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Cosmos Archaeology Pty Ltd

S.S. *Dicky* Archaeological Management Planning Documentation

Heritage Impact Assessment

S.S. *Dicky*

26° 41’ 51.37”, 153° 08’ 21.65” (WGS 84)

Dicky Beach

Caloundra

QLD

May 2015

S.S. Dicky Archaeological Management Planning Documentation

Heritage Impact Assessment

Prepared for:

Sunshine Coast Regional Council

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Cover Image: S.S.* Dicky *during a site inspection. (Cosmos Archaeology 29th September, 2014)

EXECUTIVE SUMMARY

This document is a draft Heritage Impact Assessment, which will support an application by the Sunshine Coast Council to remove and preserve key heritage elements of the wreck of the S.S. *Dicky* at Dicky Beach, Caloundra, as well as reduce safety risks posed by the wreck by removing hazardous elements. As the wreck is protected under the *Queensland Heritage Act 1992* a permit is required to interfere with the site.

The iron hulled cargo steamer was wrecked in 1893 during a cyclone with no loss of life. A number of attempts to re-float the vessel came to nought and the wreck of the S.S. *Dicky* has become a familiar landmark in the Caloundra area. As would be expected for a shipwreck located in the intertidal area of a surf beach, it has gradually broken down over the last 121 years. The wreck has reached a point where the bulk of the remains are often buried. Concerns have been expressed that the barely buried remains of frames and other wreckage pose a health threat to the public and that the heritage significance of the S.S. *Dicky* is being eroded by sand and sea. It because of these concerns that the Sunshine Coast Council is seeking to preserve key heritage elements and remove hazardous elements of the wreck.

To be awarded a permit it will need to be demonstrated that mitigation proportionate to the wreck's cultural heritage significance will able to be implemented. Therefore a Conservation Management Plan and an Interpretation Plan are required as part of the permit application. Before these plans can be prepared the details of how the wreck is to be disturbed, the standard of archaeological recording, conservation and display of wreck materials will need to be defined. The impact – the disturbance of the site – and the proposed mitigation will need to be measured against the site's assessed cultural heritage significance to determine whether the impact and mitigation is acceptable.

There are a variety of ways in which all or sections of the wreck of the S.S. *Dicky* can be recorded, moved, conserved and interpreted. Such methods, or options, needed to be examined for their impact to the heritage values of the site as well as for their feasibility in terms of cost, safety and engineering practicalities. This has been done; the options examined are presented in Section 5 and Annexes E to H. Sunshine Coast Council considered these options and chose one set of options – engineering, archaeology, conservation and interpretation – to complete the Heritage Impact Assessment. The final impact assessment has now been completed along with the preparation of the Conservation Management Plan and an Interpretation Plan for this set of options.

The resultant combination of options has been called the 'Cut and No Cover' approach. It seeks to minimise disturbance to the wreck of the S.S. *Dicky* while reducing the risk the wreck poses to public safety.

The impacts to the wreck entail the removal of upper portions of the wreck while the majority of the wreck remains buried *in situ* beneath natural beach sand deposits. This option includes the provision for the ongoing removal of loose wreckage as it becomes exposed in the future. It also includes reinforcing of the bow stanchion to remain as a wreck marker *in situ* as well as assessment of future options to replace this stanchion with another wreck marker if the stanchion were to become insufficient for this purpose.

The impacts to the wreck site will be mitigated by archaeological recording/monitoring, the conservation and/or storage of material recovered from the site and the creation of an outdoor display within line of sight to the wreck site. These mitigation measures are detailed in the accompanying Conservation Management Plan and the Interpretation Plan.

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Abbreviations

ACDO	Australian Cultural Development Office
AHD	Australian Height Datum
AIMA	Australasian Institute for Maritime Archaeology
ARI	Average Recurrence Interval
DEHP	Department of Environment and Heritage Protection (QLD)
DEO	Desired Environmental Outcome
DGPS	Digital Global Positioning System
EPA	Environmental Protection Agency (QLD)
EPBC Act	Environmental Protection and Biodiversity Conservation Act 1999
HAT	Highest Astronomical Tide
HIA	Heritage Impact Assessment
ICOMOS	International Council on Monuments and Sites
LAT	Lowest Astronomical Tide
MHWN	Mean High Water Neaps
MHWS	Mean High Water Springs
MLWN	Mean Low Water Neaps
MLWS	Mean Low Water Springs
MSL	Mean Sea Level
SCC	Sunshine Coast Council
S.S.	Steamship
UNCLOS	United Nations Convention of the Law of the Sea
UNESCO	United Nations Educational, Scientific and Cultural Organisation

1 INTRODUCTION

1.1 Background

The Sunshine Coast Council (SCC) is proposing to preserve key heritage elements of the S.S. (steamship) *Dicky* wreck as well as reduce safety risks posed by the remains by removing hazardous elements. The wreck is located in the intertidal zone on Dicky Beach, Caloundra. The SCC cites concerns for public safety, especially in light of recent increased deterioration of the wreck, as the reasons why the wreck should be disturbed.

A permit is required from the Queensland Department of Environment and Heritage Protection (DEHP) under Section 91 of the *Queensland Heritage Act 1992* to disturb the site. The awarding of a permit would be conditional, in part, on acceptable archaeological mitigation being implemented before, during and after interfering with the wreck.

For a permit to be awarded a Heritage Impact Assessment (HIA) is required by the DEHP. The HIA assesses the proposed impacts to a heritage site, in this case the wreck of the S.S. *Dicky,* against its heritage significance and determines whether such impacts are acceptable. Mitigation measures are proposed to minimise negative impact in situations where they are not acceptable. So as to demonstrate that the most appropriate mitigation measures have been identified, a wide variety of options, which could both fulfil the proponent's (SCC) requirements and safeguard the heritage significance of the site, needed to be examined. This has been a substantial undertaking for the HIA.

The adopted option with appropriate mitigation presented in this HIA will be expanded in detail in an accompanying Conservation Management Plan and Interpretation Plan. If all three documents are accepted by the DEHP, a permit will be issued under Section 91 of the *Queensland Heritage Act 1992* on condition that the measures proposed are implemented.

1.2 Study Objective

The objective of this report is to:

- *Prepare a HIA for preserving heritage elements of S.S.* Dicky *and reducing safety risks that accords with the Burra Charter principles and satisfies the requirements of the DEHP. The HIA which also will consider the impact upon the physical attributes of the place and the vessel, the setting or context of the place, social significance, and other factors that contribute to cultural heritage values*.

It is understood that SCC's capacity is limited by allocated budgets and that, by necessity, a pragmatic approach to extraction, conservation and interpretation of the S.S. *Dicky* needs to remain a consideration.

Community consultation has been undertaken by SCC with no involvement from Cosmos Archaeology.

1.3 Study Methodology

This report first provides an introduction to the S.S. *Dicky* wreck and the project in **Section 2**, including the findings of past reports and an assessment of the current condition of the wreck. **Section 3** outlines statutory issues and guidelines that inform this report including the Burra Charter and requirements of DEHP.

Section 4 provides an updated significance assessment of the S.S. *Dicky* wreck utilising previous studies and elaborates on the cultural significance of the wreck by assessing the separate physical elements that make up the site.

The numerous options for altering the wreck are then discussed in **Section 5**. These options are broken down into engineering, archaeological, conservation and interpretation options with each option explained in detail and then assessed individually. Viable combinations of options are shown with the use of a flow chart to aid in the selection of a suitable mitigation plan.

The final section of the report – **Section 6** – is dedicated to the description and rationale of the selected option, predicted heritage impacts and proposed mitigation measures.

1.4 Authorship

Danielle Wilkinson (Archaeologist) undertook the research, collation and compilation for this report as well as contributing to the cultural significance assessments for the S.S. *Dicky*. Cos Coroneos (Director) undertook the bulk of the cultural significance assessments and oversaw the preparation of the report. Caroline Wilby (Senior Archaeologist) reviewed the draft and provided significant input.

Sections 2 to 4 draws upon two previous reports completed by Cosmos Archaeology on the S.S. *Dicky*, these being:

> **Cosmos Archaeology, 2008** *SS* Dicky *Management Plan*, report for Caloundra City Council.
>
> **Cosmos Archaeology, 2014** *Preliminary Archaeological Investigation of the Wreck of S.S.* Dicky*,* report for Sunshine Coast Regional Council.

Section 5 also includes contributions from Geoff Hewitt (Principal, Geoff Hewitt Archaeologist), Vicki Richards (Research Officer/Conservation Scientist, Department of Materials Conservation, Western Australian Museum, Shipwreck Galleries) Jon Carpenter (Maritime Archaeological Conservator, Western Australian Museum, Shipwreck Galleries) and Peter Tonkin (3-D Projects).

2 BACKGROUND TO THE S.S. DICKY

2.1 Location

The wreck of the S.S. *Dicky* is situated within the intertidal zone of a sandy surf beach located 100 metres to the north of Bunbybah Creek and 2.5 kilometres north of Caloundra City Centre (Figure 1). The vessel lies on an approximate south-west to north-east axis, perpendicular to the shoreline with the bow facing inland, and has been in this location for over 120 years. The wreck is a well-known feature of the area; the beach where it is located is named after it.

Figure 1. Location of S.S.* Dicky *wreck at Dicky Beach. (Basemap source: Google Earth)

2.2 History

The historical information in this document has been obtained from *S.S.* Dicky *Management Plan* by Cosmos Archaeology in 2008[1] and *S.S.* Dicky *Inspection Report: 20 and 31 May 2013* by the Queensland Heritage Division (then the Heritage Branch).[2]

The iron hulled 225 ton (gross) steamship was wrecked in a severe storm in early February 1893 whilst en route from Fitzroy River to Brisbane carrying sand and water ballast. No lives were lost. The S.S. *Dicky* was initially only grounded by the stern at high tide, however, four attempts to re-float the vessel failed with it being washed back ashore each time. Following

[1] **Cosmos Archaeology, 2008,** *SS* Dicky *Management Plan*, report for Caloundra City Council.

[2] **Waterson, P.A., 2013,** *S.S.* Dicky *Inspection Report: 20 and 31 May 2013*, Heritage Branch, Environmental Policy and Planning Division, Department of Environment and Heritage Protection, Queensland Government.

the last attempt in late February 1894, the vessel was run ashore bow first and officially salvaged.

In the years that followed the effects of wave action, corrosion and scavenging have seen the progressive alteration and deterioration of the S.S. *Dicky* wreck. Substantial collapse events occurred in the mid-1920s and mid-1930s due to heavy seas arising from cyclones. In 1963, the propeller was removed and mounted on a specially erected stone cairn near the site. During the late 1960s, a broad section of the upper parts of the hull at midships was removed; possibly to allow the passage of 4WD vehicles along the beach. The passages of two cyclones in 1974 scoured out the sand around the wreck to such an extent that timber beams and floorboards were reportedly exposed. However, no significant loss or collapse appears to have occurred at that time. In 2005, the wreck was again exposed when then SCC (then Caloundra City Council) applied fish oil as a means of slowing down corrosion. It does not appear that the interior of the wreck was uncovered down to the bilge.

The pattern of deterioration during cyclonic seas has most recently culminated in the collapse of the mid-section of rib framing following Cyclone Oswald (January 2013). This event has been the catalyst for the SCC to take a pro-active stance for the long term management of the wreck.

2.3 Rationale for Study

The issue of long-term management of the wreck of the S.S. *Dicky* has been debated since the 1980s. There has been competing concerns regarding the potentially hazardous nature of the wreck to swimmers and beach goers versus the landmark value and tourist attraction of the wreck site as well as the cultural heritage significance of the wreck itself. A newspaper article from the *Sunday Mail* in 2009 illustrates these concerns as "There are fears children and tourists could hurt themselves on jagged, rusted sections of an iconic Queensland shipwreck, further exposed by high tides and sand erosion."[3]

In 2013, an inspection report prepared by the Queensland Heritage Branch determined that the S.S. *Dicky* has suffered advanced degradation since Cyclone Oswald in January that year. This weather event resulted in structural damage and loss of fabric, dramatically affecting the wreck's appearance and heightening safety concerns. The report concluded that the vessel has passed a catastrophic level of deterioration and key "tipping point" whereby nothing can be done to preserve the upper portions of the ship in the medium to long-term. In July 2013 it was noted that the mid-section of rib framing had collapsed, increasing concerns for the stability of the remains and viability for in-situ conservation. Considering the continued degradation of the wreck, the report stated that the argument for complete or partial removal was heightened.

The SCC have subsequently put forward a proposal to preserve key heritage elements of the S.S. *Dicky* and reduce safety risks posed by the remains.

2.4 Previous Archaeological Investigations

In 2006 SCC exposed the wreck down to the turn of the bilge and applied a fish oil treatment to the exposed hull of the S.S. *Dicky* (Figure 2). This treatment followed advice from conservators at the Western Australian Museum in an attempt to slow down corrosion.

Cosmos Archaeology was asked to undertake and prepare a Management and Interpretation Plan for the S.S. *Dicky* shipwreck in 2007 by the SCC (then the Caloundra City Council) (Figure 3).[4] This was in response to the desire for remains of the wreck to persist as an important social element and landmark for Caloundra. The management plan suggested a preferred option of applying fish oil and cathodic protection to the wreck as well as supporting the rudder post at the stern.

[3] **Martin, H., 31st May 2009,** "Shipwreck danger: Risk to bathers exposed," *Sunday Mail*, Brisbane.

[4] *Op. Cit.* **Cosmos Archaeology, 2008**

Figure 2. The S.S.* Dicky *excavated for the purpose of applying fish oil for conservation, July 2006. (Source: John Waldron)

Figure 3. S.S.* Dicky*, early morning on 17th October 2007 during wreck inspection. (Source: Cosmos Archaeology)

Following some extreme weather, the DEHP inspected the S.S. *Dicky* wreck in May 2013 and found that the much of the hull remains had disappeared over the previous three years (Figure 4).[5] The remaining sections appeared structurally weak and at risk of collapse.

***Figure 4. S.S.* Dicky *exposure in 2013 during DEHP inspection.*[6]**

[5] *Op. Cit.* **Waterson, P.A., 2013**

[6] *Ibid.*

In 2014, the SCC began their plan to remove and relocate the S.S. *Dicky* beginning with a test excavation conducted by Cosmos Archaeology. Despite the excavation being conducted during the spring low tide in April, half the wreck remained completely inundated. Mechanical excavation was followed by hand excavation at starboard midships to reveal two floor plate sections and the keelson. It was found that the wreck was likely siting on a matrix of stiff grey clay and may have sunk/bonded with it. The keelson appeared to be of centre through plate type which would give the wreck a strong 'backbone,' although one of the floor plates appeared to have parted from the keelson indicating there may be other weaknesses of this sort elsewhere in the wreck. A remnant of ceiling planking was identified abutting the keelson, indicating that the bilge deposits would be composed of small thin objects and that the ceiling planking would have assisted in sealing these deposits within the bilge. The wreck is also heeled over to port by around 12 degrees which suggests that the port side, from the keel to the turn of the bilge, would be more intact than the starboard side.

2.5 Natural Environment

The wreck of S.S *Dicky* is located in the intertidal zone of a surf beach; Dicky Beach. The position of the wreck in relation to tidal movements varies due to seasonal and sporadic accumulation and erosion of sand. Conditions during the 2008, 2013 and 2014 inspections indicate that the water level does not drop far beyond the stern post of the wreck, with the wreck remaining for the most part at least slightly submerged.

The wreck lies on a sandy beach, backed by vegetated dunes. Borehole testing around the wreck site conducted by SCC on 8 October, 2014, revealed beach sand to a depth of 1.6 to 2 m surrounding the site before becoming sandy clay (Figure 5). The results also indicated that the clay bedding layer runs on an approximate 5% slope towards the ocean and a 1.5% slope heading southwards.[7] The SCC borehole testing report is presented in Annex A.

***Figure 5. Location of boreholes testing the sediment around the wreck of S.S.* Dicky.** (Source: Cardno Construction Sciences, supplied by SCC).

[7] **Keeshan, G., 2014**, 'SS Dicky Geotechnical Investigations 08/10/2014,' unpublished findings, Sunshine Coast Council, in email 'Progress on job' to Cosmos Coroneos, 3 November 2014.

The most common wind direction is from the southern and eastern quadrants (Figure 6 and Figure 7). The figures below show that the afternoon sea breezes come from the north east quadrant. The strongest winds, those in excess of 40 km/h, come from the south east quadrant in the morning. A review of monthly averages between 1970 and 1992 show that, in the morning, the lowest wind speeds are experienced in August at 15 km/h while the largest are during February with a mean of 21.6 km/h. During the afternoon, the lowest wind speeds occur during June at a mean of 19.2 km/h and the highest again in February at 27.9 km/h.[8]

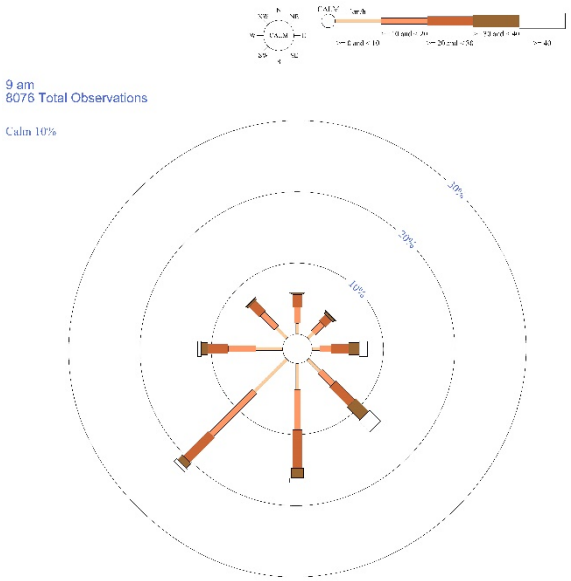

Figure 6. 9 am wind observations at Caloundra (1970-1992).[9]

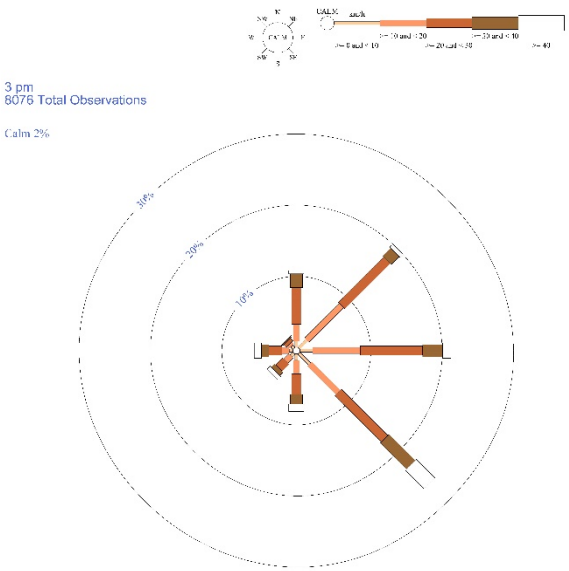

Figure 7. 3 pm wind observations at Caloundra (1970-1992).[10]

A review of the tropical cyclones off Queensland between 1906 and 2007, shows that six cyclones – 1974, 1972, 1971, 1955, 1946, 1921 – have passed within 50 km of the Sunshine Coast and the wreck of the S.S. *Dicky* (Figure 47). Seventeen cyclones have passed within 100 km of the site.[11]

[8] **Bureau of Meteorology, 2014a,** 'Climate Statistics for Australian Locations – Monthly Climate Statistics – Summary Statistics for Caloundra Signal Station', available http://www.bom.gov.au/climate/averages/tables/cw_040040.shtml, accessed 17 November 2014.

[9] **Bureau of Meteorology, 2014b,** 'Climate Statistics for Australian Locations – Monthly Climate Statistics – Summary Statistics for Caloundra Signal Station – Annual 9am wind speed vs directional plot', available http://www.bom.gov.au/clim_data/cdio/tables/pdf/windrose/IDCJCM0021.040040.9am.pdf, accessed 17 November 2014.

[10] **Bureau of Meteorology, 2014c,** 'Climate Statistics for Australian Locations – Monthly Climate Statistics – Summary Statistics for Caloundra Signal Station – Annual 3pm wind speed vs directional plot', available http://www.bom.gov.au/clim_data/cdio/tables/pdf/windrose/IDCJCM0021.040040.3pm.pdf, accessed 17 November 2014.

[11] **Bureau of Meteorology, 2014d,** 'Tropical Cyclone Information for the Australian Region – 1906-2007 within 100 km of the Sunshine Coast (26.6°S Lat, 153.09°E Long)', available http://www.bom.gov.au/cgi-bin/silo/cyclones.cgi?region=aus&syear=1906&eyear=2006&loc=1&txtloc=&radius=100&ulat=26.6&ulon=153.09, accessed 18 November 2014.

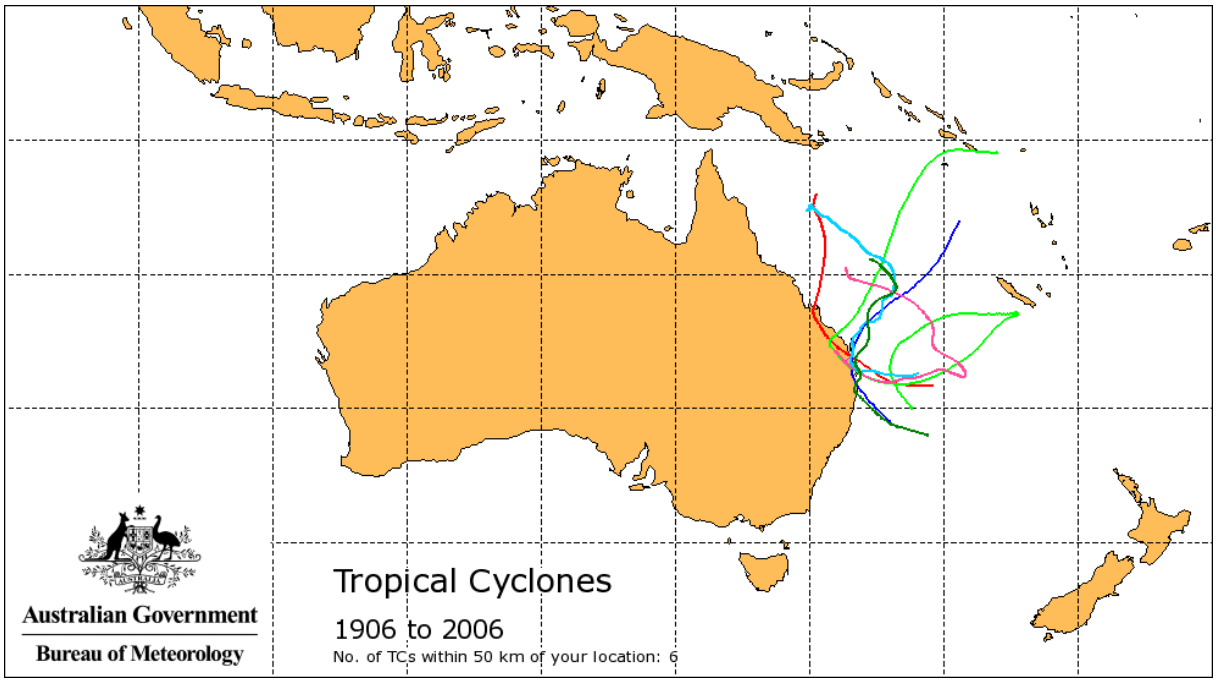

***Figure 8. Tropical cyclones that have passed within 50 km of the S.S.* Dicky *between 1906 and 2007.*[12]**

The Sunshine Coast is mostly exposed to wave conditions from the north and east, although Caloundra Head shelters the beaches to the north of it, including Dicky Beach, from south/southeast swells. The wave rose plot below is from data collected from 1996 to 2009, showing that approximately 50% of the wave climate at Dicky Beach comes from the East, although this only reaches a significant wave height (Hsig) of 2-2.4 m. In comparison, the rest of the wave data spans from between E to ENE but this reaches Hsig of 2.8-3.2 m.

