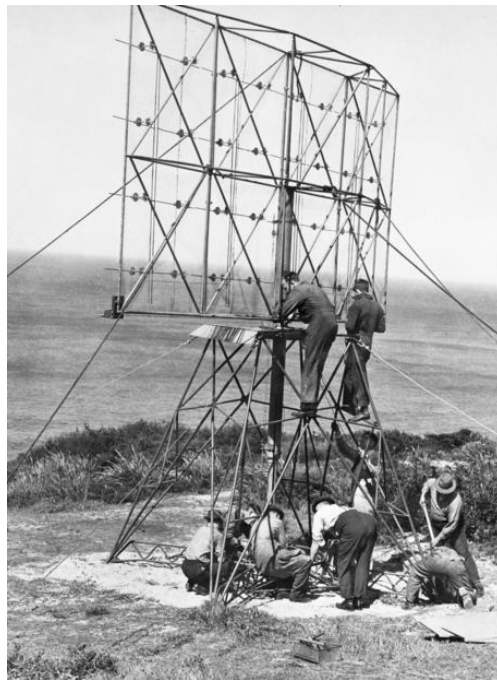


Report on a heritage survey of Radar Station 48, North  
Head, Jurien Bay for the Shire of Dandaragan

April 2016

Bob Sheppard, Jamie Twaddle & Zack Sheppard



## Table of Contents

<b>Copyright</b> .....	<b>4</b>
<b>Disclaimer</b> .....	<b>4</b>
<b>Spatial Accuracy</b> .....	<b>4</b>
<b>Cover images</b> .....	<b>4</b>
<b>1. Executive Summary</b> .....	<b>5</b>
<b>2. Heritage Detection Australia Mission Statement</b> .....	<b>5</b>
<b>3. Historical Background</b> .....	<b>5</b>
<b>4. Heritage Status</b> .....	<b>6</b>
<b>5. Survey Area</b> .....	<b>7</b>
<b>6. Survey Personnel</b> .....	<b>8</b>
<b>7. Survey Methodology</b> .....	<b>9</b>
<b>8. Survey Results</b> .....	<b>10</b>
<b>8.1. Structures</b> .....	<b>12</b>
8.1.1 (S1) Radar Station.....	12
8.1.2. (S2) Igloo A.....	12
8.1.3. (S3) Igloo B.....	13
8.1.4. (S4) Foundation One.....	16
8.1.5 (S5) Foundation Two.....	18
8.1.6. (S6) Foundation Three.....	19
8.1.7. (S7) Foundation Four.....	20
8.1.8. (S8) Foundation Five.....	<b>22</b>
8.1.9. (S9) Sub surface water tank.....	23
8.1.10. (S10) Section of earthenware sewerage pipe.....	25
<b>8.2 Associated Deposits</b> .....	<b>27</b>
8.2.1 (D1) World War II refuse site.....	27
8.2.1 (D2) Possible military camp site.....	28
8.2.3 (D3) Bottle dump.....	32
8.2.4 (D4) Bottle dump.....	32
8.2.5 (D5) Bottle dump.....	32
<b>8.3 Artefacts</b> .....	<b>32</b>
8.3.1 (A1) Medicine bottle.....	32
8.3.2 (A2) Stove front and vehicle springs.....	33
8.3.3 (A3) Iron tent peg.....	33
8.3.4 (A4) .303 casing.....	33
8.3.5 (A5) Earthenware sewerage pipe.....	33
8.3.6(A6) 3 x .303 casings.....	33
8.3.7 (A7) .303 casing.....	33
8.3.8 (A8) Copper wire.....	33
8.3.9 (A9) Bullet projectile.....	34
8.3.10 (A10) Electric water heating element.....	34
8.3.11 (A11) Bullet projectile.....	34
8.3.12 (A12) Metal earth stake.....	34
8.3.13 (A13) Unidentified iron object.....	34

<b>9. Summary of structures, associated deposits and artefacts .....</b>	<b>34</b>
<b>10. Discussion.....</b>	<b>35</b>
<b>11. Recommendations.....</b>	<b>38</b>
<b>12. References .....</b>	<b>38</b>
<b>Appendix 1.....</b>	<b>39</b>
<b>HDA Community Engagement.....</b>	<b>39</b>
<b>Site Clean Up .....</b>	<b>39</b>
<b>Surveying.....</b>	<b>39</b>
<b>Police Rangers.....</b>	<b>39</b>
<b>Public Presentation .....</b>	<b>41</b>
<b>Social media.....</b>	<b>41</b>
<b>Radio.....</b>	<b>41</b>
<b>Television .....</b>	<b>41</b>
<b>Appendix 2: .....</b>	<b>42</b>

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## Disclaimer

HDA has made every effort to ensure all relevant information collected has been presented however the authors cannot be responsible for any omissions or inconsistencies resulting from information which is revealed in the future but was not available at the time of the survey and therefore the recommendations, results and conclusions within the report are based on information available during the survey and the preparation of this report.

## Spatial Accuracy

The survey used a Garmin hand held GPS and the Archaeology Sample Collector application to record artefacts and associated deposits. GPS accuracy is subject to the normal variations expected of the technology.

Geoff Royce of Royce Surveys created plans and recorded structures using a Trimble R6 GPS system with accuracy of  $\pm 10$ mm. Base control used Landgate Geodetic stations SSM North Head and SSM Bartle. These are PWD brass plaques concreted to the limestone sheet rock at North Head adjacent to the Bartle memorial. The coordinate system used for the detail survey of the site is MGA coordinates Zone50. Vertical control (heights) used vertical datum AHD71. Future surveyors can access DXF or DWG data files or an Ascii points file by contacting Royce Surveys or HDA.

## Cover images

North Head looking south. HDA image.

A radar station of similar type to Radar Station 48. Australian War Museum image.

## 1. Executive Summary

In April 2016 Heritage Detection Australia (HDA) was engaged by the Shire of Dandaragan (SD) to complete a heritage survey of the North Head Radar Station (No. 48) and associated structures.

