Dobwalls, a distance of *c*.7km, there are only two records of prehistoric activity based on non-documentary sources on the Cornwall HER (four if one includes documentary sources). These comprise a cist at South Kelly Farm (MCO 40442) and an enclosure at Wallis Farm (MCO 39767).

In other words, Duloe Stone Circle is situated in an area which witnessed a varied amount of localised activity during prehistory. Notably, this is predominantly later prehistoric activity, dating from the Late Bronze Age through to the Romano-British period; and it might be that one of the reasons why this area was attractive for settlement was due to the proximity of the circle.

6.0. Conclusion

The objectives of the survey were to undertake complete magnetic and resistivity surveys of the stone circle at Duloe to establish the character and extent of the subsurface remains. Although the resistivity data was disappointing, the magnetometry results revealed several unknown features within the monument. The results strongly suggest the existence of a cist (**1**) at the centre of the circle; and, whilst similar examples exist in other parts of the country, notably Cumbria, this is the first example of a cist in the centre of a stone circle in Cornwall. The outer circular ditch (**2**) is a new feature which has not been recorded previously. In addition, the presence of small circular anomalies, probably prehistoric pits containing pots and/or cremations, features which have been recorded at the site previously, indicate a level of activity at the monument which is not apparent from the surface remains alone.

So far, the geophysical survey appears to show the circle as an isolated monument within the immediate area. That said, only a small area of the field was surveyed and the field immediately to the east was not accessible at the time of the survey. To develop a deeper understanding of the site and enable it to be placed within its local, regional and national context it is suggested here that the site would benefit from further investigation.

The investigation should examine three areas: First, a small, targeted excavation, would recover material evidence through which we could understand the activity and chronological sequence of the site. Furthermore, the recovery of environmental evidence would place the site within its landscape setting and recreate the environment in which the site was constructed and used. Second, an expansion of the geophysical survey to include the rest of the field in which the circle is located and an area extending from the hedge in the field immediately to the east. Finally, a local survey to identify a possible quarry site from which the quartz was extracted to make the standing stones. If such a location is found, then if possible a small excavation could be undertaken there to recover any evidence for quarrying activity there.

It is envisaged the investigation would be led by professional archaeologists but with the help of local interest groups, notably the Cornwall Archaeological Society. The excavation would be carried out alongside activities designed to educate local people in archaeological techniques and inform them of their cultural heritage.

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