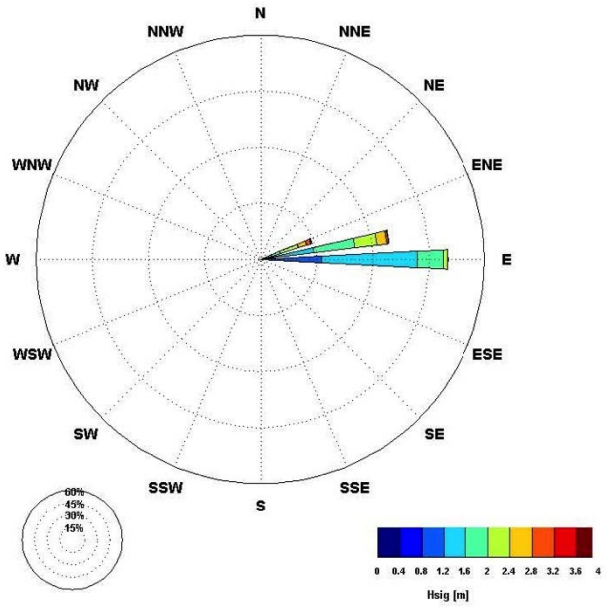

***Figure 9. Dicky Beach Wave Rose Plot.*[13]**

[12] **Bureau of Meteorology, 2014e,** 'Tropical Cyclone Information for the Australian Region – 1906-2007 within 50 km of the Sunshine Coast (26.6°S Lat, 153.09°E Long),' available http://www.bom.gov.au/cgi-bin/silo/cyclones.cgi?region=aus&syear=1906&eyear=2006&loc=1&txtloc=&radius=50&ulat=26.6&ulon=153.09, accessed 18 November 2014.

[13] **BMT WBM, April 2003,** 'Sunshine Coast Regional Council Coastal Processes Study for the Sunshine Coast', report for Sunshine Coast Regional Council, available http://www.sunshinecoast.qld.gov.au/addfiles/documents/environment/coastal/coastal_processes_study_for_sunshine_coastr.pdf, accessed 17 November 2014.

The tides along the Sunshine Coast are semi-diurnal. At Mooloolaba Beach on the Sunshine Coast, approximately 10 km north of Dicky Beach, the mean spring tide range is 1.36 m while the extreme tidal range under astronomical conditions is 2.17 m. A list of tide rages combined with approximate heights of the S.S. *Dicky* wreck, as discussed below in **Section 2.6**, is presented below (Table 1).[14] A tide table for Mooloolaba in 2015 is available in Annex B. The adjustment for Caloundra is to take off three minutes.

Table 1. Mooloolaba Standard Port Tidal Planes.[15]

Tide	Height (mLAT)	Level (mAHD)
Highest Astronomical Tide (HAT)	2.17	+1.18
Autumn 2015 HAT May 18 20:29	2.06	+1.07
Spring 2015 HAT Nov 27 08:52	2.02	+1.03
Autumn 2015 Corresponding High Tide Mar 21 08:39	1.98	+0.99
Spring 2015 Corresponding High Tide Sept 29 08:37	1.84	+0.85
Mean High Water Springs (MHWS)	1.66	+0.67
Mean High Water Neaps (MHWN)	1.33	+0.34
Mean Low Water Neaps (MLWN)	0.58	-0.41
Mean Low Water Springs (MLWS)	0.26	-0.73
Top of Keelson	Approx. 0.22	Approx. -0.77
Autumn 2015 Corresponding Low Tide May 18 13:58	0.14	-0.85
Autumn 2015 LAT Mar 21 14:54	0.09	-0.90
Spring 2015 Corresponding Low Tide Nov 27 02:17	0.01	-0.98
Lowest Astronomical Tide (LAT)	0.00	-0.99
Spring 2015 LAT Sept 29 02:27	-0.06	-1.05
Estimated lowest point of wreck	Approx. -0.53	Approx. -1.52

Storm events cause elevated water levels and these are recorded at Mooloolaba as being on an average of 1.49 mAHD with an average recurrence interval (ARI) of 20 years, or 1.66 mAHD with an ARI of 100 years. Having noted this, storm tide levels induced by a tropical cyclone in Mooloolaba are 2.37 mAHD with ARI of 100 years, or 2.55 mAHD at Caloundra with ARI of 100 years.[16]

The shoreline surrounding Caloundra is dynamic, with prevailing physical forces causing changes in the shoreline position. There is a combination of ocean swell and local wind-generated 'seas' that create the wave climate. The Caloundra Headland provides shelter to Dicky Beach from south-southeast swells. It also divides the littoral drift of sand supply, with net transport of beaches north of the Caloundra Headland expected to be weakly northwards. The presence of rocky outcrops suggests that the beaches are subject to coastal processes. The beaches appear to be comprised of sands sourced locally with a high proportion of calcareous material. The extensive offshore reef suggests onshore sediment supply is low, causing the beaches to be vulnerable to storm erosion[17]

Beach profile surveys conducted along the Sunshine Coast indicate that the beaches experience periods of erosion followed by periods of accretion, and historical survey data suggests no strong evidence for ongoing shoreline erosion.[18] The shoreline of Dicky Beach was impacted by short term erosion events between 1972 and 1974, and a significant

[14] *Op. Cit.* **BMT WBM, April 2003**

[15] *Ibid.*

[16] *Ibid.*

[17] *Ibid.*

[18] *Ibid.*

erosion threat was identified. Since this time the shoreline has recovered and is considered to be in good condition.[19]

2.6 Current Condition

2.6.1 Exposed Elements

The condition and extent of exposed elements of the S.S. *Dicky* shipwreck has altered greatly over the last eight years. The 2007 inspection occurred after storm activity had exposed more of the wreck than normal. Frames and hull plating were visible along most of the port and starboard sides up to the turn of the bilge, other than the section of hull removed in the 1960s.[20] A section of the keel was visible along with timber planking. At this stage there was exposed material towards the bow end of the wreck. The height of the bow remains varied, but the port side remains were approximately 0.5 m higher. Due to the heel of the vessel to the port, deck beams, built knee plates and stringer plates were only visible on the port side.[21]

In May 2013, only the stern and rear starboard quarter of the wreck were consistently exposed. These sections were considered structurally vulnerable, with a section of framing visibly flexing with wave action.[22] The upper stringer towards the stern had collapsed and a midsection of rib framing was weakened, likely to have occurred as late as early 2013. The missing sections of the port side had collapsed both inwards and outwards.[23]

Most recent observations during the 2014 test excavation observed that only a portion of the starboard of the stern end of the wreck were exposed above sand level, similar to 2013. Exposed sections of the wreck included the sternpost to below the turn of the bilge, a section of the hull along the starboard side towards the stern, one stanchion, the tops of two frames at sand level along the port side and the tops of three other frames (Figure 10 and Figure 11).[24] The rudder post was still the most prominent and highest point of the wreck. The base of the rudder post had been cut away, likely during the removal of the propeller in 1963, and the weight of the post is taken by a connection with the keel.

Figure 10. Exposed elements of S.S.* Dicky *at 11:00am, before excavation; facing NE towards stern.
(Cosmos Archaeology 28th April, 2014)

[19] *Ibid.*

[20] *Op. Cit.* **Cosmos Archaeology, 2008**

[21] *Ibid.*

[22] *Op. Cit.* **Waterson, P.A., 2013**

[23] *Ibid.*

[24] **Cosmos Archaeology, 2014** *Preliminary Archaeological Investigation of the Wreck of S.S.* Dicky*,* report for Sunshine Coast Regional Council.

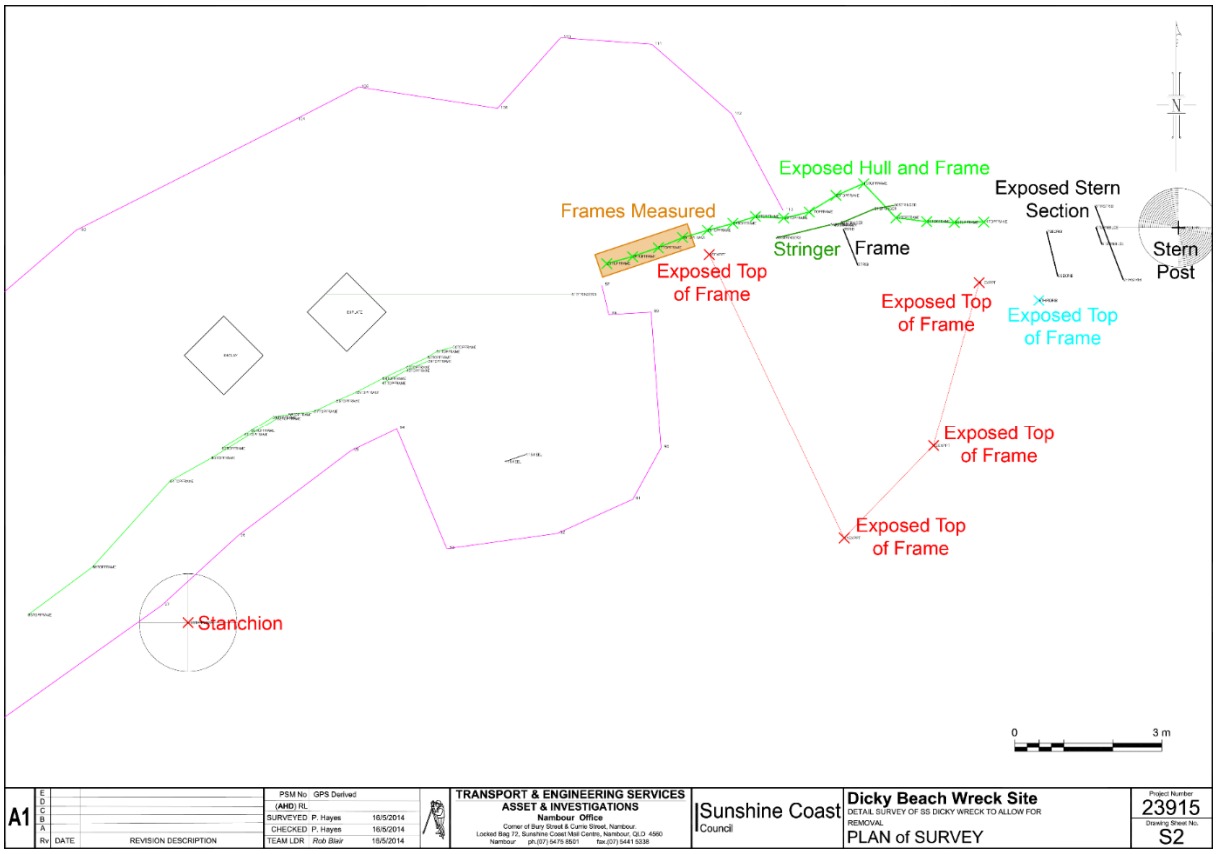

***Figure 11. Survey plan of the exposed elements of S.S.* Dicky.** (Source: Sunshine Coast Regional Council, with annotations)

The section of exposed hull included 11 frames, one stringer and one perpendicular frame extending towards the centre of the wreck, as well as the tops of another four frames visible near sand level towards the stern (Figure 12 to Figure 15).[25] The bow-facing edge of this section of hull ends at mid-ship where part of the hull was removed in the late 1960s. Where the four frames were exposed at sand level, near the stern on the starboard side, is where it was observed that a section of hull had collapsed since the 2013 inspection. The stringer shows evidence of being warped and bent at the edge of this section as a result of the forces (natural) that removed the hull.[26]

[25] *Ibid.*

[26] *Ibid.*

Figure 12. Exposed hull and stern section of the wreck; facing NE towards stern. (Cosmos Archaeology 28th April, 2014)

Figure 13. Stringer and perpendicular frame in the section of exposed hull; facing N. *The stringer shows evidence of a bend towards the stern side (right side).* (Cosmos Archaeology 28th April, 2014)

Figure 14. Looking along the only visible stringer, showing a break where it has weathered away and a perpendicular frame (parallel to the scale, 50 mm increments) extending from a frame; facing E. (Cosmos Archaeology 28th April, 2014)

Figure 15. Stern section of the wreck with the tops of four broken frames where a section of hull has been removed (left of the stern section); facing NE. (Cosmos Archaeology 28th April, 2014)

The wreck of S.S. *Dicky* was also found to heel over approximately 12 degrees to the port side, resulting in the starboard side of the vessel being higher than the port side (Figure 16). This accounts for the relatively poorer condition of the starboard hull as the frames and plating have been more exposed to wave action and their orientation would have put greater strain along the weakest point of the hull, the turn of the bilge.[27] On the port side, the hull would be less exposed to wave action as it would not be uncovered as often and the strain in the hull around the turn of the bilge would be supported by sand. It can be expected that more of the port side hull is preserved that the starboard hull (Figure 17).[28]

[27] *Ibid.*

[28] *Ibid.*

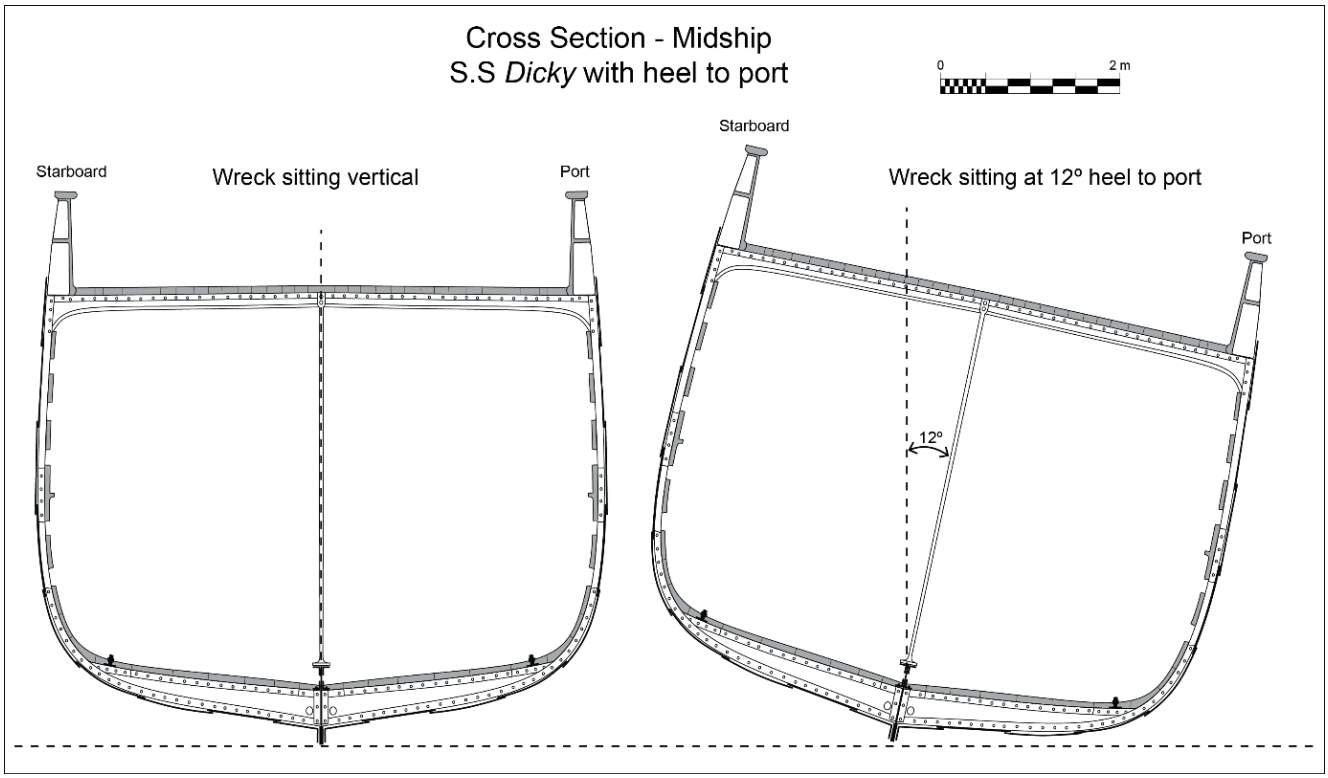

Figure 16. Degree of tilt of the S.S* Dicky, *looking east towards the stern. *The shape of the hull is based on plans of an iron hulled vessels scaled to similar depth and width.*[29]

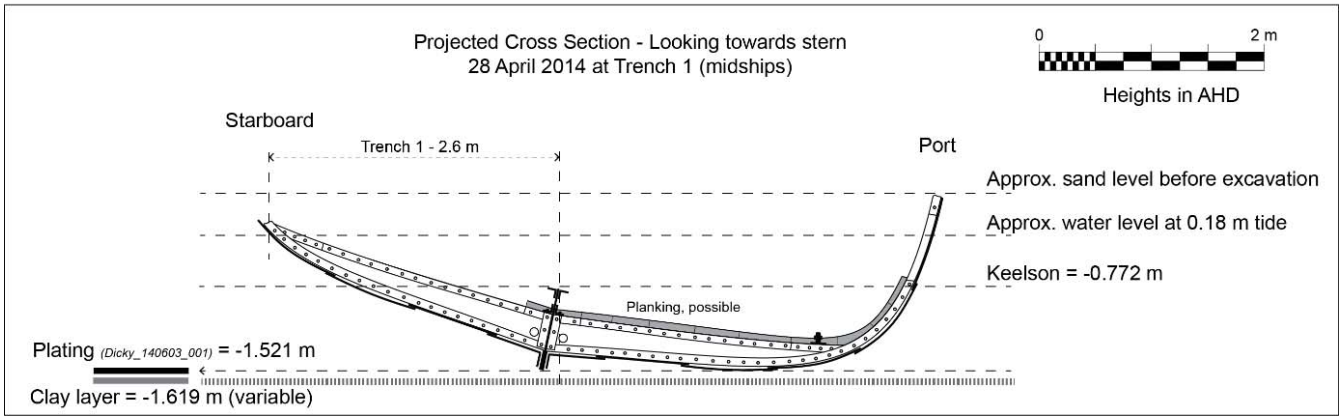

***Figure 17. Projected cross section of the wreck of S.S.* Dicky *at midships.*[30]**

2.6.2 Construction and Integrity

Construction and condition observations were made during the 2007 inspection and 2014 test excavation, with the 2014 observations including details of previously buried and unrecorded elements. These observations give an indication of the structural integrity of the shipwreck.