The survey was a follow up to numerous visits to the area by archaeologist Bob Sheppard in 2014 -2016 and the creation of *A brief report on a visit to North Head (Jurien Bay) World War Two military site* which was submitted to SD on 2014.

HDA carried out a site visit with staff from SD on 21 January 2016.

In consultation with the SD (Community Development Officer Michelle Perkins) the heritage survey was conducted on 20 – 23 April 2016.

This report details that survey.

## 2. Heritage Detection Australia Mission Statement

HDA is a Western Australian owned and operated consultancy employing local archaeologists and heritage professionals. All our employees have experience working and volunteering on local heritage projects.

The HDA team:

- is passionate about history, heritage and archaeology
- believe reports should be written in plain English
- are committed to public engagement

## 3. Historical Background

In 1942 a coast watch station was established at North Head near Jurien Bay in Western Australia (Davies 1994:80) and Australian War Records show the site was converted to a radar station and operated from August 1943 until August 1945. It was known as Unit 48RS and was one of a number of radar stations on the West coast including those at Gin Gin, Yanchep, Rottnest and Geraldton.

The station consisted of an AWMKII radar array driven by two generators housed in concrete bunkers. Some reports suggest that searchlights were linked to the radar station and there were gun emplacements nearby (Anon 1989:19).

The radar was run by RAAF trained technicians with members of the 13th Infantry Brigade (McConnell et al 1993:156) used as guards. Nicholas suggests that much of the coastal surveillance was carried out by the Volunteer Defence Corps (1985:78-98). Edwards (1993:34) was a member of the 10th Australian Light Horse Regiment and he recalls visiting North Head in World War Two and members of the 44th Battalion were camped nearby.

Report on a heritage survey of Radar Station 48, North Head, Jurien Bay for the Shire of Dandaragan

The radar had a range of around 100 miles with longer ranges possible depending on weather conditions. A ranger and heighter operated the station with information passed to a plotting room. The plots were relayed to a telegraphist and wireless operator who passed the information on to the RAAF Fighter Sector at Pearce. It is believed a phone line was built from the site to Jurien Bay.

Australian war records in the form of a personnel occurrence book, show that more than 100 men were rotated through the site during its two years of operation with around 30 men camped at North Head at a time.

Historical records of the site are sparse and no photographs of the site have come to light. Cameras were not allowed on radar stations. No personnel who served at RS48 have come forward with information about the site. One Dandaragan local, John Grigson visited the radar station when he was 8 years old and can remember some details of the site (pers. comm John Grigson 2016). According to Grigson, the site was demolished post war and the buildings were sold and salvaged. Some of the material was used on local farms and at Jurien Bay.

The foundations of many of the buildings were incorporated into shacks and camps and the generator bunkers have been used by visiting campers and fishermen.

One of the most unusual claims about the North Head site was that it was attacked by an unidentified plane (Davies 1994:82-83). If this is the case this is the southernmost point of mainland Western Australia which came under enemy fire in this conflict which would make it quite unique.

#### 4. Heritage Status

The site is listed in the *Shire of Dandaragan Municipal Inventory of Heritage Places* which states (68) ...

Statement of Significance: 'The Radar Installation Site has high historic significance for the important role it played during World War II. Further, the relative intactness of the concrete shelters, which are representative of the Nissen Hut style of military structures, adds to their significance.'

Management Category: 'Category 1. A place of exceptional cultural heritage to Shire of Dandaragan and the state of Western Australia, that is either in the Heritage Council or Western Australia's Register or worthy of consideration for entry into the register. Retain and conserve the place.'

The North Head Radar Station 48 is not registered by the State Heritage Office (pers. comm. SHO 2016).

## 5. Survey Area

The survey area is located approximately 9 km NNW of Jurien Bay town site on a peninsula known as North Head (figure 1).