The frames are composed of two angle bars riveted together to form a “z” frame, with the distance between frames, from outer edge to outer edge, being around 0.54 m. The plates were overlapped alternatively in a clinker fashion.[31] Two stanchions were observed on the

[29] *Ibid.*

[30] *Ibid.*

[31] *Op. Cit.* **Cosmos Archaeology, 2008**

keelson in 2007, along with another two stanchions to port, suggesting the S.S. *Dicky* had bilge keelsons. The bow, one of the strongest parts of the vessel, was absent in 2007 and the way that the port and starboard sides stepped down towards the bow indicated that perhaps it had been deliberately cut down.[32] Despite the exposure of the stern end of the wreck to wave action, this area was more intact in 2007, preserved to the lower deck level on both port and starboard sides. Hull remains on the port side close to the stern had further collapsed as a result of localised weakening through corrosion.[33]

Excavation in 2014 uncovered two parallel floor plates extending in a continuous line from the starboard side of the vessel to the centreline keelson.[34] The floor plates appeared to have been constructed of "T" or "T-bulb" solid iron plates, with the upper "T" bulb measuring approximately 130 mm in width. The depth of the floor plates was moulded to conform to the line of the base of the hull and appeared to abut the centreline keelson.[35] The keelson also had a "T-shaped" upper edge; likely either consisting of a "T-bulb" iron with the upper edge measuring approximately 160 mm in width.[36] The fact that the floor plates appeared to abut the keelson indicates that the keelson is most likely a centre through plate type; i.e. a continuous longitudinal member (Figure 18). From what can be seen of the wreck, it also appears that the keel is not broken.[37]

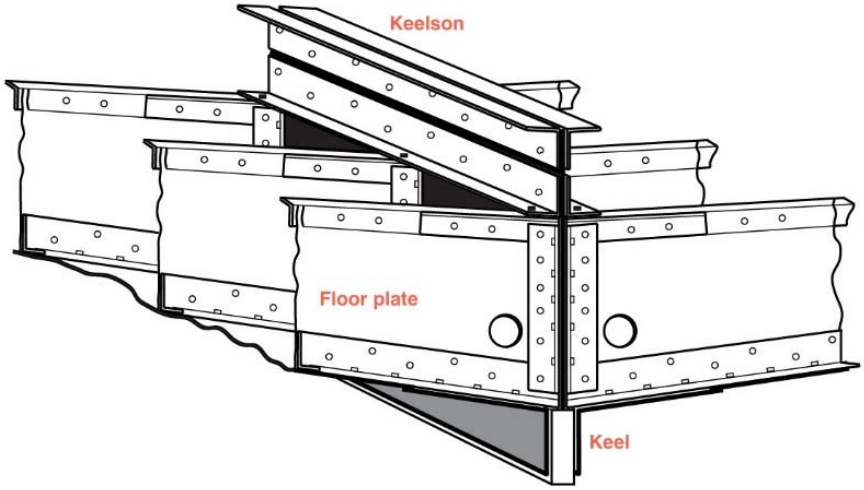

***Figure 18. Oblique view of possible keelson/keel and floor plate construction of the S.S.* Dicky, *showing the T-shaped centre through plate type keelson and jointed floor plates.*[38]**

A cut timber plank, rectangular in profile and measured 260 mm in width by 30 mm in thickness, was situated atop one of the floor plates (the stern-most or aft floor plate of the pair), running longitudinally alongside the keelson and situated approximately 200 mm below the upper surface of the keelson (Figure 19). The plank most likely represents a surviving bilge ceiling plank.[39] Observations of sediments above and below the timber plank suggest that the interior of the bilge on the starboard side of the wreck has been exposed to wave action and subject to natural deposition and reworking of sediments over time.[40]

[32] *Ibid.*
[33] *Ibid.*
[34] *Op. Cit.* **Cosmos Archaeology, 2014**
[35] *Ibid.*
[36] *Ibid.*
[37] *Ibid.*
[38] *Ibid.*
[39] *Ibid.*
[40] *Ibid.*

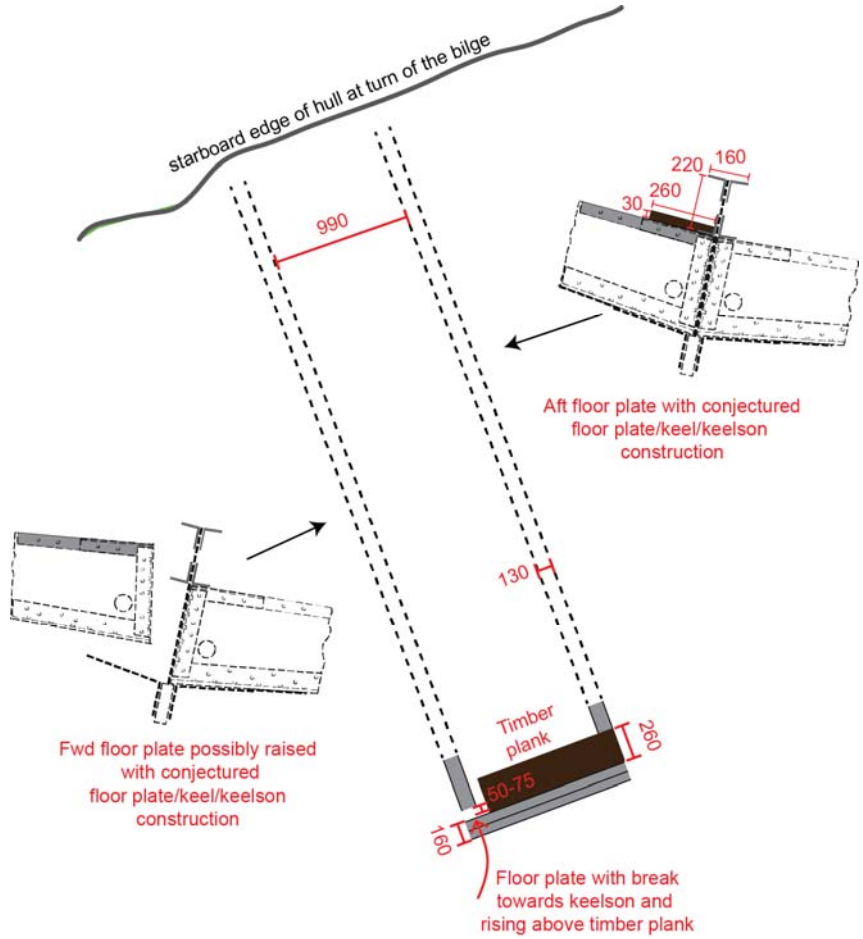

Figure 19. Measurements associated with the keelson and floor plates. *Measurements are in mm.*[41]

Given that only one timber plank was encountered within the manual excavation area, along with the presence of natural beach sands between the floor plates, it is unlikely that intact bilge deposits survive in the starboard midships area of the wreck; other than possible concretions of artefacts that have become affixed to the hull structure itself.[42] However, there is a possibility that more substantial sections of ceiling planking survive intact, especially on the more deeply buried and protected port side, thus potentially sealing or protecting under floor bilge deposits. With approximately 50 sets of floor plates from stem to stern, this would equate to potentially 50 sealed bilge deposits along the post side.[43]

Towards the second floor plate (the bow-most or forward of the pair), the timber plank dipped down towards the base of the hull and below the height of second floor plate. Further investigation in this area revealed that there was also a break between the second floor plate and the keelson with the floor plate ending in a jagged vertical edge; however, it was unclear whether the floor plate has actually been broken through at this point or simply broken free of its fastenings with the keelson (see Figure 19).[44] The end of this second floor plate was also positioned higher than the first floor plate, suggesting that this second floor plate has also broken free of its lower fastening and lifted upwards. The fact that the floor plate has broken at this point could provide support to the observation that the floor plates abutted the keelson, with the keelson being a continuous centre through type.[45]

[41] *Ibid.*

[42] *Ibid.*

[43] *Ibid.*

[44] *Ibid.*

[45] *Ibid.*

It is possible that this damage occurred during the late 1960s removal of sections of the wreck, or possible subsequent operation of motor vehicles across and over the lower midships structural components. It is also possible that this breakage is an isolated occurrence. However, the identification of such damage within a very small sample area of the wreck tends to suggest that there is a high probability of other points of damage and/or weakness occurring throughout the vessel; perhaps particularly within the midships area.[46]

2.6.3 General Observations

The environment of the S.S. *Dicky* wreck is one of the harshest for preserving wrecks, and the on-going corrosion of the hull remains has resulted in the weakening of the remaining structural integrity of the wreck, differing in rate depending on the 'thickness' of elements and their location in the wreck.[47] Areas that are seaward are unable to develop protective corrosion product 'casings' due to larger exposure to mechanical damage and therefore corrode quicker. The rudder post is the thickest and most durable element, and the thinnest and weakest are the hull plates. The lower basal elements of the wreck are either mostly or sporadically protected by sand cover and are in relatively better condition.[48]

The measured depth of the clay substrate found off the starboard side of the wreck midway between the bow and midships is almost at the same level (100 mm difference) as the base of the keel. Accounting for a modest margin of error, it is very likely that the wreck rests on a hard deposit of clay.[49] The clay was sufficiently hard enough at the time of wreck for the vessel not to sink into it, but to heel over like it would do if it had come to rest on a rock platform or compacted seabed. Having said that, it is very likely that over time the wreck has sunk into the clay, which would result in the hull forming a depression in the clay or, in other words, the clay has moulded itself to the hull.[50]

2.7 Associated Artefacts

A number of items related to the S.S. *Dicky* have become disassociated with the wreck over time. Some are known and are described below, although it is likely that more pieces have been collected by the public.

A concreted coil of steel cable is displayed, untreated, under glass in the Dicky Beach Surf Club (Figure 20). This item was donated to the Club by the Wilson family, who had recovered it from the wreck after a cyclone in the mid-1970s. Also at the Club is a scale model of the S.S. *Dicky* on display in a glass cabinet (Figure 21). The model, constructed by Neil Dowsett in 1984, is made of timber and fibreglass with the hand railings made from grass.[51] The model is 10 kg in weight, 640 mm long and 140 mm wide. It was built using information from photographs, records held by the Harbours and Marine Department and the State Archives.[52]

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[46] *Ibid.*

[47] *Op. Cit.* **Cosmos Archaeology, 2008**

[48] *Ibid.*

[49] *Op. Cit.* **Cosmos Archaeology, 2014**

[50] *Ibid.*

[51] ***Sunshine Coast Daily*, 20 June 1984,** "Dicky sails again"

[52] *Op. Cit.* **Cosmos Archaeology, 2008**

Figure 20. Close up of the steel cable under glass at the Dicky Beach Surf Club (Cosmos Archaeology, October 2007).

Figure 21. Neil Dowsett's model of the S.S. Dicky on display in the Dicky Beach Surf Club (Cosmos Archaeology, October 2007).

The propeller of the S.S. Dicky, recovered in 1963, is mounted on a stone cairn in the Dicky Beach Carpark (Figure 22). The monument is located adjacent to the car park toilets and is shaded by a large fig tree for most of the morning and early afternoon. The cairn, and the block under the propeller upon which a plaque is mounted, are painted white. The propeller itself measures approximately 1.5 m across and is coated with two layers of fibreglass (Figure 23). Signs of rust weeping from the cracks in the fibreglass show that the propeller is made of iron, the pitting in the surface of the object point to it being cast iron (Figure 24). It is unlikely that the propeller underwent any conservation treatment prior to being coated – initially it is assumed with paint – and then with fibreglass.[53]

Figure 22.The propeller mounted onto a monument for the S.S.* Dicky *at Dicky Beach Carpark. (Cosmos Archaeology, October 2007).

[53] *Op. Cit.* **Cosmos Archaeology, 2008**

Figure 23. Detail of the layers of fibreglass coating for the propeller at Dicky Beach Carpark. (Cosmos Archaeology, October 2007)

Figure 24. Crack in the fibreglass coating for the propeller at Dicky Beach Carpark. (Cosmos Archaeology, October 2007)

The Landsborough Historical Society Museum displays a sawn off section of what has been identified as a mast from the S.S. *Dicky*. This piece was recovered from the wreck after the 1974 cyclones.[54]

Figure 25. Sawn off fragment of mast from the S.S.* Dicky*, Landsborough Historical Society. (Cosmos Archaeology, October 2007).

Iron hull components of the S.S. *Dicky* are also stored in the SCC Depot (Figure 26). This includes a pallet of objects recovered from the site during and after the application of fish oil on the wreck in mid-2006. It appears that these artefacts have not undergone any conservation treatment and are actively rusting.[55]

[54] *Op. Cit.* **Cosmos Archaeology, 2008**

[55] *Ibid.*

Figure 26. Artefacts in storage at the SCC Depot. (Cosmos Archaeology, 26 September, 2014)

Most of the objects appear to be from the bow area; the longest piece, approximately 3.7 m in length, being the stem post. The stem bar is approximately 130 mm wide with a surviving core of 30 mm thickness, or 50 mm thickness if the remains of possible hull plating are included. Rivets in a zigzag configuration and approximately 27 mm in diameter at the head. One end of the stem bar has a heavily concreted bolt through it. No measurements possible. The approximate length of the stem bar piece is 3.5 m. A loose piece of stem bar, broken off, has rivet head thickness of 10 mm, although this may actually be exposed shaft of the rivet. This piece tapers to a rounded point at one end, similar to one end of the longer piece, suggesting that they were connected at this point but it was worn down by wave/wind action and snapped (Figure 27). The small piece of stem bar is approximately 1.5 m long, giving a total of approximately 5 m. The stem bar appears to taper in other areas, although this may be an effect of corrosion. Other measurements of width include 150 mm and 120 mm.

The remains of the hull plating riveted to the stem post are present. There are also segments of hull frames and built knees which were reportedly knocked off the wreck from the port stern area during the process of sand removal (Figure 28).

Figure 27. Corroded tapered end of the stem post at the SCC Depot. (Cosmos Archaeology, 26 September, 2014)

Figure 28. One of the knees at the SCC Depot. (Cosmos Archaeology, 26 September, 2014).

The Depot also houses two large hull pieces that were found buried and loose near the wreck. These are in surprisingly good condition. The largest piece is approximately 1.8 m x 1 m x 0.8 m in size and appears to be a higher piece of hull – unknown side – which has been folded in half (Figure 29). This first piece contains five frames on inside surrounded by hull, with more hull bent over the top. The inside frames also have knees and a deck frame (Figure 30).

Figure 29. First hull piece, folded over, with five frames inside. (Cosmos Archaeology, 26 September, 2014)

Figure 30. Close up view of one of the knees and frames inside the first hull piece. (Cosmos Archaeology, 26 September, 2014)

The second piece is a 'flat' piece with hull measuring approximately 1.8 m by 1.7 m with four frames, deck knees and deck planking (Figure 31). There is also a butt strap between two frames. Overlap and riveting of hull plating is obvious. The hull piece is of quite good condition. A slight curve was observed to the piece suggesting that the curve is towards the turn of the bilge and that the knees are hanging knees (Figure 32 and Figure 33).

Figure 31. Second hull piece with four frames and knees. (Cosmos Archaeology, 26 September, 2014)

Figure 32. Second hull piece, showing a slight curve. (Cosmos Archaeology, 26 September, 2014)

Figure 33. Close up of one of the hanging deck knees. *(Cosmos Archaeology, 26 September, 2014)*

Frames on both pieces are of the configuration of two 'L' (angle iron) frames with one side connected, the opposite side of one riveted to the hull and the other parallel to the hull in the opposite direction. Each side is approximately 70 mm wide. The frames are approximately 525 mm apart (centre to centre) (Figure 34).

Figure 34. Close up of the spacing between frames. *(Cosmos Archaeology, 26 September, 2014)*

An anchor, reportedly associated with the S.S. *Dicky* is located approximately 150 m directly offshore from the wreck of the S.S. *Dicky* and is what appears to be a large Admiralty Pattern anchor with an iron stock (Figure 35). It is reported to be the kedge anchor used in the attempts to refloat the vessel.[56] This appears likely as there is no report of the master of the S.S. *Dicky* dropping his anchor in order to prevent the vessel from coming ashore.

[56] **Mann, C.H., 1985,** *The Wreck of the Dicky*, Shire of Landsborough Historical Society Museum.

Figure 35. Admiralty Pattern anchor 150 m offshore from the S.S. Dicky.
(Source: Tristan Muir)

The last item known of is a brass porthole at the Buderim Pioneer Cottage that is reportedly from the S.S. *Dicky*.

3 STATUTORY ISSUES

Historic shipwrecks and associated maritime cultural heritage in Australia is protected and managed under a hierarchy of legislation. The following section provides a brief summary of the relevant statutory regulations regarding the wreck of the S.S. *Dicky* and associated relics.

3.1 Commonwealth

3.1.1 *Historic Shipwrecks Act 1976*

The *Historic Shipwrecks Act 1976* provides a national, overarching policy for the management and protection of Australia's shipwreck heritage. The Act, as amended by a declaration in 1993, provides blanket protection to all shipwrecks and associated articles or relics that are:

a) situated in Australian waters, or waters above the continental shelf of Australia, adjacent to the coast of the State or Territory; and

b) at least 75 years old. [57]

Such shipwrecks are declared "historic shipwrecks" under the Act and are protected whether they remain *in situ* or have in whole or part been removed from waters, unless otherwise declared by the Minister for the Environment and Water Resources.[58]

The Act also provides protection to articles or relics that:

a) were associated with a ship

b) are situated in Australian waters, or waters above the continental shelf of Australia, adjacent to the coast of the State or Territory; and

c) either:

i. was associated with the remains of a ship that are at least 75 years old; or

ii. entered water referred to in paragraph (b) at least 75 years ago.[59]

Such articles are declared "historic relics" under the Act and are protected whether they remain *in situ* or have in whole or part been removed from waters, unless otherwise declared by the Minister.[60]

Additional specific protection can also be declared by the Minister under the Act whereby;

a) certain historically significant wrecks or articles and relics that are less than 75 years old are protected as historic shipwrecks, or;

b) a certain area (not exceeding 200 hectares) consisting of sea or partly of sea and partly of land within which a historic shipwreck and / or historic relics are situated is declared as a protected zone [61]

Under the *Historic Shipwrecks Act 1976*, unless in accordance with a permit granted by the Minister, it is an offence to engage in conduct that;

i. destroys or causes damage to a historic shipwreck or historic relic; or

ii. causes interference with a historic shipwreck or historic relic; or

iii. causes the disposal of a historic shipwreck or historic relic; or

[57] ***Historic Shipwrecks Act 1976*** Part II, Section 4A (1) & (2)
[58] *Ibid.,* Part II, Section 4A (3) – (5) & (10)
[59] *Ibid.,* Part II, Section 4A (6) & (7)
[60] *Ibid.,* Part II, Section 4A (8) – (10)
[61] *Ibid.,* Part II, Section 6-7

iv. causes a historic shipwreck or historic relic to be removed from Australia (including State waters), from Australian waters or from waters above the continental shelf of Australia.[62]

Additional activities are prohibited within declared protection zones without a permit, including all entry into the zone via use or mooring of ships and all underwater activity, including diving.[63]

The *Historic Shipwrecks Act 1976* is administered by the Federal Department of Environment and Water Resources in conjunction with delegates in each of the States, the Northern Territory and Norfolk Island.

The Act applies to all "Australian waters," defined as "the territorial sea of Australia and waters of the sea (not being State waters) on the landward side of the territorial sea of Australia" – "State waters" are defined as "waters of the sea that are within the limits of the State."[64]

Maritime zone boundaries within Australia have most recently been determined under the United Nations Convention on the Law of the Sea (UNCLOS), entered into force in November 1994, whereby Australia's territorial sea is defined as extending up to 12 nautical miles seaward from the territorial sea baseline.

In February 1983, a proclamation made under the *Seas and Submerged Lands Act 1973* adopted the low-water datum known as Lowest Astronomical Tide (LAT) as the datum upon which the territorial sea baseline along the coast would be based. LAT is the low water datum used on Australian Hydrographic charts and is the lowest level that can be predicted under average meteorological conditions.

The remainder of the territorial sea baseline consists of straight lines across river mouths, bays and areas of deeply indented coastline or where there are fringing islands along the coast. These lines are known as straight baselines and their terminal points were gazetted on 9 February 1983 in the *Commonwealth of Australia Gazette No. S 29,* and more recently amended by the *Seas and Submerged Lands (Territorial Sea Baseline) Proclamation 2006*.[65]

Any waters on the landward site of the territorial sea baseline defined as 'internal waters' and shipwrecks within these waters do not fall under the provisions of the *Historic Shipwrecks Act 1976.* Such waters and waters extending out to three nautical miles from the coastline are covered by State heritage legislation.

The wreck of the S.S. *Dicky* is at least 75 years old, however, the wreck is situated on the coastline of the mainland of Australia, not within a river mouth, bay, port, roadstead or fringing reef, and is currently above the LAT. As such, the S.S. *Dicky* shipwreck is located within Queensland State waters and is not protected by the *Historic Shipwrecks Act 1976.*

However, some components of, or articles associated with the wreck – such as the anchor interpreted as being the kedge anchor used during the attempt to refloat the S.S. *Dicky* in 1893 – are situated below the LAT and are afforded automatic protection under the *Historic Shipwrecks Act 1976.*

The Act does address the issue of wrecks and associated relics that are situated partly in Australian waters and partly in State waters, and allows for special declaration to be made by the Minister, in agreement with the Government of the relevant State, that the whole of any such wreck is protected by the *Historic Shipwrecks Act 1976.*[66] No such declaration, however, has been made with regard to the S.S. *Dicky*.

The wreck of the S.S. *Dicky* is not protected under the *Historic Shipwrecks Act 1976* though the kedge anchor offshore very likely is. The status of wreckage which has become

[62] *Ibid.,* Part II, Section 13
[63] *Ibid.,* Part II Section 14
[64] ***Historic Shipwrecks Act 1976*** Part 1, Sect 3
[65] **Geosciences Australia**, http://www.ga.gov.au/nmd/mapping/marbound/index.htm#ambis
[66] ***Historic Shipwrecks Act 1976*** Part 1, Section 3A

detached from the main body of the wreck and is located below the LAT is unclear and may require adjudication by the DEHP.

3.1.2 Environmental Protection and Biodiversity Conservation Act 1999

The *Environmental Protection and Biodiversity Conservation Act 1999* (*EPBC Act*) provides a national framework for the protection of matters of national environmental significance and the conservation of Australia's biodiversity. Under the *EPBC Act 1999*, "environment" includes:

a) ecosystems and their constituent parts, including people and communities; and

b) natural and physical resources; and

c) the qualities and characteristics of locations, places and areas; and

d) heritage values of places; and

e) the social, economic and cultural aspects of a thing mentioned in paragraph (a), (b), (c) or (d).[67]

Under the *EPBC Act 1999* any project, development, undertaking, activity or a series of activities – defined as an "action" – that has, will have, or is likely to have, a significant impact on a matter of national environmental significance, is an offence unless specific approval has been obtained from the Australian Government Environment Minister under Part 9 of the Act.

A "significant" impact is defined as an impact, which is important, notable or of consequence, having regard to its context or intensity. Whether or not an action is likely to have a significant impact depends upon the sensitivity, value and quality of the environment, which is impacted and upon the intensity, duration, magnitude and geographic extent of the impacts.

Matters of national environmental significance include declared World Heritage properties, places on the National Heritage List or the Commonwealth Heritage List, declared Ramsar wetlands, listed threatened species and communities, listed migratory species, nuclear actions and any actions in Commonwealth land, Commonwealth marine areas or within a Commonwealth marine reserve.[68]

A Commonwealth marine area is defined as waters of the sea inside the seaward boundary of the exclusive economic zone and any waters over the continental shelf, except waters within the limits of a State or Territory or which have been vested in a State or Territory. The seabed under these waters as well as the airspace over the waters is included in the definition.[69]

Although there are varying levels of management on national and state levels within commonwealth and state or territory limits, the *EPBC Act 1999* applies to acts, omissions, matters and things within the Australian jurisdiction, defined as the land, waters, seabed and airspace in, under, or above:

- Australia; or
- an external Territory; or
- the exclusive economic zone; or
- the continental shelf.

The Act also applies to some extent outside the exclusive economic zone and not on the continental shelf, in relation to actions conducted by Australian citizens or permanent visa

[67] ***EPBC Act 1999*** Part 23, Division 1. Section 528
[68] *Ibid., Act 1999* Part 3, Divisions 1 & 2
[69] *Ibid.,* Part 1, Section 5

holders, Australian corporations, the Commonwealth and Commonwealth agencies, Australian aircraft and vessels and all members of crew of Australian aircraft and vessels.[70]

However, in order to reduce duplication of environmental assessment and approval, the *EPBC Act 1999* allows for the creation of bilateral agreements between the Commonwealth and a State or self-governing Territory for the purpose of protecting the environment, promoting conservation and ecologically sustainable use of natural resources and increasing the efficiency of environmental assessments and approvals. In essence, these agreements enable the Commonwealth to rely on State or Territory assessment processes and, in some circumstances, State or Territory approvals. Bilateral agreements must be consistent with the objectives of the Act and the processes they accredit must meet certain standards.[71]

In 2004, the Australian Government and the State of Queensland entered into a bilateral agreement in accordance with subsection 45(4) of the *EPBC Act 1999*.[72] This agreement details the level of Commonwealth accreditation of State practices, procedures, processes, systems and management plans with regards to environmental protection. Specifically, the agreement states that;

- certain actions do not require assessment under the *EPBC Act 1999* – this includes actions taken wholly within the State of Queensland including its coastal waters that are assessed under the *Queensland Integrated Planning Act 1997*, the *Development and Public Works Organisation Act 1971* and the *Environmental Protection Act 1994;*
- the bilateral agreement does not have any effect in relation to an action in a Commonwealth area or an action by the Commonwealth or a Commonwealth agency; and
- Queensland will ensure that impacts on matters that are not of national significance are assessed.

The wreck of the *S.S. Dicky* is not listed on the National Heritage List or the Commonwealth Heritage List and as such is not automatically protected by the *EPBC Act 1999*. The wreck is situated within the State of Queensland and is thus covered under the bilateral agreement between the Australian Government and the State of Queensland, whereby actions taken within the state boundaries do not require assessment by the Commonwealth under the *EPBC Act 1999*. Components or relics associated with the wreck of the *S.S. Dicky*, however, such as the kedge anchor, are situated outside internal waters and within a Commonwealth marine area. Consequently, any actions undertaken within this area that may have a significant impact on the environment as defined by the Act – including the heritage values of the area – must be subject to the assessment and approvals process defined in the Act.

3.1.3 *Environment Protection (Sea Dumping) Act* 1981

The Environmental Protection (Sea Dumping) Act 1981 was created for providing for the protection of the environment by regulating dumping into the sea, incineration at sea and artificial reef placements. It also implements the 1996 Protocol to the London Convention.

Section 10A of the *Environment Protection (Sea Dumping) Act 1981* prohibits dumping of controlled material into Australian waters without a permit, including a vessel, aircraft or platform. Controlled material also includes wastes or other matter within the meaning of the Protocol.[73] Australian waters includes all waters from the low water mark out to the limits of

[70] *Ibid.,* Part 1, Section 5
[71] *Ibid.,* Part 5
[72] **Notice of agreement, Department of Environment & Water Resources**, 13 August 2004, available http://www.environment.gov.au/epbc/assessmentsapprovals/bilateral/qld/notice.html

[73] **1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972.**

the Exclusive Economic Zone.[74] Section 10E prohibits the placement of an artificial reef without a permit.

It is considered that the moving of S.S. *Dicky* remains would be classified as the placement of an artificial reef rather than dumping of material.

A permit application is required to assess the potential environmental impacts of the disposal at sea. The placement of an artificial reef requires the completion of an Application Form under the Environment Protection (Sea Dumping) Act 1981 for an Artificial Reef Permit. [75] The form includes details of the applicant and material to be disposed, a long term management plan and a description of the site and procedures. The application for a permit also involves a fee of $10,000.

The sinking of vessels to form artificial reefs has previously occurred around Australia. The table below presents a number of wrecks purposefully sunk for the creation of an artificial reef as well as distances from shore and whether permits were required under this Act (Table 2).

Table 2. Previous vessels sunk for the creation of artificial reefs.

Year	Vessel	Location	Distance from Shore	Permit Required under Environment Protection (Sea Dumping) Act 1981
1997	Ex-HMAS Swan[76]	Geographe Bay, Bunsborough, WA	2.4 km = 1.3 nm	Yes
2001	Ex-HMAS Perth	King George Sound, Albany, WA	500 m = 0.3 nm from Seal Island	Yes
2002	Ex-HMAS Hobart[77]	Yankalilla Bay, The Fleurieu Peninsula, SA	8.3 km = 4.5 nm off Yankallilla Bay	Yes
2005	Ex-HMAS Brisbane[78]	Off Mooloolaba, Sunshine Coast, QLD	Approx. 6 km = 3.2 nm from Mudjimba	Yes
2009	Ex-HMAS Canberra[79]	Bass Strait, off Barwon Heads, VIC	3 km = 1.6 nm	Yes
2011	Ex-HMAS Adelaide[80]	Bulbararing Bay, off Avoca Beach, NSW	1.8 km = 1 nm	Yes

[74] **Department of the Environment, 2008**, 'Dumping wastes at sea,' available http://www.environment.gov.au/marine/publications/factsheet-dumping-wastes-sea, accessed 24 November 2014.

[75] This permit application is available at http://www.environment.gov.au/topics/marine/marine-pollution/sea-dumping/forms-and-application-fees

[76] **Morrison, P. F., c. 1999** *Biological Monitoring of the HMAS* Swan*,* report, available http://www.californiashipstoreefs.org/Resources/Documents/Biological_Monitoring_of_the_HMAS_Swan.pdf, accessed 25 November 2014

[77] **District Council of Yankalilla, c. 2002**, 'Dive the Ex-HMAS Hobart,' available http://www.exhmashobart.com.au/index.html, accessed 25 November 2014.

[78] **Department of National Parks, Recreation, Sport and Racing, 2014**, 'Ex-HMAS Brisbane Regional Parl – About Ex-HMAS Brisbane,' available http://www.nprsr.qld.gov.au/parks/ex-hmas-brisbane/about.html, accessed 25 November 2014.

[79] **CEE Consultants Pty Ltd, 2009,** *Ex HMAS Canberra Dive Site Marine Environmental Considerations*, report for Department of Sustainability and Environment, Victoria, available http://www.hmascanberra.com.au/assets/downloads/2009-07+Attachment+5+-+Marine+Environment+Report.pdf, accessed 25 November 2014.

[80] **Department of Trade and Investment – Crown Lands, 2014**, 'Ex-HMAS Adelaide Artificial Reef Central Coast,' available http://www.hmasadelaide.com/home, accessed 25 November 2014.

3.2 State

3.2.1 *Heritage Act 1992*

The Queensland *Heritage Act 1992* is the primary piece of state legislation that provides for the conservation and protection of places and items of historic cultural heritage within the State of Queensland. The Act provides for the establishment of the Queensland Heritage Council and the Queensland Heritage Register and regulates development of registered places through development assessments and heritage agreements.

Under the Act, places and items of historic cultural significance may be protected in two ways. Firstly, a place may be entered into the Queensland Heritage Register, maintained by the Queensland Heritage Council, if it satisfies one or more of the following criteria:

a) the place is important in demonstrating the evolution or pattern of Queensland's history;

b) the place demonstrates rare, uncommon or endangered aspects of Queensland's cultural heritage;

c) the place has potential to yield information that will contribute to an understanding of Queensland's history;

d) the place is important in demonstrating the principal characteristics of a particular class of cultural places;

e) the place is important because of its aesthetic significance;

f) the place is important in demonstrating a high degree of creative or technical achievement at a particular period;

g) the place has a strong or special association with a particular community or cultural group for social, cultural or spiritual reasons, and;

h) the place has a special association with the life or work of a particular person, group or organisation of importance in Queensland's history.[81]

Implicit in this process is that a place must demonstrate significance at a State level to be entered in the Queensland Heritage Register. Any proposed action that may impact upon the heritage significance of a place listed on the register requires development approval under the *Queensland Integrated Planning Act 1997*. Such approvals are assessed by the Cultural Heritage Branch of the Queensland Environmental Protection Agency and must be made with the main objectives of the *Queensland Heritage Act 1992* in mind – namely the retention of cultural heritage significance of the places and objects to which it applies and the achievement of the greatest sustainable benefit to the community from those places and objects.[82]

Areas of archaeological and cultural significance and archaeological objects of cultural significance can also be protected through a process of declaration by the Minister.

Such declarations apply to archaeological sites and objects situated on land and underwater and thus may apply to shipwrecks and associated objects if they are located within State waters. Under the Act it is an offence to interfere with, damage or dispose of a protected object or to cause damage or destruction to a protected place, unless in accordance with a permit granted by the Minister. A permit is also required to enter a protected place.[83]

In relation specifically to shipwrecks, Section 91 of the Act states that:

1) A person must not, without the chief executive's written consent or unless the person has a reasonable excuse, interfere with a shipwreck.

2) In this section –

[81] ***Queensland Heritage Act 1992*** Part 4, Section 23
[82] *Ibid.,* Part 5
[83] *Ibid.,* Part 7, Division 2 & 3

shipwreck means the remains or any part of the remains of a ship that –

a) Is in Queensland waters; and

b) Has been in the waters for more than 75 years.

The wreck of the *S.S. Dicky* is not included in the Queensland Heritage Register, nor has the wreck been declared as a protected object or site. However, as the wreck has been in Queensland waters for over 75 years, it is included under Section 91 and hence *S.S. Dicky* is currently afforded protection under the *Queensland Heritage Act 1992.*

It is also worth noting that the Queensland Environmental Protection Agency has stated an intention to consider the wreck of the S.S. *Dicky* for future entry in the Queensland Heritage Register based on the view that the wreck is potentially a place of cultural heritage significance.[84]

3.2.2 *Heritage and Other Legislation Amendment Act 2007*

The *Queensland Heritage and Other Legislation Amendment Bill 2007* was drafted following an extensive review of Queensland heritage framework. The main policy objectives of the Bill are to amend the Queensland Heritage Act 1992 to:

- enable the Queensland Heritage Council to perform a more strategic role in conserving Queensland's cultural heritage
- introduce more accountable, transparent and efficient administrative processes for entering places in, and removing places from, the Queensland Heritage Register and for regulating the development of registered places
- integrate the identification and protection of historical archaeological places into the management framework of the Queensland Heritage Register
- introduce improved protection for local heritage places.[85]

Of specific importance to the current project, Section 58 of the *Queensland Heritage and Other Legislation Amendment Bill 2007* serves to align protection for historic shipwrecks in Queensland waters with the Commonwealth provisions and thus provides blanket protections for all shipwrecks in Queensland waters that are over 75 years old.

Under the *Queensland Heritage and Other Legislations Amendment Act 2007*, the wreck of the S.S. *Dicky* – as a wreck over 75 years old, situated within the State of Queensland – is afforded automatic protection. Under the Act, it is an offence to interfere with – which includes damage, destroy, disturb, expose or move - the wreck in any way unless with a "reasonable excuse" or in accordance with consent granted by the Chief Executive of the Queensland Environmental Protection Agency.[86]

3.2.3 Integrated Planning Act 1997

The *Integrated Planning Act 1997* sets out the principles and processes by which Queensland State and local government authorities deal with planning and development issues – including proposed development of places on the Queensland Heritage Register (see above).

Under the Act, development is defined as;

- Carrying out building work (construction, repairing, altering, moving or demolishing a building);
- Carrying out operational work (excavation, filling, landscaping, roadworks);
- Reconfiguring a lot (subdivision, amalgamation, boundary alteration);

[84] **Cameron Harvey**, Principal Heritage Officer, Environmental Protection Agency – pers com. 6/11/07
[85] ***Queensland Heritage and Other Legislation Amendment Bill 2007*** Part 2, Clause 4
[86] *Ibid.,* Division 1

- Making a material change of use of premises (starting a new use of premises, change in the intensity or scale of use of premises).[87]

The *Integrated Planning Act 1997* also requires local governments to identify and consider the valuable features of areas and places of local cultural heritage significance – whether terrestrial or aquatic – in their planning schemes, to a level considered satisfactory by the State Minister.[88]

Sunshine Coast Planning Scheme 2014

SCC manages development within the boundaries of the Sunshine Coast via the *Sunshine Coast Planning Scheme 2014.* The Plan guides the way land, buildings and structures are used and developed by identifying assessable development, self-assessable development and exempt development and identifying outcomes sought to be achieved in the Sunshine Coast local government area as the context for assessing development. The *Sunshine Coast Planning Scheme 2014* was prepared in accordance with the Queensland *Sustainable Planning Act 2009* as a framework for managing development.

The planning scheme has a strategic framework that sets the policy direction and forms the basis for ensuring appropriate development. The strategic framework is broken down into eight themes, each with their own strategic outcomes. The eight themes are:

- Settlement pattern;
- Economic development;
- Transport;
- Infrastructure and services;
- Natural environment;
- Community identity, character and social inclusion;
- Natural resources; and,
- Natural hazards.

Parts 3.8 of the *Sunshine Coast Planning Scheme 2014* detail the strategic outcomes for community identity, character and social inclusion, with Element 3 specific to Cultural heritage and character. Section 3.8.4.1 details the specific outcomes, including:

a) Places of cultural heritage significance, including areas of built environment character, areas of streetscape and landscape heritage, and Aboriginal and non-aboriginal places are protected;

b) Development is sensitive in its design response and the manner in which it relates to and addresses places of cultural heritage significance;

c) Where a distinctive historical character is formed by a cluster of buildings or streetscapes, that character is maintained and, where possible, enhanced; and,

d) The adaptive re-use of heritage places is encouraged where sympathetic to cultural values.

Parts 5 of the *Sunshine Coast Planning Scheme 2014* detail the tables of assessment of the planning scheme that set out criteria for the assessment of proposed development. Part 8 of the Plan provides the Overlay Codes that apply to development affected by the Planning Area Overlay Maps, including performance outcomes and acceptable outcomes. The performance outcomes express the purpose of the code while the acceptable outcomes represent prescriptive requirements or standards that provide a guide for achieving the performance outcomes.

[87] ***Integrated Planning Act 1997*** Part 3, Divisions 1-3
[88] *Ibid.,* Division 2, Section 2.1.3-2.1.3A

In Section 5.10.1 the criteria for the Heritage and character areas overlay, where involving or adjoining a heritage place, considers material change of use if involving a *local heritage place* as identified on a Heritage and Character Areas Overlay Map. The criteria are as follows:

- **Code assessable** if the change of use:
    a) Will not involve the demolition, relocation or removal of a heritage place; and.
    b) Is provisionally made exempt or self-assessable by a table of assessment for material change of use.

    The assessment criteria to use in this situation is the 'Heritage and Character Areas Overlay Code'.
- **Impact assessable** if the change of use will result in building work involving demolition, relocation or removal of a heritage place.

    The assessment criteria to use in this situation is the 'planning scheme'.

The 'Heritage and Character Areas Overlay Code' is available in Part 8, Section 8.2.9.3. If the 'planning scheme' is to be used, Schedule 6.10 details the policy for heritage and character areas overlay code.

The site of S.S. Dicky *is on the Heritage and Character Areas Overlay Map. The change of use to S.S.* Dicky *can be considered to involve demolition, relocation or removal, hence the planning scheme must be used for assessing impact.*

The stated purpose of the planning scheme policy for heritage and character areas overlay code, as stated in Section SC6.10.1, is to;

a) Provide advice about achieving outcomes in the heritage and character areas overlay code; and,
b) Identify information that may be required to support a development application where affecting a place or neighbourhood character area.

Sections SC6.10.3 to SC6.10.6 provide the above advice for development and guidance in the preparation of heritage impact assessment reports and conservation management plans. Of note, SC6.10.6 lists guidelines for achieving heritage and character areas overlay code outcomes, including:

a) *The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Heritage Significance, 2013* (Australian ICOMOS, 2013); and
b) The following Practice Notes to *The Burra Charter: The Australia ICOMOS Charter for Places of Heritage Significance, 2013:*
    i) *Practice Note: Understanding and assessing cultural significance* (Australian ICOMOS, 2013);
    ii) *Practice Note: Developing Policy* (Australian ICOMOS, 2013); and
    iii) *Practice Note: Preparing studies and reports – contractual and ethical issues* (Australian ICOMOS, 2013).

The outcomes in the heritage and character areas overlay code, presented in table 8.2.9.3.1, are as follows:

Performance Outcomes	Acceptable Outcomes
Material Change of Use Involving a Local Heritage Place	
PO1 Development is compatible with the conservation and management of the heritage significance of the local heritage place.	AO1 Development is undertaken in accordance with the Australian ICOMOS Charter for Places of Cultural Heritage Significance (Burra Charter).
Reconfiguring a Lot Involving a Local Heritage Place	

Performance Outcomes	Acceptable Outcomes
PO2 Development does not:- a) reduce public access to the local heritage place; b) result in a local heritage place being severed or obscured from public view; or c) obscure or destroy any pattern of historic subdivision, the landscape setting or the scale and consistency of the urban fabric relating to the local heritage place.	AO2 Development is undertaken in accordance with the Australian ICOMOS Charter for Places of Cultural Heritage Significance (Burra Charter).
Building Work or Operational Work Involving a Local Heritage Place	
PO3 Development conserves and is subservient to the features and values of the local heritage place that contribute to its heritage significance.	AO3 Development: a) does not alter, remove or conceal significant features of the local heritage place; or b) is minor and necessary to maintain a significant use for the local heritage place.
PO4 Changes to a local heritage place are appropriately managed and documented.	AO4.1 Development is compatible with a conservation management plan prepared in accordance with the Australian ICOMOS Charter for Places of Cultural Heritage Significance. AO4.2 An archival quality photographic record is made of the features of the place that are destroyed because of the development that meets the standards outlined in the *Guideline: Archival Recording of Heritage Registered Places* (Department of Environment and Resource Management).
PO5 Development does not adversely affect the character, setting or appearance of the *local heritage place*, including removal of vegetation that contributes to the heritage significance of the place.	AO5.1 The scale, location and design of the development are compatible with the character, setting and appearance of the *local heritage place*. AO5.2 The development is unobtrusive and cannot readily be seen from surrounding streets or other public places. AO5.3 Existing vegetation that forms part of the local heritage place is retained and incorporated into the design and layout of development.
PO6 Excavation or other earthworks do not have a detrimental impact on archaeological sites.	AO6.1 The impact of excavation is minor and limited to parts of the *local heritage place* that have been disturbed by previous excavation. AO6.2 An archaeological investigation is carried out for development involving a high level of surface or sub-surface disturbance.
Development adjoining a State or Local Heritage Place	
PO7 Where on a lot or premises adjoining a State heritage place or a local heritage place, development is located, designed and constructed in a manner that does not adversely affect the heritage significance of the heritage place, including its context, setting, appearance and archaeology.	AO7.1 The scale, location and design of the development is compatible with the heritage significance of the adjoining State heritage place or local heritage place, including its context, setting and appearance. AO7.2 Where the site adjoins a State heritage place or a local heritage place that has been identified as

Performance Outcomes	Acceptable Outcomes
	an archaeological place, an archaeological investigation is carried out for development involving a high level of surface or sub-surface disturbance.
Advertising Devices (All Places)	
PO8 Advertising devices located on a local heritage place or adjoining a State heritage place, or a local heritage place, are sited and designed in a manner that:- a) is compatible with the heritage significance of the place; and b) does not obscure the appearance or prominence of the heritage place when viewed from the street or other public place.	AO8 No acceptable outcome provided.

The wreck of the S.S. *Dicky* is listed as a Local Heritage Place in Appendix SC6.10A of the *Sunshine Coast Planning Scheme 2014.* The listing is as follows:

SS Dicky Wreck (DBH1) (ANSD)	
Address	Beach foreshore between Bell Street and Coochin Street, Dicky Beach, just south of Beach Access 263
Lot/ Plan	N/A
Land number	N/A
Coordinates	
Feature Type	Historic Place
Listings	Local Heritage Place
Category	
Protected area	Beach foreshore between Bell Steet and Dicky Beach Surf Club
Context	In situ despite early attempts to deconstruct
National Register	Australian National Shipwrecks Database ID: 7973
National Status	
QLD Place ID	N/A
Primary period	1893-early 20th century
Other Known Names	
Former Reference	CA59 (Caloundra City Plan)
Statement of Significance	During a cyclone in early 1893, the SS Dicky was washed ashore north of Caloundra Head. No lives were lost but the ship was unable to be refloated. The wreck has been a prominent feature of the Dicky Beach landscape. When still reasonably intact, it was used as a dressing shed by bathers. Sea travel was a common means of transport and accidents involving vessels off the Queensland coast were a common occurrence. Most vessels sank at sea, while some such as the SS Dicky were grounded ashore. The SS Dicky wreck is a reminder of the dangers associated with sea travel in the 19th and early 20th century.

3.2.4 Coastal Protection and Management Act 1995

The objectives of the *Coastal Protection and Management Act 1995* relevant to this study are to provide protection, conservation, rehabilitation and management of the coastal zone including its resources and biological diversity as well as to ensure that decisions about

proposed developments would safeguard life and property from the threat of coastal hazards.

In this Act any activity deemed as *Tidal works* is an *assessable development* (Part 6, Division 1, Section 103) and requires development approval. In assessing an application for the construction of a Tidal works (Part 6, Division 2, Section 104.2) the following must be considered:

(a) natural coastal, riverine and estuarine processes, including, for example, erosion and accretion, wave and tidal currents, littoral drift, tidal prism and tidal inundation;

(b) natural topography and drainage of coastal land, including, for example, the integrity of dune systems and natural surface runoff;

(c) coastal wetlands and other coastal ecological systems, including, for example, the wildlife, biological diversity and water quality of the wetlands or systems;

(d) places or objects that have cultural heritage, landscape, historical, anthropological, archaeological or aesthetic significance or value;

(e) public access to the foreshore.

Tidal works include, but are not confined to, the construction of a breakwater, embankment or groyne. Because of this definition some *in situ* conservation options for the wreck of the S.S. *Dicky* may be considered to cross the threshold for what is an assessable development.

3.3 Non-Statutory Guidelines

A variety of documents are available to provide guidance and standards of practice for those who provide advice, make decisions about, or undertake works to places of cultural significance in Australia. The following section provides a discussion of the relevant guidelines with regard to historic shipwrecks within Australia.

3.3.1 The Burra Charter: Australia ICOMOS Charter for Places of Cultural Heritage Significance 1999

The *Burra Charter: Australia ICOMOS Charter for Place of Cultural Significance* is the widely accepted reference document for heritage conservation standards in Australia. The Charter evolved from the International Charter for the Conservation and Restoration of Monuments and Sites (Venice 1964), and the Resolutions of the 5th General Assembly of the International Council on Monuments and Sites (ICOMOS) (Moscow 1978), and was adopted by Australia ICOMOS (the Australian National Committee of ICOMOS) in August 1979 at the historic South Australian mining town of Burra.