The Lot/ Location: Vic Loc 11000

Reserve No: 29373

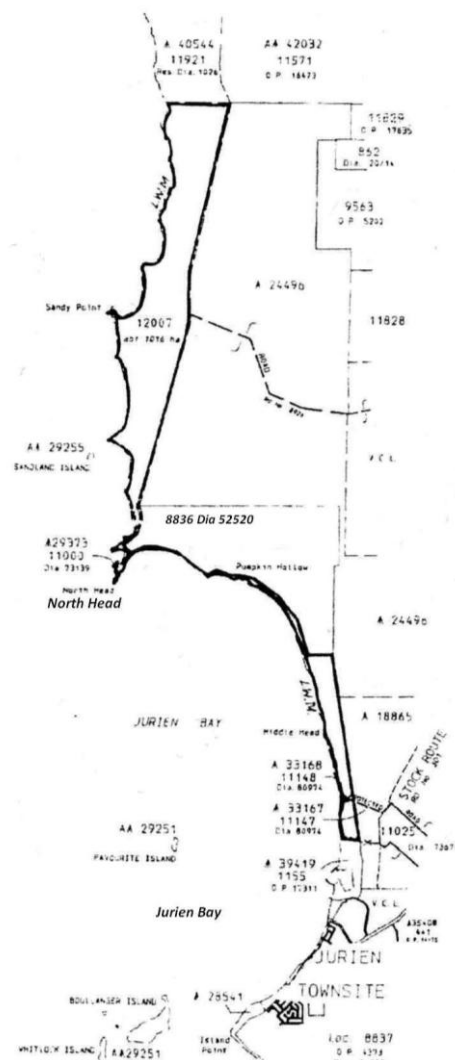


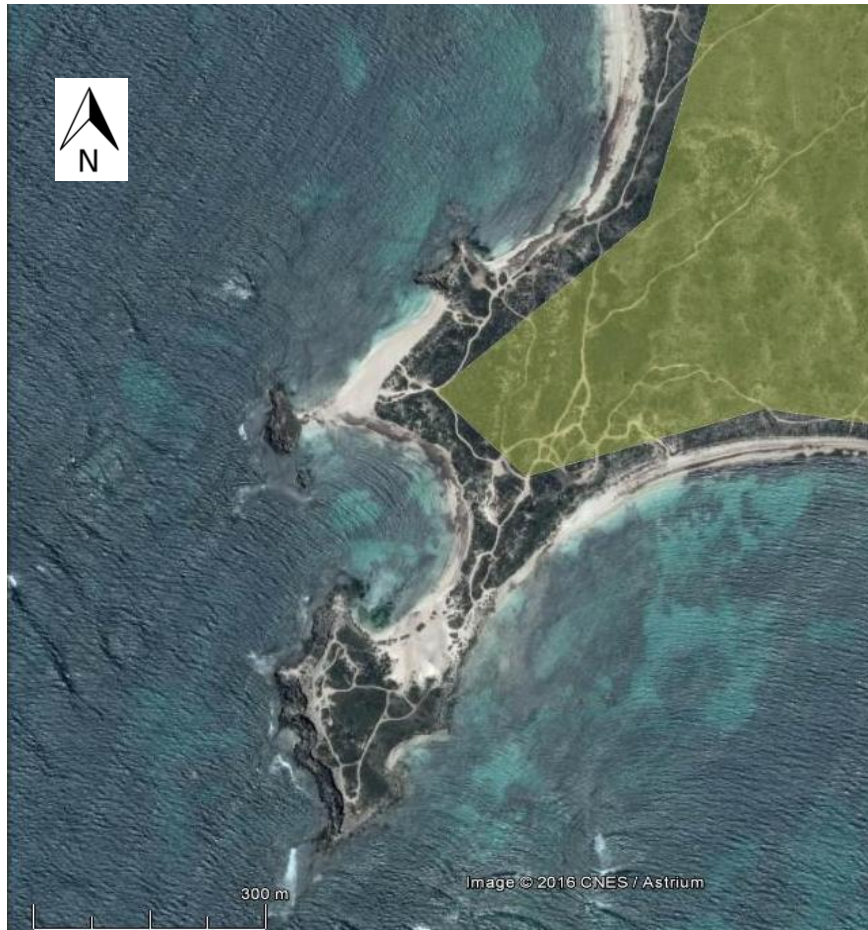
Figure 1: Map of Jurien Bay and North Head

The radar station is situated on coastal reserve administered by the Shire of Dandaragan. What are believed to be WW2 buildings associated with the radar site, including foundations, drains, building pads and an underground tank, are within the boundaries of private land.

Permission for the survey team to access and survey the related infrastructure on private land was coordinated by the Shire of Dandaragan.

Report on a heritage survey of Radar Station 48, North Head, Jurien Bay for the Shire of Dandaragan

The yellow shaded area in figure 2 below is the approximate area of private land.



**Figure 2: North Head peninsula. Yellow shaded area indicates the approximate area of privately owned land**

The area is a popular campsite with locals, who use the access tracks running through the sand dunes. Vegetation along the peninsula can be described as coastal scrub with coverage ranging from dense to moderate. Archaeological visibility in the survey area is on average 25 per cent. There is substantial disturbance to the survey area. Vehicles have degraded sand dunes and modern rubbish is scattered throughout the bush and adjacent to the tracks.

## 6. Survey Personnel

The archaeological and surveying participants present on this survey include:

- Bob Sheppard, BA Hons and Hon. Assoc. WA Museum, archaeologist and principal of HDA
- Jamie Twaddle BA Hons, senior archaeologist HDA
- Zack Sheppard BA Hons. Dip. Ed., archaeologist HDA
- Geoff Royce surveyor

April 2016 Report on a heritage survey of Radar Station 48, North Head, Jurien Bay  
for the Shire of Dandaragan



The shire of Dandaragan provided additional personnel to support the survey, including:

- Volunteers
- Staff to assist the survey, including rangers and administrative/coordinating staff

## 7. Survey Methodology

HDA archaeologists surveyed the area according to HDA's pedestrian survey transecting methodology. HDA was also joined by volunteers when walking transects. Assisted with a Garmin hand-held GPS device, survey participants walked transects 5m apart. This created adequate coverage to facilitate the observation and identification of archaeological material in all areas, including open areas and areas covered with dense vegetation. When archaeological evidence was encountered, archaeologists flagged and recorded the material with Archaeology Sample Collector. Details recorded included the assignment of a reference number, GPS location, description, a preliminary determination of heritage value and a photograph with a scale. A plan of the area covered by the transects is included in figure 3.

To facilitate accurate recording of cultural material related to the radar station, all recorded material was divided into three categories:

Structures (prefix S)

Associated deposits (prefix D)

Artefacts (A)

The surveyor used high-tech surveying recording equipment to obtain highly detailed and accurate positioning of the structural material. A site diagram featuring this data has been completed.

The surveyor recorded sites and material culture in UTM. Transects and material recorded by the survey team were recorded in degrees, minutes and seconds (decimal).

Archaeological material that was not fixed (i.e. artefacts such as bottles, cartridges etc.) were left in situ after they were recorded. This is to ensure that archaeological material remains in what is most likely the last place it was used. This facilitates future research potential on these artefacts. Two items encountered during the survey were however deemed to be of important heritage significance and in danger of loss or destruction. Hence, they were collected during the process of surveying. This material collected remains the property of the Shire of Dandaragan.