The *Burra Charter* provides guidance for the conservation and management of places of cultural significance (cultural heritage places) and is based on the knowledge and experience of Australia ICOMOS members. The Charter sets a standard of practice for those who provide advice, made decisions about or undertake works to places of cultural significance, including owners, managers and custodians and Charter can be applied to all types of places of cultural significance including natural, indigenous and historic places with cultural values.

Conservation – "the processes of looking after a place so as to retain its cultural significance" – is an integral part of the management of places of cultural significance and is an ongoing responsibility. The *Burra Charter* advocates a cautious approach to change; do as much as necessary to care for the place and to make it useable, but otherwise change it as little as possible so that its cultural significance is retained.

The key conservation principles of the Charter include the following:

Places of *cultural significance* should be conserved. Such places are worth conserving because they enrich our lives – by helping us understand the past; by contributing to the

richness of the present environment and because we expect them to be of value to future generations.[89]

The cultural significance of a place is embodied in its physical fabric, settings, contents, use, associated documents and its meaning to people through their use and associations with the place. *Conservation* is based on a respect for the existing *fabric, use, associations* and *meanings.* It requires a cautious approach of changing as much as necessary but as little as possible.[90]

The cultural significance of a place and other issues affecting its future are best understood by a methodical process of collecting and analysing information before making decisions. *Conservation* should make use of all the knowledge, skills and disciplines which can contribute to the study and care of the *place.*[91]

Conservation of a *place* should identify and take into consideration all aspects of cultural and natural significance without unwarranted emphasis on any one value at the expense of others.[92]

Conservation requires the retention of an appropriate visual *setting* and other relationships that contribute to the *cultural significance* of the *place.* New construction, demolition, intrusions or changes which would adversely affect the setting or relationships are not appropriate.[93]

The physical location of a *place* is part of its *cultural significance.* Relocation is generally unacceptable unless this is the sole practical means of ensuring its survival.[94]

Contents, fixtures and objects which contribute to the *cultural significance* of a *place* should be retained at that place. Their removal is unacceptable unless it is; the sole means of ensuring their security and *preservation;* on a temporary basis for treatment or exhibition; for cultural reasons; for health or safety; or to protect the place.[95]

The contribution which *related places* and *related objects* made to the *cultural significance* of the *place* should be retained.[96]

Conservation may, according to circumstance, include the processes of; retention or reintroduction of a *use*; retention of *associations* and *meanings; maintenance, preservation, restoration, reconstruction, adaptation* and *interpretation,* and will commonly include a combination of more than one of those.[97]

3.3.2 UNESCO Convention for the Protection of the Underwater Cultural Heritage 2001

UNESCO has long been aware of the lack of sufficient protection of underwater cultural heritage by international law as well as by most national legislations. The need for efficient protection became increasingly evident over the past few decades due to technical progress which has led to an unprecedented accessibility of the seabed and the cultural heritage located thereon.

In 1993, at the request of the UNESCO Executive Board, experts began regular meetings to draft an international legal instrument for general application: the *Convention on the Protection of Underwater Cultural Heritage.* The convention was adopted on November 2001, at the UNESCO General Conference at its 31st session (Doc 31C/24), becoming UNESCO's fourth cultural heritage convention.

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[89] ***The Burra Charter: Australia ICOMOS Charter for Places of Cultural Significance 1999*** Article 2
[90] *Ibid.,* Article 3
[91] *Ibid.,* Article 4
[92] *Ibid.,* Article 5
[93] *Ibid.,* Article 8
[94] *Ibid.,* Article 9
[95] *Ibid.,* Article 10
[96] *Ibid.,* Article 11
[97] *Ibid.,* Article 14

Recognising the importance of the underwater cultural heritage as an integral part of the cultural heritage of humanity, the Convention is intended to guarantee its preservation through international cooperation.

For the purposes of the Convention on the Protection of the Underwater Cultural Heritage *"underwater cultural heritage"* means *all traces of human existence having a cultural, historical or archaeological character which have been partially or totally under water, periodically or continuously, for at least 100 years.*[98]

The general principles of the UNESCO *Convention on the Protection of the Underwater Cultural Heritage* which are relevant to this study are;

- The preservation *in situ* of underwater cultural heritage shall be considered as the first option before allowing or engaging in any activities directed at this heritage.[99]
- Any activity relating to underwater cultural heritage to which this Convention applies should ensure that any recovery of the underwater cultural heritage achieves its maximum protection.[100]
- Responsible non-intrusive access to observe or document *in situ* underwater cultural heritage and international cooperation shall be encouraged.[101]
- Any discovery of or activity directed at underwater cultural heritage located in the exclusive economic zone, on the continental shelf of the coastal State or in the Area shall be subject to a specific system of reporting, notification and authorization.
- Prior to any activity, a project design for the activity shall be developed and approved by the competent authorities.[102]
- Training in underwater archaeology, the transfer of technologies and information sharing shall be promoted and public awareness shall be raised in the value and significance of the underwater cultural heritage.[103]

3.3.3 AIMA and ACDO Guidelines for the Management of Australia's Shipwrecks 1994

The development of the *Guidelines for the Management of Australia's Shipwrecks* was initiated by the Australian Cultural Development Office (ACDO) who, as administrators of the Commonwealth *Historic Shipwrecks Act 1976*, were interested in seeing a common code of practice accepted by all States. At the same time, Australia's professional maritime archaeologists, represented by the Australian Institute for Maritime Archaeology (AIMA) were developing a professional code of practice. Ultimately both a code of practice and guiding principles in the management of Australia's shipwrecks were produced in one document – the 1994 Guidelines.

The Guidelines provide a common basis of the management of shipwrecks nationally by identifying strategies and practices for management and administration of the resource. The Guidelines provide administrators with useful measures of the cultural and heritage values of shipwrecks and aid the identification and assessment of wrecks according to their historic, technical, social, archaeological (scientific) and interpretive values.

The key issues regarding shipwreck site management relevant to this study are as follows:

98 **UNESCO *Convention on the Protection of the Underwater Cultural Heritage 2001*** Article 1
99 *Ibid.,* Article 2, par. 5: Rule 1 of the Annex
100 *Ibid.,* Article 4
101 *Ibid.,* Article 2, par. 10; Rules 7 and 8 of the Annex
102 *Ibid.,* Rules 9–16 of the Annex
103 *Ibid.,* Articles 19-21

Site and Artefact Management

All activity that causes any disturbance to a shipwreck site should be guided by a Management Plan containing a detailed assessment of the significance of the shipwreck and based on the need to conserve its cultural significance.[104]

Controls are needed to minimise adverse human and environmental impacts on significant shipwreck sites and relics.[105]

There are various strategies that can be adopted to control adverse impacts. The strategy and its resourcing should be appropriate to the significance of a site or sites, and the level of threat.[106]

Strategies to control environmental and human impacts include site stabilisation, rescue archaeology, relocation and recovery of part of all of the remains.

Survey and Inventory

The survey and inventory of shipwreck sites must be undertaken in a scientific manner.[107] A clear statement of the survey aims should be prepared prior to carrying out any work.[108]

3.3.4 Requirements of DEHP

DEHP are currently preparing Guidelines for interfering with shipwreck sites. In response to specific inquiry by SCC concerning the removal of S.S. *Dicky*, Paddy Waterson, Principle Heritage Officer (Archaeology), Heritage Branch of the DEHP, provided a list of items that must be addressed concerning in the ongoing management of the wreck. This list is as follows:

- What is proposed? This includes not just the removal of the wreck but what the eventual outcome will be.
- Why is it being proposed? What necessitates the proposed action and what consultation has taken place? How does this relate to the significance assessment of the wreck?
- How it will be conducted? This includes exact methods and stages in the process - why these methods were chosen and why such an approach is necessary/proposed. For the S.S. *Dicky*, key issues will be conservation; where will it be conducted and what will actually be conserved (all or some - if some, what parts and why?)
- When it will be conducted? Again, not just the removal but any subsequent work and when it is expected to be on display?
- Who is undertaking the work? This should be clearly stipulated so there is no confusion about roles and responsibilities

Additional questions provided by Mr Waterson which pertain specifically to the engineering and conservation aspects include the following:

- How will the wreck will be recovered from the beach? Can it be removed in a single piece or does it need to be sectioned?
- Will the archaeological analysis be undertaken while it is in place, after removal, or both?
- Where will it be taken to be examined and/or conserved? How will it get there?
- If it is taken off-site, will it be to a secure facility or will it need additional security?

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[104] ***Guidelines for the Managements of Australia's Shipwrecks 1994*** Part 1.1
[105] *Ibid.,* Part 1.4
[106] *Ibid.,* Part 1.4.1
[107] *Ibid.,* Part 5.1
[108] *Ibid.,* Part 5.2

- If not all of the wreck can be conserved, what will happen to the elements that cannot be conserved?
- Can the components already held by council be re-incorporated into a display?

These questions will need considering when determining the process and outcome of interfering with the S.S. *Dicky* wreck remains.

4 SIGNIFICANCE ASSESSMENT

Assessing the importance or significance of a shipwreck is an essential requirement of effective site management. An assessment of significance will identify what is important about a site. This will in turn serve as a guide to what is desirable and non-desirable with regards to activities and developments that are to take place on, and around, the site.

4.1 Criteria for Assessing Significance

The significance assessments made in the 2008 study of the S.S *Dicky* by Cosmos Archaeology were based on the concepts of cultural significance as defined in the Australian ICOMOS *Charter for the Conservation of Places of Cultural Significance,* known as the Burra Charter.[109] Cultural significance assessment criteria for guidelines and legislation across Council, State and Commonwealth jurisdictions all follow the principles of the *Burra Charter.*

The other relevant guidelines that are most applicable to the assessment of the cultural significance of the S.S. *Dicky* are the AIMA and ACDO *Guidelines for the management of Australia's historic shipwrecks* and the *Queensland Environmental Protection Agency (EPA) Guidelines for Historical Archaeological Studies*.[110] Although these two documents are largely compatible, there are some slight variations. For example, while under the EPA guidelines the terms 'Scientific' and 'Archaeological' significance are interchangeable, the AIMA and ACDO guidelines separate the two. This is because in maritime archaeology there is a considerable emphasis on understanding the behaviour of cultural material in a marine and/or submerged environment for the purposes of finding better ways to conserve important sites.

Presented below is a list of the significance evaluation criteria against which the cultural significance of the S.S. *Dicky* will be assessed. This list is a combination of the two assessment guidelines discussed above. Where there is a criterion, or aspect of a criterion, which is not found in both the guidelines, the initials of the relevant guideline will be appended to the sentence.

Aesthetic Significance

Archaeological objects, or an area containing archaeological objects, may be significant for their particular style, craftsmanship, quality, design or beauty. This type of significance may be relevant to those objects or areas with surface ruins or other associated structures. The assessment of aesthetic significance also takes into consideration aspects of sensory perception, which are based on the consideration of the form, scale, colour, texture and material of the site.

The siting of objects within the wider landscape can often be used when considering aspects of aesthetic significance. Employing a cultural landscape approach to assessment may provide insights into decisions made in the past about the location of certain features and why some objects are found in certain locations and not in others.

The aesthetic significance of the S.S. *Dicky* has been assessed against the following criteria:

- There is considerable structure remaining of the wreck, allowing it to be clearly viewed as a shipwreck.
- The juxtaposition of the wreck with the surrounding landscape.(EPA)

Archaeological Significance

This relates to the capacity of the area and/or objects to answer important archaeological research questions. Not all areas enquiry and objects/contexts may be highly valued by the wider community, however, for archaeologists, they represent an important opportunity to

[109] **Australia ICOMOS, 1999** *The Australia ICOMOS Burra Charter*. Australia ICOMOS, Canberra.
[110] **AIMA & ACDO 1994** *Guidelines for the management of Australia's historic shipwrecks* and **EPA July 2007** *Queensland EPA Guidelines for Historical Archaeological Studies*

improve our understanding of a particular class of object or area, and/or broaden our understanding of the past.

Archaeological values are determined through careful analysis of material recovered by excavation or collection. Values can also be predicted when based on documentary research, field survey or other non-invasive assessment methods. The archaeological significance of a site can be enhanced by the rarity or intactness of the object/area, or its ability to contribute to a collective understanding of a type of place.

The archaeological significance of the S.S. *Dicky* has been assessed against the following criteria:

- A site for which there is a strong presumption of research potential in one of a wide variety of fields, which may contribute to the understanding of history (e.g. ship construction and design, trade, passengers, exploration, transport, etc.).
- Sites with physical evidence likely to be of technical or cultural value, where that evidence is not available through other research techniques.

Architectural Significance (EPA)

Architectural values will be relevant if structural remains are present. These remains may increase the cultural heritage significance of an associated archaeological object or area through, for example, the presence of significant design or decorative elements that build upon an understanding of any associated archaeological materials.

The architectural significance of the S.S. *Dicky* has been assessed against the following criteria:

- There are decorative elements associated with the structure of the wreck.
- The wreck is of a particular design or type of vessel.

Historic Significance

Archaeological objects, or areas containing archaeological objects, may be significant for their associations with important people, an historical place, event or other historical process. The historical values of objects and areas relate to the importance of particular periods of occupation of an area and include historical links. The object or area may be important as it provides tangible evidence of a particular phase, pattern and/or evolutionary process in the development of Queensland.

The historical significance of the S.S. *Dicky* has been assessed against the following criteria:

- A wreck significant in the discovery, early exploration, settlement or early development of Queensland and/or Australia.
- Relevance of a wreck to a particular person(s) or event(s) of historical importance.
- The ability of a wreck to provide a particular perspective to the history of the area, region or Queensland.

Interpretive Significance

This incorporates the potential of a site to contribute towards public education through on-site, or other, interpretation on a particular function, event, way of life, or use. Areas with undisturbed *in situ* archaeological objects tend to have a higher interpretive potential than those that have experienced disturbance.

The interpretative significance of the S.S. *Dicky* has been assessed against the following criterion:

- A site by virtue of accessibility, setting, integrity, etc. conducive towards interpretation, which highlights their specific cultural, and general, values.

Scientific Significance (AIMA/ACDO)

Relates to the potential to yield information about the composition and history of cultural remains through examination of physical and chemical processes. Such examinations lead to the generation or testing of hypotheses concerning the composition of cultural remains, the effects of original use and the effects of other environmental factors.

The scientific significance of the S.S. *Dicky* has been assessed against the following criteria:

- Sites which display a strong presumption that scientific investigation of organic and/or inorganic components will lead to the generation of, or contradiction of, important hypotheses related to the natural sciences or the behaviour of manufactured materials in submerged environments.
- Sites which have significant potential for the development, testing and evaluation of in situ measures.

Social Significance

This is a measure of the spiritual, political, national or other cultural sentiment attached to a place or archaeological site.

The social significance of the S.S. *Dicky* has been assessed against the following criterion:

- Sites whose strong association with a community is demonstrated to be of social, cultural, spiritual or educational nature.

Technical Significance

Relates to a site possessing or contributing to technical or creative accomplishment. Its significance also relates to the importance of the site in demonstrating a high degree of technical or creative achievement for the period in question.

The technical significance of the S.S. *Dicky* has been assessed against the following criterion:

- Demonstrates appropriate and conceptually strong solutions to a technical problem, by expanding established or developing new technology.
- Is creative either through their innovative departure from, or their perfection of, established norms in some field of design.
- Contribution to the understanding of patterns and processes involved in the development and evolution of Queensland. (EPA)

4.1.1 Significance Rating

All shipwrecks have significance. All significance is relative. Some sites may have little significance while others are of great importance. Significance also alters with time. What may be considered of little importance in the present may be very significant in the future. For some sites their significance cannot be readily assessed because little is known about them and more research is required. The level or ***degree of significance*** assigned to a shipwreck is relative to its context, condition/state of preservation, representativeness or rarity.

To be considered of **high** significance a shipwreck, or wreck/site element, would need to:

- Be or be associated an important part in the history of Queensland;
- Be unique or an outstanding example of its type;
- Be considered to be of importance to the wider Queensland community; and,

- Provide archaeological, scientific and technical information that cannot be obtained by other research methods.

A wreck, or wreck/site element, could be considered to be of **moderate** significance if it:

- Would increase our understanding of the history of the region;
- Is a well preserved and good example of its type;
- Is considered to be of importance to the local community; and,
- Provides archaeological, scientific and technical information that is representative of its type and the information is not easily obtainable from other sites or by other research methods.

A wreck, or wreck/site element, could be considered to be of **low** significance if, for example, it:

- Is historically unimportant;
- Has few remains; and,
- Is not known to the general community.

4.2 Evaluation

A significance assessment for the S.S. *Dicky* wreck was made in the 2008 S.S. *Dicky* Management Plan.[111] Since this assessment, the S.S. *Dicky* its previously most visible components have collapsed. This has impacted on the significance of the site and therefore what follows below is the 2008 significance assessment which has been revised for this report.

As well as undertaking a re-assessment of the site as a whole, this significance assessment also evaluates individual elements of the wreck, which are assessed separately in order to grade the importance of what remains as part of the wreck.

The following evaluation of significance with regard to the wreck of the S.S. *Dicky* should not be considered to be a definitive statement. Research into the historical and technical aspects of the wreck was not exhaustive. Further investigation into these aspects of the S.S. *Dicky* may further enhance, or even perhaps reduce, the stated significance of the site.

Aesthetic Significance

In 2008, the wreck of the S.S. *Dicky* was a shipwreck archetype. The twin rows of frames with the upright rudder post protruding from golden sand just beyond the crashing waves on a long sweep of beach, combined to form an image that is universally recognisable and iconic. The contrasts between light and dark, the transient and the seemingly immovable, straight lines and curves, the tensions between culture and nature were what attract the photographer (Figure 36).

Recently, only the starboard side is visible in normal conditions and, of that side, only the stern side of amidships, with sections of even this part of the hull broken off and missing. The wreck no longer contains the symmetry and shape it did in 2008. It is still a striking feature of the beach, which offers plenty of opportunity for photographers in the ever-changing environment, but the wreck has lost much of the completeness that it once had as culture is overcome by nature.

[111] *Op. Cit.* **Cosmos Archaeology 2008**

Figure 36. The wreck of the S.S. Dicky late October or early November 2007. (Source: *Garry'* – uploaded onto *Flickr* on November 2, 2007)

The changes in light, tide, sea state and sand levels ensure that the site is in a constant state of flux. This ensures that there is a near infinite ways the wreck can be photographed. While not the only wreck on a beach in Queensland, the remains of the S.S. *Dicky* in its current location are a perfect subject for a photographer interested in the shipwreck theme (Figure 37).

Figure 37. The wreck of the S.S. Dicky around June 2006. (Source: *mowog* – uploaded onto *Flickr* on June 8, 2006)

The aesthetic qualities of the wreck of the S.S. *Dicky* are best demonstrated by a search of the Internet. On one web site alone, *Flickr*, there are approximately 90 images of the site posted between 2006 to November 2007 and over 250 images by October 2014, showing the wreck in a number of stages of deterioration but the majority taken when both port and starboard side hull was exposed (Figure 38). Another site features the *Dicky* in on-line computer art (Figure 39).

The wreck of the S.S. Dicky *could be considered to be of* ***moderate*** *aesthetic significance.*

Figure 38. S.S. **Dicky** ***at sunrise, showing approximately the most degraded state the wreck appears in the Flickr results.*** (Source: *Bernie Zajac* – uploaded onto *Flickr* on 24 March, 2012).

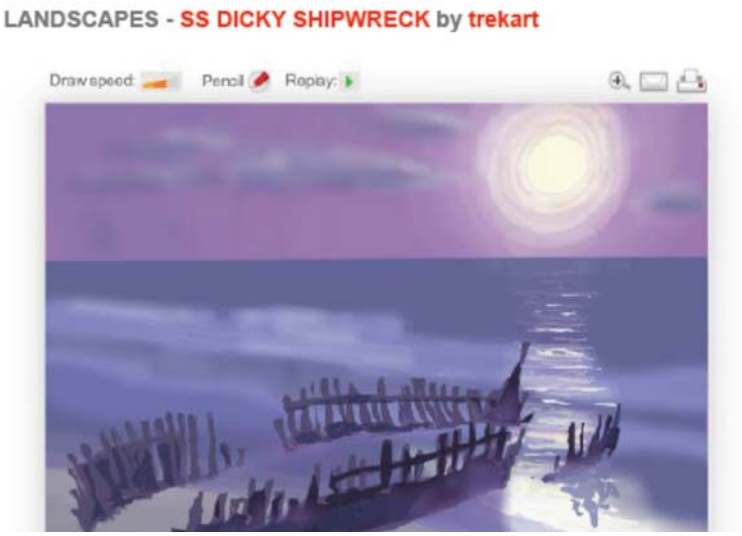

Figure 39. Computer drawing of the S.S. Dicky.
(Source: *trekart* – posted on *Rate my Drawings http://www.ratemydrawings.com/drawings/landscapes/115154.html*)

Archaeological Significance

There are usually three main aspects to the archaeological significance of a shipwreck – what can be learned about the way it was constructed, what can be learned about the cargo and what can be learned about the crew?

The S.S. *Dicky* appears to be a typical iron built steamer of the period. That Lloyds eventually insured it suggests that the vessel was built according to the norms of the day. Table 3 lists the number of iron hulled vessels lost in Australia. With over 500 iron hulled vessels known to have been wrecked, abandoned or scuttled, the S.S. *Dicky* could be considered to be representative in this respect.

The S.S. *Dicky,* however, was built in Germany, which had a different shipbuilding tradition to that of Britain and the British Empire. Of the 9,000 or so known shipwrecks in Australia, only 23 are known to be of German origin. Of these, only two were iron hulled steamers built in the 1880s including S.S. *Papua* and S.S. *Dicky***.** Very little is known of *Papua* other than it was lost on Osprey Reef in 1885. It has not been found and could even have been refloated. Within an Australian context, the S.S. *Dicky* can be considered to be very rare with respect to the combination of the decade and origin of construction with that of it being a

steamer. The details of the construction of the S.S. *Dicky* that could be obtained from the remnants would be of some archaeological significance as such information is apparently not available in the historical record.

Table 3. Iron hulled and German built vessels lost in Australia.[112]

State	Iron	German	German / Iron	German/ iron/steam	Names
Western Australia	100	9	2	0	
Tasmania	48	4	0	0	
South Australia	70	0	0	0	
Victoria	62	0	0	0	
Northern Territory	7	2	0	0	
New South Wales	161	0	0	0	
Queensland	125	8	4	2	*Papua* (1885-1885) *Dicky* (1883-1893)
TOTAL	573	23	6	2	

Very limited research has been conducted concerning iron built vessels lost in Australia as a whole. A summary of key iron shipwreck studies are included in **Annexes C.2** and **C.5**. These show that the majority of iron hulls have been recorded and conserved *in situ* with only certain elements, such as the engine, machine guns or smaller artefacts, being removed for closer inspection and separate conservation. Excavation and recording of the S.S. *Dicky* shipwreck has the potential to provide new information in the field of iron shipwreck research.

Generally, within the bilge of a vessel, particularly in the spaces between the floors and the keelson, there tends to be an accumulation of artefacts associated with the cargo (amidships) captain, officers and passengers (stern) and crew (bow). This fragmentary record of the 'history' of the vessel never gets salvaged, unless the wreck is completely broken up. Excavations of a salvaged iron hulled paddle steamer tug, *Leo* (1873-1917), in Newcastle, NSW, recovered objects from within the bilge such as bottle glass, brush handles and mother of pearl shell buttons.[113] The artefacts within the bilge of the S.S. *Dicky* would be of some archaeological significance. As recent degradation of the condition and physical remains appears to be limited to higher exposed sections of the wreck, it is highly likely that the lower areas, specifically the bilge, have not altered and the archaeological potential of the wreck remains intact.

The wreck of the S.S. Dicky *could be considered to be of* ***moderate*** *archaeological significance.*

Architectural Significance

If there were any decorative elements on the S.S. *Dicky,* they have since been removed or destroyed. From the information available it does not appear that the S.S. *Dicky* was of a particular rare design or type of vessel.

The wreck of the S.S. Dicky *could be considered to be of* ***low*** *architectural significance.*

Historical Significance

The known history of the S.S. *Dicky* prior to its arrival to Australia is unremarkable, though it is not common for vessels previously registered in Hong Kong to transfer its registry to this country. The history of registration, transactions and mortgages of the vessel gives an insight into the practices of ship owners in Queensland at the time, along with a whiff of a suspicion of insurance fraud.

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[112] **Department of the Environment, n.d.** 'Australian National Shipwrecks Database,' Australian Government, available http://www.environment.gov.au/topics/heritage/historic-shipwrecks/australian-national-shipwreck-database, accessed 11 November 2014.

[113] The *Leo* was excavated and removed in September 2007. The author was involved in the excavation.

The activities of the vessel in southern Queensland are typical of many other steamers of the period – hauling cargo and passengers between outports and major centres such as Brisbane. The S.S. *Dicky* operated in the twilight of the coastal tramp steamer period in southern Queensland as by the 1890s, the railway wound its way up the coast from Brisbane slowly depriving ship owners of their livelihood, port by port. The alleged murder of Mary Tinsell provides some colour to the history of the vessel.

The wrecking of the S.S. *Dicky* took place in one of southern Queensland's best remembered storms and floods:

> *"How one could write and tell of that eventful year of floods and financial disaster. Day and night, week on without cessation, the rain fell as it never could have fallen before, and the wind blew in storm and hurricane and gales. Business almost ceased to exist in the city; and in suburbs and northern towns ever the same story of flood and misfortune was written and told. Nature seems to have lost control and wrought damage and distress to the rich as well as the poor."*[114]

The wreck of the S.S. *Dicky* and the abutment of the Victoria Bridge at Southbank, Brisbane, are probably the most recognisable relics of this event. Of some additional historical note surrounding the wrecking event is the brief illumination it provides on the early European settlers of the area and the relative 'wilderness' of the area at that time.

The Premier of Queensland in 1963 gave a speech in response to mounting the S.S. *Dicky* propeller that in effect elevated the historical significance of the wreck to that of State level, saying:

> *"Throughout the State many obelisks, cairns and plaques have been erected to perpetuate important events in our history and to preserve for prosperity the story of outstanding happenings in the settlement of the State."*[115]

In reviewing this aspect of the vessel's significance it is proposed that:

The wreck of the S.S. Dicky *could be considered to be of* ***moderate*** *historical significance.*

Interpretative Significance

From the late 19th century into the early 21st century the wreck of the S.S. *Dicky* has displayed some wonderful attributes that readily lent itself as an educational tool. These included its accessibility and context, which have been the most significant aspects of its interpretive value. Where else but on a surf beach, standing in amongst the ruined hull, could the story of a shipwreck be told to an audience. What the site was, is so self-evident that little, if anything needs be stated. The site interpreted itself where it is.

The remains of the S.S. *Dicky* as a static display on the beach and in context leaves the visitor with the reinforced perception of the generic wreck, an enigma upon which one can make up their own stories of romance, terror, bravery, folly, hopelessness and desolation. Apart from playing the role of the 'unknown' wreck, the S.S. *Dicky* can also be interpreted in a completely opposite manner where it is used as a vehicle to introduce stories of the early European settlement in the Caloundra area, the events of 1893 and even the role of coastal shipping in the development of Queensland. The mystery of the demise of Mary Tinsell could add a salacious element to the mix.

In recent years storms have reduced the visual impact of the S.S. *Dicky* wreck and as a consequence have reduced the interpretive potential of the wreck. The remains are still identifiable as a shipwreck and provide a setting for interpretation as its location on the beach maintains accessibility for public interaction and curiosity. If anything, the continual degradation of the wreck is part of a timeline of change and the continuation of the story of S.S. *Dicky*. The wreck has been continuously altered by both cultural and natural forces. The

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[114] **Thomson, A.K. (ed) n.d**. *The Collected Works of Thomas Welsby*: Volume 1.

[115] **Caloundra Weekly, 29 November 1963**, 'Premier unveils plaque'.

remains display the processes of shipwreck collapse, showing how even large and robust cultural features, such as an iron ship's hull, will slowly give way to nature. Despite this, continual degradation has led to significantly less remains being normally visible on the beach and, eventually, will lead to the complete lack of remains. Interpretive significance may adapt as the shipwreck continues to degrade but interpretation requires material and, as the wreck continues to diminish, so does the potential for interpretation.

The wreck of the S.S. Dicky *could be considered to be of* ***moderate*** *interpretative significance.*

Scientific Significance

One of the significant aspects of the wreck of the S.S. *Dicky* is that it has been well documented with photography from the time it was wrecked to the present day. This is unprecedented within an Australian context for a wreck, which is 121 years old. The photographic resource of the S.S. *Dicky* deteriorating over time contributes greatly to our understanding and to the study of the formation of wreck sites in similar environments. The sites accessibility also allows the opportunity for conducting scientific work on the wreck for the purposes of its conservation. As the case study summaries in **Annex C** show, conservation of iron hulls in Australia has largely been conducted *in situ* with only smaller elements being removed for separate conservation. Depending upon the management of S.S. *Dicky,* there is the potential for the conservation of this wreck to be unique in Australia. Continual deterioration, especially in recent years, highlights its scientific significance as an example of the diachronic formation of iron wreck sites.

The wreck of the S.S. Dicky *could be considered to be of* ***moderate*** *scientific significance.*

Social Significance

The wreck of the S.S. *Dicky* has always been a prominent part of Caloundra society. The beach has been named after the wreck and poems have been written about it (**Annex D**). The North Caloundra Surf Life Saving Club changed its name recently to Dicky Beach Surf Life Saving Club (Figure 40).

Figure 40. The Dicky Surf Club courtesy bus. (Cosmos Archaeology, October 2006)

From the earliest years it has been an attraction for both local and visitor. As C. H. Mann stated:

> "… *I think there are more photographs (of the wreck) in photo albums around the coast than you can shake a stick at*.""[116]

What the wreck of the S.S. *Dicky* means to the local community and those many thousands from interstate who spent their childhood holidays on the Sunshine Coast can be summed up by the following:

116 *Opp. Cit.,* ***Sunshine Coast Daily*****, 22nd May 1985**.

> "… *but she will last a long time yet to delight the crowds of happy children who use her as a playground and a curiosity, for not many places provide a real ship on the beach to play in*."[117]

Though the above account was written in 1960, this holds true to the present today and is evidenced by the community reaction against the proposal to move the wreck. In the 1980s, debate first arose within the local community as to whether the wreck of the *Dicky* should be removed. Most of the local community, headed by historians Neil Dowsett, C. H. Mann, the President of the then North Caloundra Surf Club, Barry Emerton and Reverent Allan Malle, opposed the removal of the wreck.[118] The reasons for retaining the wreck were based on the site's apparent uniqueness – the only recreational beach in the world named after a wreck and where the wreck was still visible – and the tourists (money) it attracted.

In 2014, some of the reactions of locals in Caloundra were collected into a newspaper article by the *Sunshine Coast Daily* titled 'SS Dicky wreck: Why we will miss her so much'[119]. The article demonstrates a fondness for the wreck, but also concern at its continual degradation. One recalled memories of family holidays to the beach, saying "I was like every young boy that walks down on the beach – their eyes light up. …It was something to look forward to." A couple of photographers claimed "when I see it, I feel a lot of history" but also that "from a photographer's point of view, it sucks that it will go but we can see over the years that it's fading away and I'd rather see it preserved how it is than be gone in a couple of years." Another described how the wreck is part of the beach, but he would like to see it moved for the sake of the wreck and history.

The wreck of the S.S. Dicky *could be considered to be of* ***high*** *social significance.*

It is one of the often-made statements in the promotion of the wreck of the S.S. *Dicky* that it is the only 'recreational' beach in the world named after a shipwreck (Figure 41).[120] This is erroneous. Coolangatta (QLD), Malabar (NSW), Collaroy (NSW) and Kwinana (WA) are just a selection of recreational beaches known to be named after shipwrecks. At Kwinana the wreck is still visible.

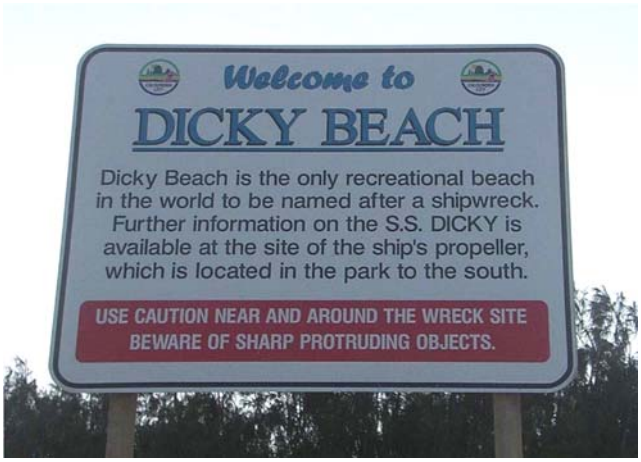

Figure 41. Sign at Dicky Beach. (Cosmos Archaeology, October 2006)

117 **Trundle, Gwen 1961** *Caloundra; Gem of the Sunshine Coast*. Landsborough Regional Historical Museum IDNo 0144.

118 ***Sunshine Coast Daily*, 22 May 1985**, 'Fight on to save wreck'.

119 ***Sunshine Coast Daily*, 8 May 2014**, 'SS Dicky wreck: Why we will miss her so much,' available http://www.sunshinecoastdaily.com.au/news/ss-dicky-wreck-sunshine-coast-memories-photos/2246685/, accessed 14 November 2014.

120 *Op. Cit.* **Mann, C.H., 1985**

Technical Significance

The construction of iron (not steel) ships had its heyday from the 1850s to the 1880s. Compared to wood, steel, aluminium and fibreglass this medium had a relatively narrow window of popularity. Building ships from iron required techniques and a level of craftsmanship that is now most likely extinct. The skills and quality of work is best evidenced by the way the rudder post has managed to stay intact and upright under the sustained assault of the sea for 121 years and occasional human intervention. It is also highly likely that no ship lines or half model exist for the S.S. *Dicky* so the remains are the only potential source of information about the original form of the ship.

The wreck of the S.S. Dicky *could be considered to be of* ***moderate*** *technical significance.*

4.2.1 Statement of Significance

Following from the above analysis, a statement of significance can be presented which acknowledges all aspects of its significance:

> *The significance of the S.S.* Dicky *lies in its excellent ability to convey the story and meaning of shipwreck through its present form and context as well as provide some illumination on iron shipbuilding technology and life aboard a late 19th century cargo vessel. It is a much loved and perhaps even revered cultural landmark of the Sunshine Coast.*

The statement of significance also implies that the;

- *Setting within which the wreck of the S.S.* Dicky *is located is a critical component of its significance.*
- *Current form and articulation of the wreck makes it recognisable as a wreck.*

Following on from this, it is obvious therefore that the;

- *Severance of the wreck from its present context will markedly reduce its most elevated values, these being its aesthetic, interpretative and social significance, as would deterioration, breaking up, and dis-articulation through natural causes.*

4.2.2 Assessment of Physical Elements

In light of the proposed works and the potential for the wreck to be cut into sections, the remains of S.S. *Dicky* have been separated into elements for individual significance assessments. The elements included are:

- Stern assembly;
- Extant starboard side hull and frames;
- Extant port side hull and frames;
- Detached sections of hull which may be lying around the wreck;
- Internal structure including stanchions, bulkheads, deck beams, etc..;
- Bilge or basal area including floor plates, ceiling planking, keel/keelson assembly and hull;
- Bilge deposits;
- Form, and;
- Setting.

Stern assembly

Criteria	Significance
Aesthetic	• Prominent and iconic section of the S.S. *Dicky* wreck. • Most easily identified and least degraded. • Visually unique in form. • Part of a centrepiece for photography. • *High aesthetic significance*
Archaeological	• As no ship lines exist, the stern assembly can contribute to knowledge about construction of the vessel which is only accessible example of a German iron ship built in 1880s wrecked in Australia. • *Moderate archaeological significance.*
Architectural	• Stern assembly is not decorative and not of rare design. • *Low architectural significance.*
Historic	• As an identifiable element associated with an historical event, the stern assembly has the potential to provide a link between written accounts of the wrecking event and the physical remains that resulted. • *Moderate historical significance.*
Interpretive	• As a clearly identifiable section of the S.S. *Dicky* shipwreck, the stern assembly is very representative element of the wreck and associated history. • Can be reassociated with the removed propeller. • Is currently unstable and unsafe to interact with, limiting interpretive potential in its current state despite interpretive potential. • *High interpretive significance.*
Scientific	• Consistently exposed and part of the record of deterioration. • High potential for conservation and studies in the durability of iron wrecks in the harshest of environments. • *Moderate scientific significance.*
Social	• Stern assembly is a significant and recognisable part of the S.S. *Dicky* wreck, contributing to its form as a feature in the landscape. • *High social significance.*
Technical	• An example of the techniques and craftsmanship from the short period of iron shipbuilding. • Particularly good example as the stern assembly has managed to stay intact and upright since the wrecking event. • *Moderate technical significance*
STATEMENT OF SIGNIFICANCE	The stern assembly has great value as a visually iconic part of the S.S. *Dicky*. This value gives it a high significance that must be considered and protected but it also gives it great potential to be utilised in future interpretation.

Extant Starboard Side Hull and Frames

Criteria	Significance
Aesthetic	• Only remaining exposed hull section. • Still easily identified. • Not visually unique in form. • *Moderate aesthetic significance.*
Archaeological	• As no ship lines exist, the starboard hull can contribute to knowledge about shape and construction of the vessel as the S.S. *Dicky* is only accessible example of a German iron ship built in 1880s wrecked in Australia. • *Moderate archaeological significance.*
Architectural	• Starboard hull is not decorative and not of rare design. • *Low architectural significance.*
Historic	• Has limited potential to provide additional information concerning the construction history, events or crew of S.S. *Dicky.* • *Low historical significance.*
Interpretive	• Currently the only exposed hull section above the turn of the bilge. • Clearly identifiable as shipwreck hull. • Relatively safe to interact with, providing the largest *in situ* 'stage' piece for interpretation of S.S. *Dicky*, European settlement and coastal shipping. • Strongly demonstrates the changing form of shipwrecks. • *High interpretive significance.*
Scientific	• Consistently exposed and part of the record of deterioration. • Buried remains also have potential to contribute to knowledge of deterioration. • Moderate potential for conservation. • *Moderate scientific significance.*
Social	• Starboard hull is a significant and recognisable part of the S.S. *Dicky* wreck, contributing to its form as a feature in the landscape. • *High social significance.*
Technical	• An example of the techniques and craftsmanship from the short period of iron shipbuilding. • The starboard hull is not a unique structural element. • *Low technical significance*
STATEMENT OF SIGNIFICANCE	Although it does not have a high potential to yield new information, the extant remains starboard hull has been consistently exposed and has become a significant part of the form of the wreck, also being the most prominent piece remaining, after the stern assembly, to demonstrate the changing conditions of shipwrecks over time.

Extant Port Side Hull and Frames

Criteria	Significance
Aesthetic	• No longer exposed in normal conditions. • When exposed, not visually unique in form. • *Low aesthetic significance.*
Archaeological	• As no ship lines exist, port hull can contribute to knowledge about shape and construction of the vessel as the S.S. *Dicky* is only accessible example of a German iron ship built in 1880s wrecked in Australia. • *Moderate archaeological significance.*
Architectural	• Port hull is not decorative and not of rare design. • *Low architectural significance.*
Historic	• Has limited potential to provide additional information concerning the construction history, events or crew of S.S. *Dicky.* • *Low historical significance.*
Interpretive	• Currently not exposed. • If exposed, would be clearly identifiable as shipwreck hull. • Has potential to provide material for interpretation of S.S. *Dicky*, European settlement and coastal shipping. • *Moderate interpretive significance.*
Scientific	• Has been mostly exposed and part of the record of deterioration. • Buried remains also have potential to contribute to knowledge of deterioration. • Moderate potential for conservation. • *Moderate scientific significance.*
Social	• Port side hull is a significant and recognisable part of the S.S. *Dicky* wreck, contributing to its form as a feature in the landscape. • *High social significance*
Technical	• An example of the techniques and craftsmanship from the short period of iron shipbuilding. • The port hull is not a unique structural element. • *Low technical significance*
STATEMENT OF SIGNIFICANCE	Despite now being mostly buried, the extant remains of the port hull may be more complete in form – that is, preserved beyond the turn of the bilge – providing material that may be utilised for interpretation.

Detached Sections of Hull

Criteria	Significance
Aesthetic	• Removed and stored by SCC without public access or buried beneath sand. • Not identifiable without interpretation. • Stored pieces are in good condition and demonstrate construction elements. Buried sections have the potential to be in good condition considering burial. • Visually not unique in form but are representative of the rest of the hull. • *Moderate aesthetic significance.*
Archaeological	• Detached sections can contribute to knowledge about the form and construction of the vessel, especially the upper parts of the hull. Their location and orientation could contribute to the understanding how the wreck broke up. This would be of use for the management of other similar wrecks in similar environments. • *Moderate archaeological significance.*
Architectural	• The hull sections inspected are not decorative or of rare design, and it is unlikely that any other sections would be decorative or rare. • *Low architectural significance.*
Historic	• Has limited potential to provide additional information concerning the construction history, events or crew of S.S. *Dicky.* • *Low historical significance.*
Interpretive	• Currently not accessible to the public or exposed. • The sections have the potential to be identified as part of a ships' hull. • Can be reassociated with other removed artefacts/elements including those already removed and those that may be removed in the future. • Can be used to represent the rest of the hull for the interpretation of S.S. Dicky, European settlement and coastal shipping. • *Moderate interpretive significance.*
Scientific	• Contributes to the record of deterioration by demonstrating processes of collapse, including both removed pieces and buried pieces. • Removed and buried remains can both contribute to the record of deterioration from a conservation perspective due to the difference in conditions between storage and burial. • Moderate potential for conservation. • *Moderate scientific significance.*
Social	• The removed and buried sections would not be recognisable without interpretation as they have been in storage or buried and, as there is no information pertaining to where they originated in the hull, they cannot be attributed to any previously recognisable section of hull. • *Low social significance*
Technical	• An example of the techniques and craftsmanship from the short period of iron shipbuilding. • The removed sections of hull are not unique structural elements. • *Low technical significance*
STATEMENT OF SIGNIFICANCE	Although these sections of hull have been disassociated with the wreck and contain limited information, they have the potential to be useful elements for interpretation as representations of the hull without requiring cutting/impacting the complete hull remains.

Internal Structure

Criteria	Significance
Aesthetic	• Only one stanchion remains *in situ*. • Exposed stanchion and previously visible stanchion were both recent iconic features of wreck. • No other internal decking or frames have been visible in recent times. • *Low aesthetic significance.*
Archaeological	• The limited remains of the internal features could contribute to knowledge about construction of the vessel as the S.S. *Dicky* is only accessible example of a German iron ship built in 1880s wrecked in Australia. • *Low archaeological significance.*
Architectural	• Internal features are not expected to be decorative and not of rare design. • *Low architectural significance.*
Historic	• Has limited potential to provide additional information concerning the construction history, events or crew of S.S. *Dicky.* • *Low historical significance.*
Interpretive	• Currently not exposed in normal conditions, other than one stanchion. • If exposed, only the tops of the stanchions would be familiar from previous exposure of the wreck. • Has potential to provide smaller pieces for interpretation of S.S. *Dicky* only. • *Moderate interpretive significance.*
Scientific	• Has only been partially exposed and part of the record of deterioration. • Buried remains have potential to contribute to knowledge of deterioration. • Low potential for conservation. • *Low scientific significance.*
Social	• The stanchions were a recognisable part of the S.S. *Dicky* wreck, contributing to its form as a feature in the landscape. • Rest of internal features have been largely buried. • *Moderate social significance*
Technical	• An example of the techniques and craftsmanship from the short period of iron shipbuilding. • The internal features are not unique structural elements. • *Low technical significance*
STATEMENT OF SIGNIFICANCE	The extant and *in situ* stanchion and other internal structure that may be present in and around the hull can provide some limited contribution to the significance of the wreck, primarily with regards to archaeological, interpretative and technical significance.