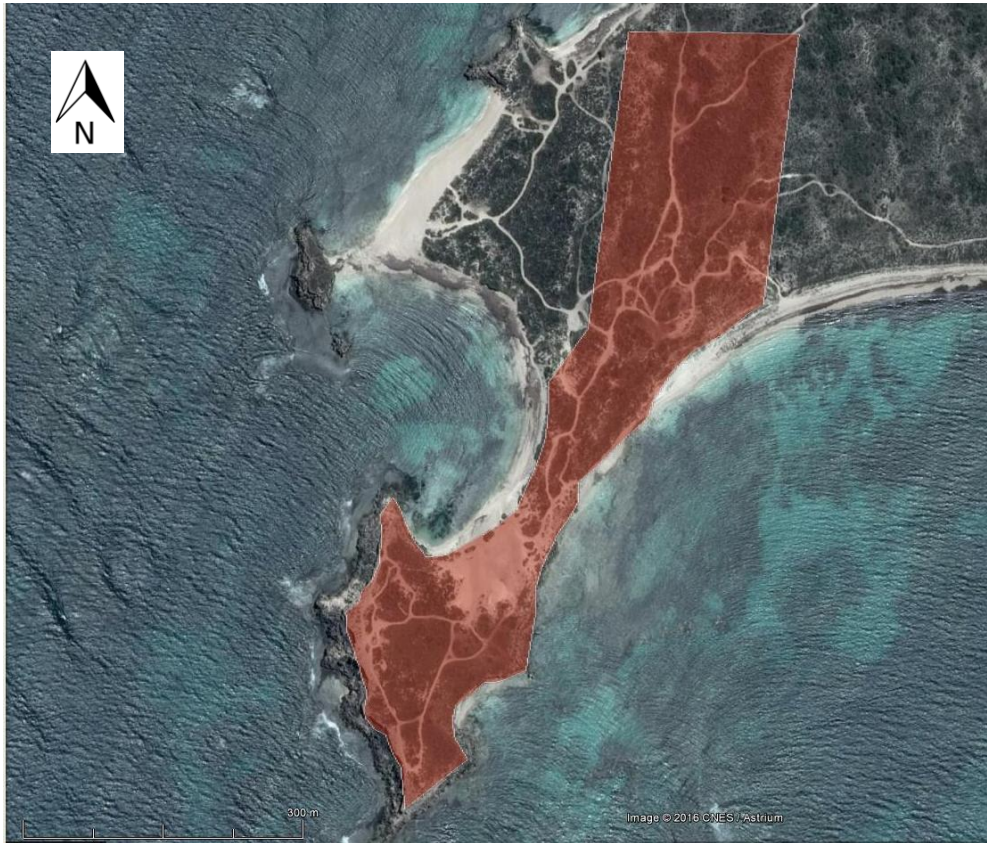
At the conclusion of the survey, HDA created this report of the survey, which is to be provided to SD.

The report contains a plan and details of the site, an overview of the heritage values of the site and a brief historical background of the radar station.

The report can be used by the Shire of help guide future plans for the site.

Report on a heritage survey of Radar Station 48, North Head, Jurien Bay for the Shire of Dandaragan

Australian Aboriginal cultural material has been recorded in the area (see Monks, Sheppard and Dortch 2015). The survey team ensured there was no damage to any Indigenous cultural material and complied with the requirements of the *Aboriginal Heritage Act 1972*.



**Figure 3: Area covered by transects shown in red.**

## **8. Survey Results**

Cultural material located during the survey has been recorded in 3 categories: Structures/foundations, associated deposits and artefacts. All material is detailed below in section 8. Figure 4 below shows the structures/foundations and associated deposits on a map of the area. Individual artefacts are not shown on this map, but their locations are detailed in 8.3.