Bilge / Basal Area

Criteria	Significance
Aesthetic	• Not visible, and has had limited exposure since wrecking. • No current aesthetic significance, but has potential aesthetic significance if exposed as a complex structural element. • *Moderate aesthetic significance.*
Archaeological	• As no ship lines exist, the bilge area can contribute to knowledge about shape and construction of the vessel. • *Moderate archaeological significance.*
Architectural	• Bilge area is not expected to be decorative and not of rare design. • *Low architectural significance.*
Historic	• As an area of many construction elements, the bilge area as the potential to provide additional information concerning the construction history of S.S. *Dicky.* • *Moderate historical significance.*
Interpretive	• Currently not exposed, and has rarely been exposed. • Although probably not familiar to the public, the combination of structural elements would be a useful feature for interpretation of S.S. *Dicky*, European settlement and coastal shipping. • *Moderate interpretive significance.*
Scientific	• Has only been infrequently exposed during excavation. • High potential to contribute to knowledge of deterioration due to restricted interference, minimal previous observation and complexity of structure/materials. • High potential for conservation. • *Moderate scientific significance.*
Social	• The bilge area is not a recognisable part of the S.S. *Dicky* wreck. • It has the potential to expand social understanding of the wreck by showing structural elements previously unseen. • Also has potential to demonstrate the archaeological/ excavation process that raised it and encourage social appreciation of changes to the wreck. • *High social significance*
Technical	• An example of the techniques and craftsmanship from the short period of iron shipbuilding. • The bilge area contains a number of structural elements that may be unique and/or display the techniques involved. • *Moderate technical significance*
STATEMENT OF SIGNIFICANCE	Although it has rarely been exposed, the bilge is a complex structural area that may be utilised for research but also to create new public awareness of the previously hidden components of S.S. *Dicky* and the benefits of undertaking excavation/ removal.

Bilge Deposits

Criteria	Significance
Aesthetic	• Not visible, nor has been visible since wrecking. • No current aesthetic significance, but has potential significance if exposed, depending on the type of remains found within. • *Moderate aesthetic significance.*
Archaeological	• Remains are unknown but have the potential for archaeological significance attributed to the history of the vessel and the crew. • *Moderate archaeological significance.*
Architectural	• Bilge deposits do not form part of the architectural composition of the vessel. • *No architectural significance.*
Historic	• Has the potential to provide additional information concerning the history and crew of S.S. *Dicky.* • *Moderate historical significance.*
Interpretive	• Currently not exposed and has likely never been exposed. • Bilge deposits have the potential to be highly representative of the crew and working life of the vessel. • Would contain artefacts that could utilised for interpretation of S.S. *Dicky*, European settlement and coastal shipping. • Easier to conserve and distribute amongst multiple locations for various functions. • *High interpretive significance.*
Scientific	• The presence *or absence* of bilge deposits have the potential to contribute to scientific research of conservation and deterioration. • Artefacts themselves have the potential to contribute to research on conservation and deterioration. • *Moderate scientific significance.*
Social	• Bilge deposits will not be a recognisable part of the S.S. *Dicky* wreck. • It has the potential to expand social understanding of the wreck by providing evidence of the crew and working life of the vessel previously unseen. • Also has potential to demonstrate the archaeological/ excavation process that raised the artefacts and encourage social appreciation for excavation of the wreck. • *High social significance*
Technical	• Bilge deposits do not form part of the technical composition of the vessel. • However, bilge deposits may contain artefacts that have their own technical value. • *Low technical significance*
STATEMENT OF SIGNIFICANCE	The presence of bilge deposits has not been conclusively demonstrated, but the potential deposits would have great research value as well as being useful for the interpretation of the crew and working life of S.S. *Dicky*.

Form

Criteria	Significance
Aesthetic	• The aesthetic value of the S.S. *Dicky* wreck was largely dependent upon the form as a symmetric hull outline of a ship. As the wreck deteriorates, the balance and completeness of the form is lost. • The S.S. *Dicky* wreck was also valued for its sheer size and scale as a feature in the beach, being approximately 30 m long. Now the dilapidated wreck exposes only an approximately 12 m length of hull on one side, including the stern post, plus an isolated stanchion. Continued deterioration increases the loss of aesthetic significance of the form of the wreck. • *Moderate aesthetic significance.*
Archaeological	• As no ship lines exist, the form of the wreck can greatly contribute to knowledge about the shape and construction of the vessel as the S.S. *Dicky* is only accessible example of a German iron ship built in 1880s wrecked in Australia. • *Moderate archaeological significance.*
Architectural	• Form is not decorative and not of rare design. • *Low architectural significance.*
Historic	• The changing form of the vessel over time contributes to the historic record of S.S. *Dicky* as a collapsing feature of Dicky Beach. • *Low historical significance.*
Interpretive	• The remains of S.S. *Dicky* provide a static display for interpretation but as the form is lost, especially the symmetry, so is the potential for the remains to be easily identified as a shipwreck for interpretation. • Despite this, the current form of the shipwreck could potentially be used in combination with a display of its form in the past to illustrate the changing and deteriorating nature of a shipwreck and a history of collapse specific to S.S. *Dicky.* • *Moderate interpretive significance.*
Scientific	• The form of the wreck has a large potential to contribute to knowledge of deterioration and collapse. • *Moderate scientific significance.*
Social	• The form of S.S. *Dicky* has influenced the way public can interact with the vessel, from being a large and study structure as a dance floor to a feature of curiosity in the beach. • Deterioration of the form of the vessel has occurred within the living memory of the public. Observations in the last 10 years can note significant change. This leads to stronger local response to the future of the wreck remains as some mourn the loss of material and others hope to preserve what remains. • *High social significance*
Technical	• The form provides an example of the lines, techniques and craftsmanship from the short period of iron shipbuilding. • Form of the vessel has some potential be a unique structural element. • *Moderate technical significance*
STATEMENT OF SIGNIFICANCE	The form of S.S. *Dicky* has heavily influenced its aesthetics and the type of interaction with it. Although the form of the wreck is gradually deteriorating it still holds physical information and its deteriorating condition has heightened concerns for the future of the wreck. Consideration of form in the past and its change over time should be considered in any interpretation.

Setting

Criteria	Significance
Aesthetic	• The aesthetic value of S.S. *Dicky* as a whole is largely dependent upon its setting in the inter-tidal zone of Dicky Beach. • The contrast between the cultural feature and natural landscape is integral for the contrasts that attract photographers and the curiosity of visitors. • The deteriotating form of the shipwreck does lessen the aesthetic qualities of the shipwreck, but does not affect the significance of setting. • *High aesthetic significance.*
Archaeological	• The fact that S.S. *Dicky* is still located *in situ* increases archaeological potential due to the limiting of disturbances that occur during any form of relocation. • The form of the wreck mostly maintains integrity while *in situ*. • *Moderate archaeological significance.*
Architectural	• The setting of S.S. *Dicky* is within a natural environment and hence does not contain any architectural qualities. • *No architectural significance.*
Historic	• The *in situ* nature of the wreck maintains its historic presence on Dicky Beach. • *Moderate historical significance.*
Interpretive	• The *in situ* nature of the wreck aids in the interpretation of S.S. *Dicky* and the changing nature of a shipwreck through time. • *High interpretive significance.*
Scientific	• There is a large potential for scientific research of the degradation and conservation an iron wreck *in situ*. • *Moderate scientific significance.*
Social	• This is the setting where people have been able to interact with the S.S. *Dicky* remains since it wrecked. • The wreck has a continued presence in the landscape of this public area for over 120 years. • *High social significance*
Technical	• The setting of S.S. *Dicky* is within a natural environment and hence does not contain any technical qualities. • *No technical significance.*
STATEMENT OF SIGNIFICANCE	The presence of the S.S. *Dicky* wreck at Dicky Beach is a large component of its cultural significance. It has greatly impacted the community by being a prominent and accessible feature on the beach for over 120 years.

4.2.3 Discussion

It must be reiterated that the setting of the S.S. *Dicky* shipwreck is integral to its cultural significance. This setting includes its location in Dicky Beach, where it has lain for over 120 years and the integrity of the remains makes it recognisable as a shipwreck. In recent years due to cyclonic weather, the integrity of the wreck has been compromised and it is expected that the wreck will continue to be broken down. As the wreck continues to disappear into the sand, only to become exposed after storms, it will gradually become remembered in photographs.

It is this situation, in part, which has led to proposed movement of the wreck. It may be possible that relocation of some or all of the wreck, along with conservation and interpretation measures, will serve to preserve the significance of the wreck for a longer term. Despite some or all of the remains being relocated out of its original setting, consideration of the significance of the different elements of the wreck included in the section above may be considered in maintaining significant aspects of the S.S. *Dicky* remains.

5 OPTIONS FOR INTERFERENCE

5.1 Approach

The initial stages of this project revealed a large number of possible options for the preservation of key heritage elements of the S.S. *Dicky* wreck and reduction of safety risks posed by the remains. These options crossed a broad number of aspects and included many smaller variations. In order to simplify the display of options, the process is broken down into four major stages that follow the chronological progression of the project. The four stages are:

- Engineering – the physical removal and relocation of all or sections of the wreck;
- Archaeology – examination and recording of the remains;
- Conservation – preserving any recovered remains; and,
- Interpretation – the display and interpretation of remains.

Each of these four stages contain a number of possible options, with different latter stages (archaeology, conservation and interpretation) often being contingent on the choice of the engineering option. A flow chart has been provided in (Figure 42), outlining all the options and viable combinations between each stage.

5.1.1 Assessment of Options

Each of the identified options will be assessed individually. The assessment will include predicted requirements for each option, the risks of the success of each option, the potential impact to cultural heritage significance, and whether the option is considered acceptable or not from a cultural heritage perspective.

Requirements

The assessment of requirements includes estimates of:

- Personnel
- Time
- Resources
- Equipment
- Any approvals or permit documentation that may be required – other than that required under Section 91 of the *Queensland Heritage Act 1992*. This report forms part of the approval process for the aforementioned Act.
- Cost

Risks

The assessment of risk is based on a number of uncertain elements that must be taken into account when considering the potential success of each option. This includes factors such as the unknown physical integrity of the wreck hull, unpredictability in weather conditions, failure of equipment or machinery to function as predicted, and the inability to complete tasks within a restricted time frame. The risk for each option is the likelihood of the option not being implemented successfully, resulting in a detrimental, unintended and uncontrolled impact to the physical elements and cultural heritage significance of the wreck.

To assist in the assessment of risk, the following list of ratings has been linked to a percentage chance of the option not being implemented successfully. The risk ratings and accompanying percentages are as follows:

Certain	100%
Almost Certain	95% to 99%
Very likely	75% to 94%
Likely	50% to 74%
Unlikely	26% to 49%

Very unlikely	2 to 25%
Remote	0 to 1%

Impact to Significance

Each of the options is assessed with regards to its potential impact on each cultural significance criterion used in this study. It is acknowledged that the very proposal to interfere with the wreck could have a substantial impact to its cultural significance. However, as the wreck breaks up it will, within a few years to a few decades, disappear under the sand. As this occurs its significance will diminish. The impact assessments have been made with this eventual occurrence in mind, and views the options as a form of mitigation for the gradual diminishing of the S.S. *Dicky*'s significance through natural forces. The options are not graded like elsewhere in the report but are expressed as being either acceptable or unacceptable through assessing the risk to significance that a particular option entails and whether an option is seen as proportionate to the assessed significance of each criterion.

Costings

Only cost estimates can be provided at this stage, and no detailed costings have been provided for the engineering options due to the variability of the prices for some of the equipment/material required which could only be firmed once the detailed plans are available. Furthermore, firms were reluctant to provide detailed prices on account of the speculative nature of the options at this stage. Once an option has been decided, detailed costings can be provided. In the meantime an indication of the relative price for various costings can be ascertained by reviewing the material, equipment, expertise and time required for each of the options.

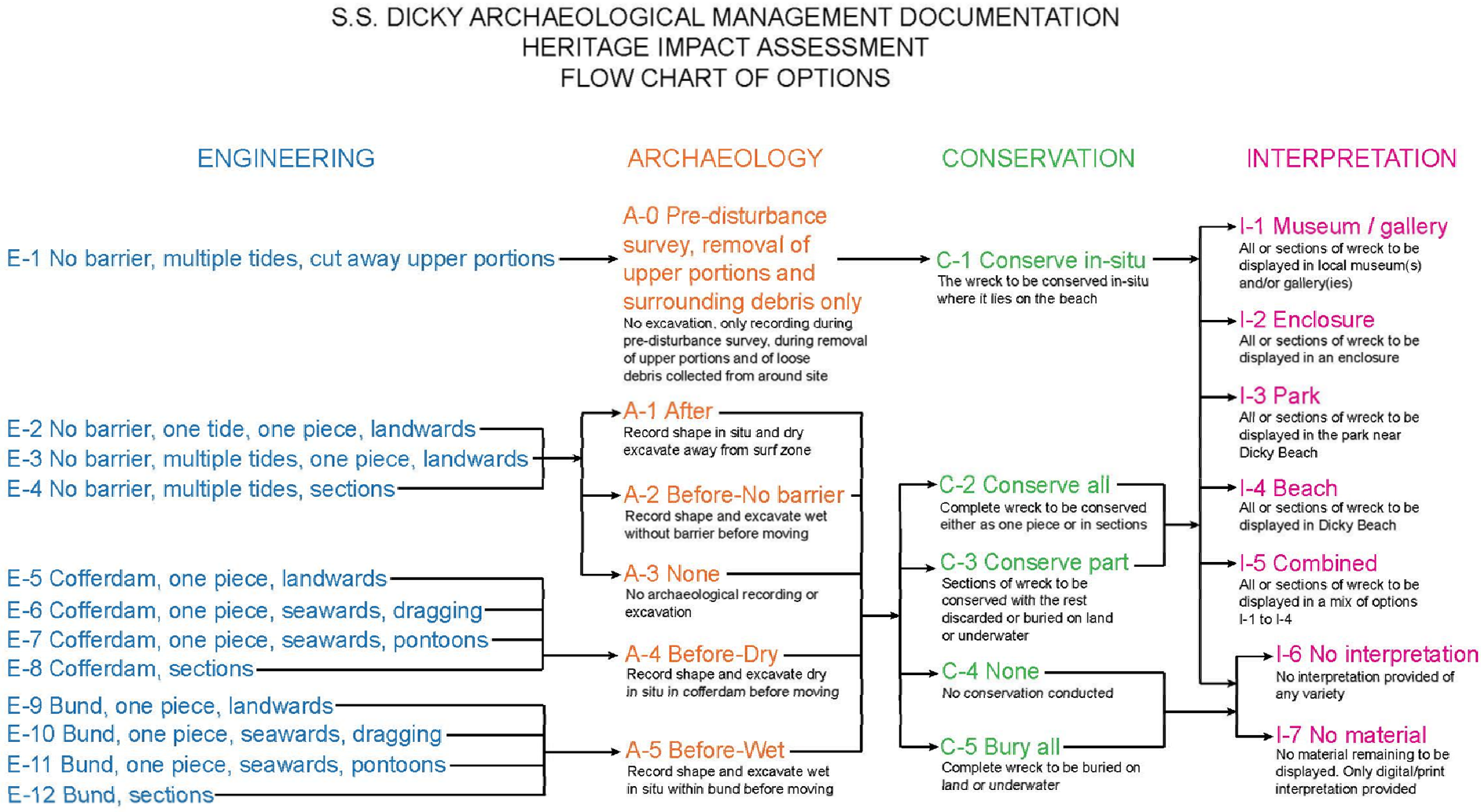

Figure 42. Flow chart of viable option combinations.

5.2 Engineering Options

The following section provides a brief discussion of the major considerations involved in the identification and selection of potential engineering options for the removal and relocation of some or all of the wreck of the S.S *Dicky.* Detailed assessments of each of the engineering options can be found in Annex E.

5.2.1 Work Environment

A major consideration for the removal of the wreck of the S.S *Dicky*, from an engineering perspective, is the type of environment in which the work is to be carried out. The wreck is located in an area that is subject to tidal movements and surf. The more this environment can be controlled, the more efficient, precise and assured of success any work carried out is likely to be. A balance will need to be struck on constructing an optimum controlled environment that will allow the approved works to be carried out to satisfy requirements, as well as both safely and efficiently.

Working without a controlled environment

Working with the tides and surf without any modification of the environment would be a cheaper option with regards to the initial expenditure. However, it would take considerably longer to achieve a satisfactory outcome, and would entail greater risks for not achieving that outcome.

The simplest option for working without a controlled environment involves the removal of the wreck in the space of one low spring tide. This would heavily restrict the amount of access and time to assess the wreck or implement any removal mechanisms. As a result, this option would require detailed forward planning and the pre-fabrication of lifting gear in order to perform the removal as quickly as possible. It must also be considered that there may not be enough time to expose the shipwreck in one tide from beneath the beach sand, so any removal will likely involve shifting not only the wreck but also a considerable amount of sand.

Removal of the wreck over multiple tides enables more time to access the wreck and prepare for removal, but would require a strategy that takes into account the natural energy forces of tide, surf and movement of sand.

Working within a cofferdam (watertight)

The most controlled work environment that could feasibly be put in place for this project would be a watertight metal sheet-pile cofferdam surrounding the wreck on three sides. It would need to be continuously pumped clear of water so as to provide a dry work environment. This approach is similar to that constructed around the Skuldelev Viking Ships in Roskilde Fjord, Denmark and for the *La Belle* excavation in Matagorda Bay, Texas, USA (Annexes **C.1.4** and **C.1.5**).

Creating a dry environment around the wreck would allow for more control and greater efficiency over the archaeological recording as well as for works centred on moving wreck remains.

Working within a bund (not watertight)

Another means with which to control some of the environmental limitations to working on the wreck would be the installation of a bund or seawall. The bund would form a physical barrier that would block wave energy but would not prevent water from entering the work area. This method would be similar to that used during excavation of the *Amsterdam* shipwreck, at Bulverhythe, East Sussex, England, but also shown in the advanced infrastructure constructed for the excavation of the Yorktown Shipwreck 44YO88, Virginia, USA (Annexes **C.1.6** and **C.1.7**).

The establishment of this barrier would allow extended access to the site for archaeological recording and preparing for relocation. Most of the wreck would be underwater, at least during the high tides, with visibility expected to be low at times. This means that progress would be slower than if the site was dry and that some of the tasks required involved in

recording and removing wreck remains may not be carried out to the same efficiency as compared to a dry environment, or may even not be possible with a partially submerged wreck.

The bund could be constructed from a variety of materials ranging from rock rubble, sandbags, and traffic barriers to very large bulk bags filled with sand.

5.2.2 Removing the Wreck

There are two main choices with regard to moving the wreck; either in one piece or in sections. Moving the wreck in one piece allows the essential shape of the wreck, as it is below the turn of the bilge, to be maintained; as long as the right amount of support is provided. Cutting or breaking up the wreck into sections may be a consideration if retaining the form of the lower hull is not seen as essential. Cutting the wreck into sections however would allow for more than one relocation option for each of the sections.

All the options being considered for moving the wreck include the searching for, excavation and removal of all wreck related debris around the main wreck site.

With a limited time frame in an uncontrolled environment, it may be possible to thread cables beneath the wreck as the tide recedes and raise it as a complete unit with a crane; similar to what was performed during the relocation of the *Xantho* engine by the Western Australian Museum (see Annex **C.1.1**). Another consideration may be to use a similar cable system then attempt to lift the wreck at high tide; much like how the Western Australian Museum relocated the *Day Dawn* shipwreck (Annex **C.1.3**). Such choices with respect to the wreck of the S.S. *Dicky* would run an increased risk of it falling apart during the lift.

With more time, a more controlled environment and detailed measurements of the hull, a specially constructed cradle could be fitted around the wreck prior to it being lifted complete with a crane. With more time to work on the wreck within a controlled environment, more of the wreck can also be exposed prior to lifting, enabling the reduction of the weight of the wreck. All this extra effort would minimise the risk of the wreck breaking up or twisting / warping during the lift and the subsequent move to its new location.

Within an uncontrolled environment it may be feasible to remove the wreck in sections over a number of tides. It is not considered feasible to be able to cut the wreck in sections and remove all sections over the space of one tide. Such an option has not been considered.

However, natural forces would fill any excavation following each tide, so exposing the next section of wreck would require the excavation process to essentially start over again. The determination of the number of sections the wreck would be cut into would depend on the varying structural integrity of the wreck along its length and whether the targeted section of the wreck is dry or submerged at the time.

Within a controlled environment the removal of the wreck in sections could be performed by excavating a section at a time, allowed by the larger time frame, then cutting into sections while being able to assess the best positioning for each cut and moving the smaller pieces by crane using cables/cradles or by dragging.

Another option being considered is that of retaining the basal part of the wreck *in situ*, but cutting away the upper sections. An example of this can be seen in the mixed treatment of the *Wyola* wreck (Annex **C.1.1**), for which a section of hazardous hull was removed and the rest of the wreck remained *in situ*.

5.2.3 Relocating the Wreck

The choice of where to relocate the wreck, or sections of, relies on what conservation and display options are chosen. There are three broad options for the relocation of the wreck – relocated to where it will be conserved and prepared for public display, burial on land, or burial at sea. The breaking up of the wreck into sections would allow for all three options to be implemented.

5.2.4 Description of Options

The section briefly describes the engineering options, with detailed assessments presented in Annex E.

E-1 No Barrier, Multiple Tides, Cut Away Upper Portions

The primary reasons for SCC's initiative to interfere with the wreck is for the safety of the public and to prevent on-going deterioration of this culturally significant site. An option to consider is the partial removal of the wreck, leaving the *in situ* the remains below the turn of the bilge and the stern post. This engineering option should be read conjunction with the conservation option C-1 (see Section 5.4), which looks at the basal remains of the wreck being covered.

All wreck related material around the site will be searched for, excavated and removed as part of this option.

E-2 No Barrier, One Tide, One Piece, Landwards

This option considers exposing the wreck over one low tide and removing it in one piece further up the beach above the high tide mark. The wreck could then be excavated and recorded before being cut into sections or transported as a whole to where it would be conserved and/or put on display. All wreck related material around the site will be searched for, excavated and removed as part of this option.

E-3 No Barrier, Multiple Tides, One Piece, Landwards

Moving the wreck as one piece over a number of tides is an option which allows for a more measured approach to be taken. The wreck would excavated and recorded once it was removed. This option would require the services of commercial divers to work around the lower parts of the wreck and stern which will always be submerged. All wreck related material around the site will be searched for, excavated and removed as part of this option.

E-4 No Barrier, Multiple Tides, Sections

This option examines the approach of removing the wreck one section at a time, where work is only carried out at Spring low tides and in calm conditions. Commencing at the bow, the wreck would be exposed in sections and cut in easily removable sections. However, as the wreck is submerged even in Spring low tides from amidships to the stern, there would be difficulties encountered with working within water and surf. Some diving would be required for the stern area.

As with options E-2 and E-3, the wreck sections would be recorded after they had been moved out of tide range.

All wreck related material around the site will be searched for, excavated and removed as part of this option.