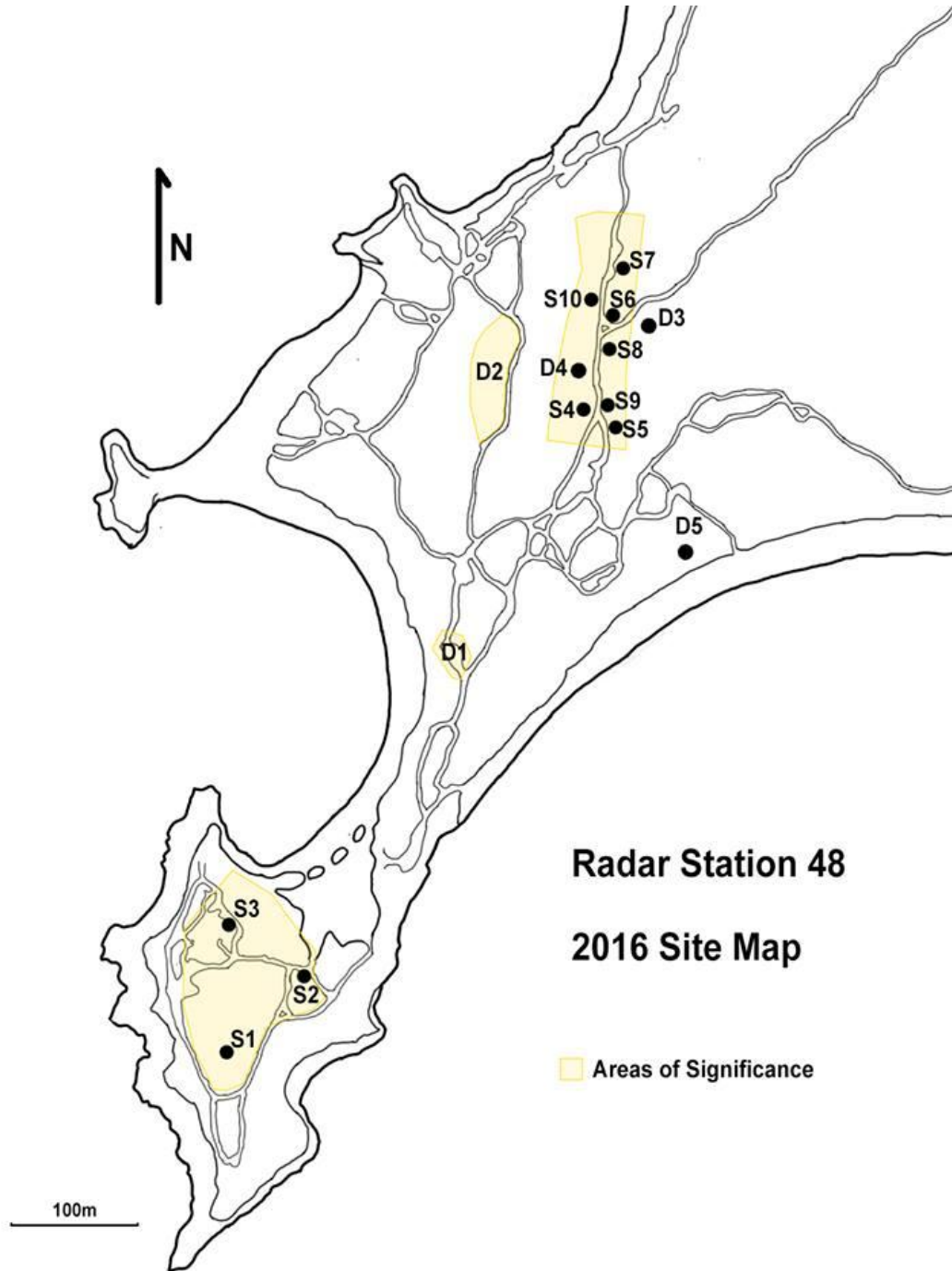


Figure 4: Map showing the structures/foundations and associated deposits associated with Radar Station 48 on North Head.

## 8.1. Structures

HDA located and identified in situ and fixed structures that are most likely associated with the military presence of Radar Station 48 in North Head between 1943 and 1945. These structures are detailed below.

### 8.1.1 (S1) Radar Station

The Radar Station is located at the highest point of the North Head peninsula (approximately 19.80m ASL) with 360 degree views of the coast. What remains of the Radar Station are concrete sandbags (figure 5) stacked at least five layers high (upon visual inspection) where the sandbags form a series of steps on the northern side of the foundations.



**Figure 5: Concrete sandbags on radar station site. Photo facing South.**

### 8.1.2. (S2) Igloo A

Igloo A is a North-facing Nissen hut shaped structure made of steel reinforced concrete. Known as an 'Igloo' it housed a generator which ran the radar station and associated infrastructure.

The structural integrity of the Igloo is relatively intact, however this is likely to be compromised due to the degradation of the supporting sand dune the foundations rest on (see figure 6). Graffiti and vandalism has also had a negative impact on the preservation of Igloo. Sections of the iron door and window have been destroyed and the structure contains beds, a refrigerator and rubbish. The concrete engine bed has been removed.



Figure 6: Igloo A. Photo facing south.

### 8.1.3. (S3) Igloo B

Igloo B (figure 7) is located to the WNW of Igloo A on a more elevated section of the peninsula. Igloo B has the same purpose and construction style as Igloo A. Igloo B is more structurally stable than Igloo A. Its foundations rest solidly on stable ground. The concrete engine bed remains (figure 8).

Vandalism and graffiti have also extensively impacted Igloo B (figures 9 & 10). This hut has been used in recent times as a fisherman's/campers hut. A fire pit (figure 11), water tank, fishing buoys and sandbags have been added to the sides and front edges of the Igloo.



Figure 7: Igloo B facing south.



Figure 8: Generator engine bed inside Igloo B. Scale 2m. Photo facing south.



Figure 9: Graffiti on southern interior walls of Igloo B. Photo facing south.



Figure 10: Graffiti on southern and eastern interior walls of Igloo B.



**Figure11: Fire pit outside and west of Igloo B.**

#### **8.1.4. (S4) Foundation One**

Foundation one consists of a concrete floor with a raised concrete lip around the extremities (figures 12 & 13). The concrete was constructed in a similar fashion to the Igloos and other foundations believed to be related to Radar 48.

The foundations are on the western side of the track and are obscured by thick bush. There are numerous bottle dumps nearby. However it is difficult to determine if these dumps originated with World War Two use or modern use, as there are also modern bottles present on the surface.

The concrete lip appears to be a later addition to the foundations. Local resident John Grigson informed the survey team that this lip was used to channel water run-off from the slab into the nearby underground tank and was added post war by fishermen who built camps nearby (pers. comm. John Grigson 2016).





**Figure12: Foundation One concrete foundations. Scale 30cm.**



**Figure13: Foundation One concrete foundations. Scale 2m. Photo facing west.**

### 8.1.5 (S5) Foundation Two

Foundation two consists of a concrete floor with a raised concrete lip around the extremities (figures 14 & 15). The concrete was constructed in a similar fashion to the Igloos and other foundations believed to be related to Radar 48. These are the foundations of the largest building so far located. It is not possible to determine the original dimensions as the corner of the structure has been damaged by machinery.

Similar to Foundation one, the concrete slab has a lip around the edge used to channel water into the nearby underground tank. The structure is linked to the tank by earthenware pipes and there are a series of man holes nearby which indicate an extensive water or drainage system.



**Figure 14: Foundation Two concrete foundations. Scale 2m. Photo facing east.**



**Figure 15: Foundation Two concrete foundations. Scale 2m. Photo facing north.**

#### **8.1.6. (S6) Foundation Three**

Foundation three consists of a concrete floor (figure 16). Overlying this are sheets of rusted corrugated iron that have collapsed into a pile, along with broken brickwork. It appears the foundations have been reused as a fisherman's hut some time after WWII.

There are other items of refuse spread over and around the structure; such as old chairs and bottles.

The structure is in an open area void of vegetation located adjacent to the vehicle track (and is clearly visible from the track).



**Figure 16: Foundation 3 concrete foundations overlain by rusted iron corrugated sheets. Scale 2m. Photo facing north.**

#### **8.1.7. (S7) Foundation Four**

Foundation four is the northern most structure so far discovered and is not clearly visible from the track as it is obscured by dense bush and trees. Foundations consist of concrete flooring which has collapsed slightly on the eastern side. The concrete work appears of the same style of construction as the Igloos and other nearby structures (figure 17).

Some artefacts are located in the vicinity of this structure. It is unclear if these have their origins with wartime use of the site or were used in a post-war context. Sheets of galvanised iron lie on top of or near to the foundations: most likely associated with modern use of the foundation as fisherman's shack. Associated artefacts include a medicine bottle, a piece of 'Queens Head' galvanised iron (figure 18) and a meat safe (figure 19).



**Figure 17: Foundation 4 concrete foundations overlain by vegetation debris. Scale 2m. Photo facing east.**



**Figure 18: 'Queen's Head' galvanised iron sheet located near Foundation 4.**



**Figure 19: Meat safe found at Foundation 4.**

#### 8.1.8. (S8) Foundation Five

Foundation five was most likely constructed post-war and used as the foundations of a fisherman's hut. It is located in an area that is sparsely vegetated. The concrete foundations of foundation five are clearly different from those of the other foundations linked to war-time use (fig.20).

The concrete is composed of a mixture of shell grit (there is a shell quarry in the vicinity) and cement and the edges have become degraded and indistinct.

Sheets of rusted corrugated iron and other items of refuse are scattered around the site.



**Figure 20: Foundation 5 looking east.**

#### **8.1.9. (S9) Sub surface water tank**

The underground water tank (figure 21) has a diameter of 6.48m meters and an estimated volume of 41.7 cubic meters (figure 22).

The tank has been constructed from concrete using a similar style of construction to the Igloos and concrete foundations nearby. Access to the interior of the tank is through a manhole which is 2 x 2 feet in Imperial measurements (figure 23). Iron rungs have been concreted into the tank wall.

Nearby there are a series of pipes, both metal and earthenware, and a covered drainage system. The tank is in good condition. John Grigson suggests this tank was filled by run off from the rooves of the nearby military buildings and fishermen later adapted the exposed nearby foundations to enable water to be diverted into the tanks (pers. comm. John Grigson).



**Figure 21: Interior of water tank. Facing northwest. Rubbish has since been collected by volunteers.**



**Figure 22: Water tank located on, and to the east of the main vehicle track. 2m scale. Photo facing north.**





Figure 23: Manhole to water tank, located east of the vehicle track. Scale reaches down 2m. Photo facing east.

#### 8.1.10. (S10) Section of earthenware sewerage pipe

Along the main track and adjacent to S6 is a section of earthenware pipe, which appears to be intact, but also may have been moved by track maintenance or earthmoving (figure 24). Local informant John Grigson informed to team this pipe took sewerage from the camp ablution block to an ocean outlet (pers. comm. John Grigson 2016).

The location of the remainder of the buried pipe and the outlet is unknown but is likely to be found outside the survey area. There are numerous pieces of earthenware pipe scattered around the area (figure 25). Some of this may have been reused by shack builders.



**Figure 24: Geoff Royce inspecting the section of earthenware pipe that is visible from the vehicle track. Photo facing northwest.**



**Figure 25: Section of earthenware Pipe.**

## 8.2 Associated Deposits

HDA located and identified collections of material that appear to be related to Radio Station 48. These are detailed below in 8.2.

### 8.2.1 (D1) World War II refuse site

Moving dunes have uncover cultural material which appears to be related to the military presence at the Radar Station 48.

The deposits consists of heavily corroded food tins (probably 'bully beef' tins), glass and bones (figures 26 & 27).

HDA archaeologist Bob Sheppard believes much of the material he located here in 2014 has since been removed.



**Figure 26: A possible 'Bully Beef' tin found in the sand dune blow out.**



Figure 27: A possible 'Bully Beef' tin found in the sand dune blow out.

### 8.2.1 (D2) Possible military camp site

Based on observations of the plans of other radar stations around Australia, and in the absence of historical records of Radar Station 48, the survey team believed there would be a separate camping area for enlisted men away from the main camp area.

These men would be housed in tents which would lack lasting structural components.

The team believed the likely area for the camp would be in the shelter of the dune system either to the west or east of the structural components (foundations). This would allow for a separation of the enlisted men and officers but would be in close proximity to the mess hall, headquarters and the ablution block.

Archaeologist Bob Sheppard and volunteers Ian Styles and Brad Faulkner located cultural material which Sheppard believes to be from a military camp site

Shallow test pits were used to identify a number of items.

Finds included a tube of insect repellent (figure 28), a tube of shaving cream (figure 29), a .303 cartridge in a clip (figure 30), pieces of barbed wire (figure 31) and numerous .303 cartridges (figure 31).



Figure 28: Tube of insect repellent 'Skeeto' found at possible military camp site.



Figure 29: Tube of shaving cream found at possible military camp site.



Figure 30: .303 cartridge in clip found at possible military camp site.



Figure 30: Pieces of barbed wire found at military camp site



Figure 31: 303 cartridges found at possible military camp site.

### **8.2.3 (D3) Bottle dump**

A bottle dump was located on the eastern extremities of the survey area which may be military related.

### **8.2.4 (D4) Bottle dump**

A bottle dump was located near S4. While there are more modern bottles scattered on the surface in the area the team believed much of this material is related to the WW2 camp.

### **8.2.5 (D5) Bottle dump**

A bottle dump was located on the south eastern extremities of the survey area which may be military related.

## **8.3 Artefacts**

Artefacts. Artefacts that could be related to RS48 were also located and identified. These could have been moved and redeposited since WW2.

### **8.3.1 (A1) Medicine bottle.**



**8.3.2 (A2) Stove front and vehicle springs.**

**8.3.3 (A3) Iron tent peg.**

**8.3.4 (A4) .303 casing.**

**8.3.5 (A5) Earthenware sewerage pipe.**

**8.3.6(A6) 3 x .303 casings**

**8.3.7 (A7) .303 casing**

**8.3.8 (A8) Copper wire.**

**8.3.9 (A9) Bullet projectile.**

**8.3.10 (A10) Electric water heating element.**

**8.3.11 (A11) Bullet projectile.**

**8.3.12 (A12) Metal earth stake.**

**8.3.13 (A13) Unidentified iron object.**

**9. Summary of structures, associated deposits and artefacts**

The April 2016 survey of North Head recorded:

- 10 structures
- 5 possible associated deposits
- 13 artefacts
- Numerous artefacts at the possible military camp site

## 10. Discussion

Radar Station 48 is one of 22 radar stations established around Western Australia in World War II in response to the perceived need to increase coastal surveillance.

A search of the State Heritage Office (SHO) inHerit database reveals three radar stations or parts of radar stations are state registered.

RS48 is not state registered. The SHO is awaiting additional information from SD before considering the site for state registration (pers. comm. SHO 2016).

The site is listed in the *Shire of Dandaragan Municipal Inventory of Heritage Places* which states (68) ...

Statement of Significance: 'The Radar Installation Site has high historic significance for the important role it played during World War II. Further, the relative intactness of the concrete shelters, which are representative of the Nissen Hut style of military structures, adds to their significance.'

Management Category: 'Category 1. A place of exceptional cultural heritage to Shire of Dandaragan and the state of Western Australia, that is either in the Heritage Council or Western Australia's Register or worthy of consideration for entry into the register. Retain and conserve the place.'

The Municipal Inventory was last updated in 2004. It appears no action has been taken to 'retain and conserve the place' since that date.

HDA supports the SD Statement of Significance and Management Category, however in the 12 years since the inventory was reviewed the site has suffered substantial degradation. Archaeologist Bob Sheppard has noted a continual deterioration in the structures, and the loss of related cultural material, since his first visit in 2014. If plans to 'retain and conserve' the place (as stated in the Municipal Inventory) are not acted upon in the short term, the perceived 'relative intactness' of these structures may become compromised. This will in turn affect the Statement of Significance which would need to be reviewed to reflect the changing nature of the site.

The April 2016 Heritage Survey located and verified structural elements associated with Radar Station 48. Many of these are in a degraded condition, have been vandalised, and reused by campers. They could have also been damaged by mistake during the demolition and removal of the squatter's shacks in recent years.

The structures that have survived could have done so because they have been hidden by dense vegetation, or perhaps due to the nature of robust military

Report on a heritage survey of Radar Station 48, North Head, Jurien Bay for the Shire of Dandaragan

construction specifications. The installation site, which consists of sand and cement sandbags, is partially hidden by coastal scrub and appears to have escaped vandalism as a result.

Not all damage to Radar Station 48 and North Head can be interpreted as deliberate acts of destruction. The 4WD track leading from the beach to the Igloos has caused the dune to become heavily deflated and hollowed-out the foundations of Igloo A which is at risk of collapsing. HDA believes this structure is in imminent danger. The loss of this Igloo would dramatically affect the future heritage status of the site.

As this site has clearly been subject to vandalism and graffiti in the past it can only be presumed that if no changes are made, acts of defacement and destruction will continue (potentially at an accelerated rate given the increasing popularity of North Head).

Campers accessing the Igloos for temporary accommodation also affect the integrity of the Igloos.

There is a high potential for further radar station related sites and material to be found in the area.

Local John Grigson, who HDA believes is one of the last surviving community members to see the radar operating, told the HDA team there were originally 14 buildings at the site. Evidence of some structural elements is missing. Many of these were built in a military style, made of timber and corrugated iron and built on stumps. These were removed after the war for re-use on farms and in Jurien Bay.

According to Grigson

- the radar station was linked to Jurien Bay by a telegraph line
- the camp was linked to the generators by a power line
- a sewerage pipe was built from the camp ablution block to the ocean
- a rubbish dump was created to the north east of the administration area
- the original access track ran from Jurien Bay to Middle Head and then on to North Head
- There was a complex system of bunkers, shelters and weapons pits associated with and near the radar installation

Careful archaeological excavation, remote sensing and further surveys could reveal evidence of these missing structures.

The discovery of what appears to be a previously unknown military camp site is an important new archaeological find. The camp, which could also be the original coast

watch post and could predate the radar station, is covered with sand and appears undisturbed. As such it has the potential to reveal important information about the soldiers who camped there during WW2. The discovery of this site indicates that future field survey transects and remote sensing could locate additional material and sites in the area.

Sites could be under threat. Some 'dig holes' are evident at the radar station installation site. There is a risk items carrying valuable archaeological information could be removed from the site. Unstructured digging and excavation at this site will also compromise the archaeological integrity, context and stratigraphy of the site. This could make future archaeological investigations more challenging.

The use of the area by campers in post war years has complicated the archaeology of the site. Bottle dumps, which appear to be radar station related, often are mixed with other material on the surface that is more recent. The identification of these dumps as radar station related can only be tested by archaeological excavation and analysis. Throughout the site modern rubbish is mixed with World War II related material and it is difficult to differentiate between what is 'old' and what is 'new'.

The community attitude towards the site as expressed by visitors and local residents to HDA is complex. Many of those who visited the site while the survey was in progress were not aware of the history and significance of the site. The site has been used by campers and fishers for generations and the attention the site is attracting is seen by many as threat to their future access to North Head. Tensions therefore exist between preservation and access. It is HDA's view that these tensions need to be managed carefully and future conservation plans should consider community requirements.

In the past the site has been protected by its relative isolation and access difficulties. However the publicity given by the survey and associated media interest has raised the profile of the site. Access to the coast road and increased regional tourism will see increased visitation to North Head, which may have a negative impact on what remains of Radio Station 48.

The site is complicated by the dual ownership of the land, with the coastal strip (including the radar installation and Igloos) administered by the SD, while the administration area, new radar station related cultural material deposits the team located, and areas of potential deposits are privately held. HDA believes that future development in the area could be designed to be sympathetic to, and accommodate the conservation of heritage sites. As noted in this report Australian Aboriginal material has previously been located on the North Head peninsula.

## 11. Recommendations

HDA recommends

1. The area of the heritage survey be extended and the use of remote sensing be included in future surveys.
2. Archaeological excavations be carried out to investigate the functions of individual structures, the extent of the installation (both residential and administrative, as well as other elements such as communications, drainage etc.) and to help determine the nature of what day-to-day life was like for personnel serving at Radio Station 48. The results would strengthen a nomination for state heritage registration.
3. The creation and implementation of a Conservation Management Strategy (short term) or Conservation Management Plan (long term).
4. The preparation and submission of a nomination to the Office of State Heritage for heritage registration based on the results of this survey, future surveys, archaeological investigations and the conservation plan.
5. Creation of a publication telling the story of Radar Station 48.
6. Consideration be given to the offers from those groups who have indicated a willingness to provide free expert services such as LiDAR and high resolution photogrammetry.
7. Maintaining the interest created in the site within the Dandaragan and wider community through both social and mainstream media.

## 12. References

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## Appendix 1

### HDA Community Engagement

HDA is committed to engaging members of the local community in archaeological projects and fieldwork: an approach widely known as 'Public Archaeology'. HDA places particular emphasis upon public outreach to raise awareness about local heritage and to educate the wider community on the importance of archaeological investigation and preservation.

During the course of the survey at North Head, in conjunction with the Community Development Officer and staff of the Dandaragan shire, HDA hosted several volunteers on site.

### Site Clean Up

Three volunteers assisted with the collection of rubbish that was spread over the survey area. HDA provided guidance as to what was 'rubbish' compared to historical material (which the volunteers were instructed to leave in situ). The assistance of these volunteers was particularly instrumental in cleaning up the interior of the subsurface water tank, which contained a large amount of modern rubbish.



### Surveying

Volunteers also assisted the survey by conducting transects alongside the HDA archaeologists. With instruction from the archaeologists about what archaeological remains to observe, during transects volunteers were able to notify the archaeologists when they saw artefacts or structures relevant to the aims of the survey.

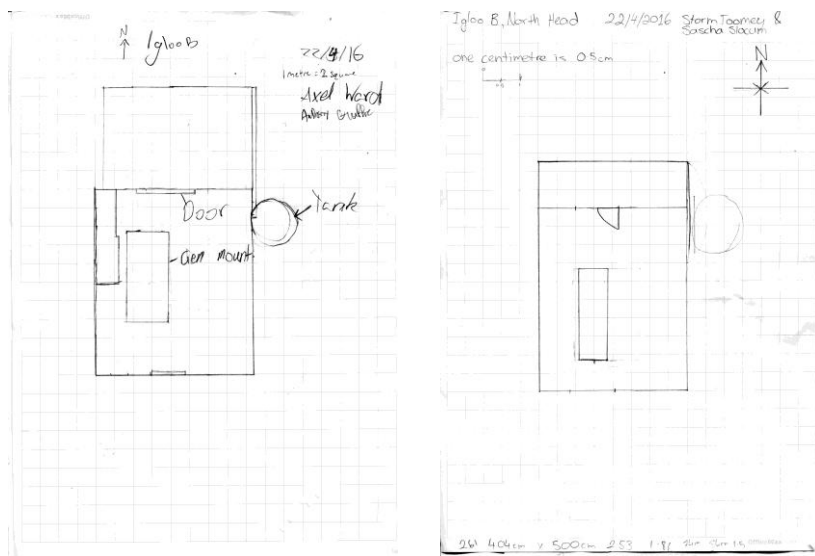
### Police Rangers

Report on a heritage survey of Radar Station 48, North Head, Jurien Bay for the Shire of Dandaragan

On The 22nd of April 2016, eight of the Jurien Bay Police Rangers and two of their leaders joined HDA on site. Archaeologists, Zack Sheppard and Jamie Twaddle took the Rangers for a site tour and explained the meanings/functions of the archaeological remnants to the Rangers. The Rangers were then involved in two activities aimed at teaching them skills directly relevant to archaeological fieldwork. Zack Sheppard showed the Rangers how to undertake artefact photography (with the use of an archaeological scale). A photo competition was held, and the Rangers were asked to submit their best photo to HDA. The winner of this competition was awarded a book prize.



Jamie Twaddle taught the Rangers how to draw a site plan, including how to draw to scale. In pairs, the Rangers drew site plans of Igloo B. An example of one of these plans is included below:





The Rangers departed site that afternoon having learnt important elements about the history of Radar Station 48 and having gained an understanding of the importance of historical preservation.

### Public Presentation

On the evening of the 23<sup>rd</sup> of April, with the assistance of the Shire of Dandaragan, HDA delivered a talk to the public about the history of Radar Station 48 and the preliminary results of the survey. The talk was followed by an informal question and answer session.

Details of the poster promoting the event were created in collaboration with Michelle Perkins, Community Development Officer of SD.

### Social media

HDA maintains an online blog (<https://heritagedetection.wordpress.com>) and Facebook page (<https://www.facebook.com/HeritageDetectionAustralia/>) detailing current projects and archaeological initiatives that the team are involved with.

A blog is currently in preparation regarding the survey of Radar Station 48 and will be posted online with the approval of the Shire of Dandaragan. Regular updates were posted on social media over the course of the survey, and HDA plans to continue the promotion of this project in the future. Such promotion has proven useful in the past at creating positive and proactive reactions within the community.

Zack Sheppard and a team of volunteers created MP3 recording of the sound of a radar station in operation. This linked the ranger, heighter, plotter, wireless operator and Fighter Sector (Pearce). A copy of this has been supplied to SD and can be used as required.

### Radio

HDA principal Bob Sheppard was interviewed on ABC Radio twice in April and promoted the survey and the SD's role.

One of these interviews is available at <https://soundcloud.com/abcwa/survey-of-old-ww2-radar-station-site-may-reveal-big-surprises>

### Television

HDA engaged with Sarah Taillier from ABC TV and assisted her during the creation of news coverage of the site. The report can be viewed on line at

<https://www.facebook.com/abcmidwestandwheatbelt/videos/10154015919470985/?ref=fb>

## **Appendix 2:**

Appendix 2 includes the surveyor's site plans.