E-5 Cofferdam, One Piece, Landwards

Erecting a watertight cofferdam to allow the wreck to be excavated and removed in dry conditions is the optimum option for the relocation of the wreck. This option looks at the lifting of the wreck in one piece to be taken further up the beach beyond the surf and tide zone or to where it is to be conserved/displayed.

All wreck related material around the site will be searched for, excavated and removed as part of this option. This is a necessary precursor to any sheet piling for a cofferdam as such objects would hinder construction.

E-6 Cofferdam, One Piece, Seawards, Dragging

If the wreck is to be relocated to an offshore underwater environment then some additional engineering options need to be considered. This option examines the dragging of the wreck along the seabed into deeper water, beyond the surf zone.

All wreck related material around the site will be searched for, excavated and removed as part of this option. This is a necessary precursor to any sheet piling for a cofferdam as such objects would hinder construction.

With this option, it may be necessary to obtain a permit under the *Environment Protection (Sea Dumping) Act 1981* to relocate the wreck into deeper water.

E-7 Cofferdam, One Piece, Seawards, Pontoons

This is a similar option to E-6, however, the wreck would be towed out into deeper water.

All wreck related material around the site will be searched for, excavated and removed as part of this option. This is a necessary precursor to any sheet piling for a cofferdam as such objects would hinder construction. With this option, it may be necessary to obtain a permit under the *Environment Protection (Sea Dumping) Act 1981* to relocate the wreck into deeper water.

E-8 Cofferdam, Sections,

This option examines the possibility of removing the wreck in sections within a dry work environment. All wreck related material around the site will be searched for, excavated and removed as part of this option. This is a necessary precursor to any sheet piling for a cofferdam as such objects would hinder construction.

With this option, it may be necessary to obtain a permit under the *Environment Protection (Sea Dumping) Act 1981* to relocate sections of the wreck into deeper water.

E-9 Bund, One Piece, Landwards

The creation of a bund around the wreck, composed of sandbags, larger bulka bags, sand-filled traffic barriers and/or rock will not form a dry work environment but at least could retard wave energy washing across the site. This would be the next most preferred controlled work environment after a cofferdam.

All wreck related material around the site will be searched for, excavated and removed as part of this option.

E-10 Bund, One Piece, Seawards, Dragging

Similar option to E-6 but the work is to be partially carried out underwater and protected from surf conditions. With this option, it may be necessary to obtain a permit under the *Environment Protection (Sea Dumping) Act 1981* to relocate the wreck into deeper water.

All wreck related material around the site will be searched for, excavated and removed as part of this option.

E-11 Bund, One Piece, Seawards, Pontoons

Similar option to E-7 but the work is to be partially carried out underwater and protected from surf conditions. With this option, it may be necessary to obtain a permit under the *Environment Protection (Sea Dumping) Act 1981* to relocate the wreck into deeper water.

All wreck related material around the site will be searched for, excavated and removed as part of this option.

E-12 Bund, Sections.

Similar option to E-8 but the work is to be partially carried out underwater and protected from surf conditions. With this option, it may be necessary to obtain a permit under the

Environment Protection (Sea Dumping) Act 1981 to relocate sections of the wreck into deeper water.

All wreck related material around the site will be searched for, excavated and removed as part of this option.

5.3 Archaeological Options

These archaeological options are largely dependent upon the resulting environment provided by the selected engineering option. Archaeological excavation and recording should be undertaken on whatever remains are exposed and/or raised. This may include the entire wreck in one piece or in multiple sections, but may also include only some sections of the wreck if the basal portion is left *in situ*. Full assessments of each of the archaeology options can be found in Annex F.

A-0 Pre-Disturbance Survey, Removal of Upper Portions and Surrounding Debris Only

This option confines the archaeological recording to what is exposed and what is recovered from around the wreck. Recording in this context could also include 3D photogrammetry of intact structures of the wreck. All archaeology options below will have a pre-disturbance survey and recording of wreck related material recovered around the site as part of the archaeological documentation process.

Within this option is included the monitoring of works being carried out to remove the upper portions of the wreck.

A-1 Dry Excavation After Removal

Dry excavation after removal would entail excavating the whole wreck or sections of the wreck in a new location on higher ground. The form and features of the wreck would be recorded using a combination of manual measurements, differential global positioning system (DGPS) positioning and photography. Extended access to the wreck would allow detailed recording. Being dry, it would also facilitate recording in other forms such as 3D scanning, such as has been conducted on above-water elements of the HMCS *Protector* shipwreck on Heron Island, QLD (Annex **C.2.2**) and the engine of S.S. *Xantho* (Annex **C.2.3**).

A pre-disturbance survey would be required before the commencement of the works and all wreck related material recovered from around the wreck will also need to be recorded.

A-2 Wet Excavation before Removal with No Barrier

Wet excavation undertaken before removing the wreck may be conducted within a controlled environment or with ongoing natural forces. In the case of ongoing natural forces, recording would be conducted using a combination of manual measurements, total station survey, photogrammetry and photography. The use of photogrammetry would be similar to that conducted on the Phanagorian Shipwreck, Taman Bay, Russia (Annex **C.2.1**). It would be intended that the wreck be exposed from beach sand either in sections or as a whole for the form and features of the wreck to be recorded while *in situ*.

Should the wet excavation be conducted with ongoing tide and sand movement, recording would be limited to what can be exposed before natural forces refill any trenches and excavation is repeated on another section. It would be unlikely that any large sections of the wreck could be exposed at one time.

A pre-disturbance survey would be required before the commencement of the works and all wreck related material recovered from around the wreck will also need to be recorded.

A-3 No Archaeological Excavation/Recording

This option would result from the wreck being removed, likely in pieces, and being immediately discarded without archaeological excavation or recording.

A-4 Dry Excavation Before Removal

Dry excavation *in situ*, within the confines of a cofferdam, would enable extended access to the shipwreck and allow for detailed recording of the form and features of the wreck using a combination of manual measurements, DGPS positioning and photography- such as was conducted on the P.S. *Leo* excavation, Newcastle, NSW (Annex **C.2.1**). Being dry, it would also facilitate recording in other forms such as 3D scanning.

A pre-disturbance survey would be required before the commencement of the works and all wreck related material recovered from around the wreck will also need to be recorded.

A-5 Wet Excavation Before Removal with Barrier

Wet excavation undertaken before removing the wreck may be conducted within a barrier established with the purpose of limiting water movement over the wreck. This would allow for better water clarity and visibility, as well as protecting personnel working on the wreck from wave action and assisting to prevent excavated areas being filled back in with sand.

In the case of a controlled environment, recording would be conducted using a combination of manual measurements, total station survey, photogrammetry and photography, such as was conducted on the *City of Launceston* excavation, Port Phillip Bay, Victoria (Annex **C.2.5**). It would be intended that the wreck be exposed from beach sand either in sections or as a whole for the form and features of the wreck to be recorded while *in situ*.

Should the wet excavation be conducted in a controlled environment as a result of a physical barrier being constructed around the site, the recording and excavation of the wreck could occur over a greater length of time and potentially allow large expanses of the wreck to be exposed at one time.

A pre-disturbance survey would be required before the commencement of the works and all wreck related material recovered from around the wreck will also need to be recorded.

5.4 Conservation Options

These options only address conservation potential relative to the quantity of shipwreck material recovered. They do not address the number of scientific processes that could be used in the conservation of iron material such as methods of chemical stabilisation or underwater reburial. Full assessments of each of the conservation options can be found in Annex G.

C-1 Conserve **In-Situ**

Conservation *in-situ* would require leaving or reburying the wreck section(s) on the beach. This could involve protecting the buried remains with geotextile, sand bags and a carapace of rock to protect it during periods of excessive water and sand movement.

It is estimated that around 150 cubic metres of rock would be required to cover the wreck to a mean depth of one metre. An igneous rock such as basalt or granite would be most suitable as this would resist breakdown and erosion in seawater. Irregular pieces as-quarried having dimension 1.0 m minimum should reduce wave energy and minimise displacement.

This option may also include monitoring corrosion and the placement of anodes.

C-2 Conserve All

This option would entail conserving – chemical stabilisation – the entire shipwreck, either as a whole or in sections. Conservation as part of this option does not include reburial, only the chemical stabilisation and preservation of material on land.

C-3 Conserve Part

Depending on the material raised, this option would involve conserving the shipwreck in sections, either amounting to the entire shipwreck or only selected parts. Options would be available to conserve sections of the wreck in different ways depending upon their individual

merits including chemical stabilisation, reburial, discard and *in situ* preservation. Such as with the conservation of the S.S. *Xantho*, the engine was raised and conserved on land while the rest of the shipwreck is conserved *in situ* (Annex **C.3.1**).

This conservation option could include reburial on land or underwater; the latter of which would involve the application of some form of anode protection. *In situ* preservation may also be considered, involving the whole wreck or sections of the wreck left in the beach and conserved in place with a cover, such as a floor of sand bags, with a top covering of rock or concrete filled sandbags.

C-4 No Conservation

This option considers no conservation on any of the wreck or material, all such material being discarded.

C-5 Bury All

This option involves complete reburial of all material on land or underwater beyond the surf break, whether dealing with the entire wreck in one piece or in sections, or pieces of the wreck. Underwater reburial would include the application of some form of anode protection, similar to that placed on *Santiago* (Annex **C.3.2**).

5.5 Interpretation Options

These interpretation options are largely dependent upon the amount and quality of material recovered and conserved after excavation. Full assessments of each of the interpretation options can be found in Annex H.

I-1 Existing Museum / Gallery

Display of recovered material in an existing museum or gallery could involve the entire wreck or sections of the wreck, possibly similar to that used for the display of the *Hanse Kogge* shipwreck in the Deutsches Shiffahrts Museum in Bremerhaven, Germany (Annex **C.4.1**). The material could be displayed in one museum or gallery, be shared amongst multiple locations, or be packaged as a single travelling exhibition. Displays could also include other items previously recovered from the S.S. *Dicky* shipwreck and a scale model (digital or physical) of S.S. *Dicky* based on 3D photogrammetry; similar to what has been done for the Phanagorian Shipwreck, HMCS *Protector* and S.S. *Xantho* engine (Annexes **C.2.1**, **C.2.2** and **C.2.3**).

I-2 Purpose-Built Enclosure

This option includes the presentation of recovered material in an enclosure, involving either the entire wreck or sections of the wreck. The enclosure could comprise either a simple open shelter or fully enclosed purpose-built 'museum' structure for the remains and be located in an area accessible by the public - preferably near the Dicky Beach shipwreck site, such as the grassed areas around the Dicky Beach carpark. Considerable conservation, alteration and reconstruction will likely be required to enable effective interpretation of the remains for the public.

I-3 Park Installation

This option involves the presentation of recovered material in the park adjacent to Dicky Beach, incorporating the entire wreck or sections of the wreck. The park installation would entail a combination of creative landscaping works and partial reconstruction of the S.S *Dicky* using relocated wreck elements and introduced materials, such as timber planking. The wreck remains would need to be modified to enable a safe environment for public interaction. This could be similar to the installation at Port Arthur Historic Dockyard in Tasmania (Annex **C.4.2**).

I-4 Beach Installation

This option involves the presentation of iconic wreck elements or a new interpretive 'wreck' structure on the beach, either above or below the intertidal zone near the site of the present wreck. This installation would entail the introduction of new materials and modification of wreck relics to ensure display elements are suitably positioned and anchored for public viewing and interaction. This could be similar to installation of *Lady of St. Kilda* that was in St Kilda Main Beach, Victoria (Annex **C.4.3**).

I-5 Combined Options

This option comprises a combination of some of the above options in order to interpret the material in various ways depending upon the condition and extent of recovered remains, impacts on the public domain, interest by local museums and available funding.

I-6 No Interpretation Provided

This option involves no interpretation works for any recovered material, wherever it may be located.

I-7 No Interpretation of Physical Remains

For this option the possibility of confining the interpretation of the S.S. Dicky to digital or printed media. There would be no physical display or exhibition of the wreck.

5.6 Summary of Options

The following table, Table 4, summarises the options presented in this section and in Annexes E to H.

Table 4. Summary of option assessments.

Option	Key Requirements	Key Risks	Advantages	Estimated Cost	Heritage Impact
E-1 No barrier, multiple tides, cut upper portions	Mechanical excavator, welder, lifting gear.	Work would be affected if undertaken in high tide or surf conditions. Not all wreck removed	Minimal impact to the wreck and relatively low cost.	Substantially low costs related to hire of plant and labour	Acceptable
E-2 No barrier, one tide, one piece, landwards	Crane, mechanical excavator as well as possibly pre-fab cradle and directional boring.	Lift unable to proceed within time frame due to multiple factors. Not a positive media image if wreck breaks apart during lift.	Relatively cheap cost in terms of time taken to move wreck. Lift would attract considerable media attention.	Most cost will be in hire of plant and fabrication.	Unacceptable
E-3 No barrier, multiple tides, one piece, landwards	Crane, mechanical excavator, commercial divers as well as possibly pre-fab cradle and directional boring.	Lift unable to proceed satisfactorily due to difficulty of working in tidal and surf environment. Not a positive media image if wreck breaks apart during lift.	Relatively cheap cost in terms of time taken to move wreck. Lift would attract considerable media attention.	Most cost will be in hire of plant and fabrication over a relatively longer period of time than E-1.	Unacceptable
E-4 No barrier, multiple tides, sections.	Crane, mechanical excavator, commercial divers as well as possibly pre-fab cradle and directional boring.	Lift of the seaward half of the wreck unable to proceed satisfactorily due to difficulty of working in tidal and surf environment. Removing seaward half of wreck would take much longer and at a higher cost.	Landward half of the wreck more certain of being recovered in sections at relatively low cost.	Most cost will be in hire of plant and fabrication over a relatively longer period of time than E-2.	Unacceptable
E-5 Cofferdam, one piece, landwards	Crane, mechanical excavator, 100 metres of sheet metal piling, de-watering system as well as pre-fab cradle and directional boring.	Cofferdam leakage and heavy seas overtopping the cofferdam.	Will receive National, if not international coverage. Wreck will be exposed for public viewing.	The installation of the 100 m long cofferdam and constant de-watering will form a substantial cost. It is estimated to be in excess of $1M.	Acceptable
E-6 Cofferdam, one piece, seawards, dragging	Crane, mechanical excavator, 100 metres of sheet metal piling, de-watering system as well as pre-fab cradle/skid and directional boring. Also require tug boat. May require permit under *Environment*	Cofferdam leakage and heavy seas overtopping the cofferdam. Tug may have insufficient bollard pull to drag wreck seaward.	Will receive National, if not international coverage. Wreck will be exposed for public viewing.	The installation of the 100 m long cofferdam, constant de-watering and charter of tug boat will form a substantial cost. It is estimated	Acceptable

Option	Key Requirements	Key Risks	Advantages	Estimated Cost	Heritage Impact
	Protection (Sea Dumping) Act 1981			that the cofferdam and dewatering alone will be in excess of $1M.	
E-7 Cofferdam, one piece, seawards, pontoons	Crane, mechanical excavator, 100 metres of sheet metal piling, de-watering system as well as pre-fab cradle, buoyancy devices and directional boring. Also require tug boat. May require permit under *Environment Protection (Sea Dumping) Act 1981*	Cofferdam leakage and heavy seas overtopping the cofferdam. Insufficient lift from tide rise.	Will receive National, if not international coverage. Wreck will be exposed for public viewing.	The installation of the 100 m long cofferdam, constant de-watering and charter of tug boat will form a substantial cost. It is estimated that the cofferdam and dewatering alone will be in excess of $1M.	Acceptable
E-8 Cofferdam, sections	Crane, mechanical excavator, 100 metres of sheet metal piling, de-watering system as well as pre-fab cradles and directional boring. May require permit under *Environment Protection (Sea Dumping) Act 1981*	Cofferdam leakage and heavy seas overtopping the cofferdam.	Will receive State, if not national coverage. Wreck will be exposed for public viewing.	The installation of the 100 m long cofferdam and constant de-watering will form a substantial cost. It is estimated to be in excess of $1M.	Acceptable
E-9 Bund, one piece, landwards	Crane, mechanical excavator, bund material, pre-fab cradle and directional boring.	Heavy seas overtopping or breaking down bund.	Will receive State, if not national coverage. Wreck will be exposed for public viewing.	Establishing of bund should be relatively inexpensive but labour costs higher as work will take longer to complete.	Acceptable
E-10 Bund, one piece, seawards, dragging	Crane, mechanical excavator, bund material, pre-fab cradle and directional boring. Also require tug boat. May require permit under *Environment Protection (Sea Dumping) Act 1981*	Heavy seas overtopping or breaking down bund. Tug may have insufficient bollard pull to drag wreck seaward.	Will receive State, if not national coverage. Wreck will be exposed for public viewing.	Establishing of bund should be relatively inexpensive but labour costs higher as work will take longer to complete. Cost of tug boat charter to be considered.	Acceptable

Option	Key Requirements	Key Risks	Advantages	Estimated Cost	Heritage Impact
E-11 Bund, one piece, seawards, pontoons	Crane, mechanical excavator, bund material, pre-fab cradle, buoyancy devices and directional boring. Also require tug boat. May require permit under *Environment Protection (Sea Dumping) Act 1981*	Heavy seas overtopping or breaking down bund. Insufficient lift from tide rise.	Will receive State, if not national coverage. Wreck will be exposed for public viewing.	Establishing of bund should be relatively inexpensive but labour costs higher as work will take longer to complete. Cost of tug boat charter to be considered.	Acceptable
E-12 Bund, sections, combination	Crane, mechanical excavator, bund material, de-watering system as well as pre-fab cradles and directional boring. *Environment Protection (Sea Dumping) Act 1981*	Heavy seas overtopping or breaking down bund.	Will receive State, if not national coverage. Wreck will be exposed for public viewing.	Establishing of bund should be relatively inexpensive but labour costs higher as work will take longer to complete.	Acceptable
A-0 Pre-disturbance survey, removal of upper portions and surrounding debris only.	Archaeologist present when wreckage around the wreck being recovered and/or when upper portions of wreck are being removed	None identified.	Ensures that complete record of wreck obtained just prior to any impact and during removal of upper portions.	$18,000	Acceptable
A-1 After removal	Security	Unsuitable cutting/lifting, conservation of organic material	Allows for a more controlled excavation with less time pressure.	$45,000	Acceptable
A-2 Before No Barrier	Underwater recording equipment	Restricted access, increased risk to safety	None	Up to $120,000	Unacceptable
A-3 None	None	Complete loss of archaeological information	None	None	Unacceptable
A-4 Before – Dry	3D recording equipment, security	Monitor hull integrity, conservation of organic material	Would be able to get best archaeological results in shorter period of time. Would be of interest to the general public who can come and watch.	$50,000	Acceptable
A-5 Before – Wet	Diving equipment, commercial	Monitor hull integrity, limited visibility	Would be of interest to	$80,000	Acceptable

Option	Key Requirements	Key Risks	Advantages	Estimated Cost	Heritage Impact
	dive team and security		the general public who can come and watch.		
C-1 Conserve *in-situ*	Excavator, May use sandbags, geotextile with rock cover. Any coverings would require approval under *Coastal Protection and Management Act 1995*	Exposure during storm event	Minimum impact to the wreck and relatively low cost.	Up to $25,000	Acceptable
C-2 Conserve all	Tanks, chemicals, transformers, conservation treatment for <10 years	Loss of material if not conserved correctly, long process while not on display	Retains the whole wreck as one unit which allows for ease of study into the future	$260,000 - $610,000	Acceptable
C-3 Conserve part	Depending on method – excavator, crane, commercial divers, zinc anodes	Loss of material if not conserved correctly, possible long term monitoring	Relatively lower costs than conserving the whole wreck and would focus on more representative and more intact parts of the wreck.	Mixture OR $40,000 OR $59,000 (with ongoing cost of $5,000)	Acceptable
C-4 None	None	Loss of material	None	None	Unacceptable
C-5 Bury all	Excavator, crane	Risk of contamination from sediment/water table	Relatively accessible for future study.	Up to $50,000	Unacceptable
I-1 Museum/Gallery	Showcases, multimedia screens, interpretive panels	Isolated from wreck, material split up, reduced exposure	Travelling capability would allow the exhibition to be shared around SCC area.	$50,000	Acceptable
I-2 Enclosure	Protective railings, structure frame, roofing	De-contextualised, potential vandalism	Lower on-going conservation costs for the wreck itself.	$150,000-$500,000	Acceptable
I-3 Park	Formed concrete, steel framing structure, timber decking/seating, landscaping	Park inadequate size, potential vandalism	Allows for greater public interaction and close to wreck site.	$150,000 - $300,000	Acceptable
I-4 Beach	Formed concrete, steel framing structure, timber decking/seating, landscaping	Impact on beach, potential vandalism	Setting very close to the original wreck site.	$25,000-$150,000	Acceptable

Option	Key Requirements	Key Risks	Advantages	Estimated Cost	Heritage Impact
I-5 Mixture	N/A	N/A	N/A	N/A	Acceptable
I-6 No interpretation	None	Inadequate interpretation	None	None	Unacceptable
I-7 No material	Web page, flyer	Inadequate interpretation on-site	Reduction in on-going conservation and curation of the physical remains of the wreck.	$20,000	Unacceptable

6 PROPOSED WORKS

The proposed works will seek to minimise disturbance to the wreck of the S.S. *Dicky* while reducing the risks posed by the wreck to public safety. Impacts to the wreck site will be offset by archaeological recording and the creation of an outdoor display nearby.

This approach is referred to as the 'Cut and No Cover' option entailing the removal of upper portions of the wreck for conservation, storage and outdoor display while the majority of the wreck remains buried *in situ* beneath natural beach sand deposits. This option includes the provision for the ongoing removal of loose wreckage as it becomes exposed in the future. It also includes reinforcing of the bow stanchion to remain as a wreck marker *in situ* as well as assessment of future options to replace this stanchion with another wreck marker if the stanchion were to become insufficient for this purpose.

What follows in this section is a summary of the key elements of the proposed impacts and mitigation, details of which are provided in the Conservation Management Plan and the Interpretation Plan. A heritage impact assessment will be made in relation to the proposed impacts and then re-assessed based on the suggested mitigation measures to minimise identified impacts.

6.1 Outline of Proposed Works

6.1.1 Proposed Impact

Detail on the particulars of each impact will be presented in the Conservation Management Plan, however some key points regarding the impacts are as follows:

- Removal of loose wreck debris from around the wreck;
- Removal of frames and hull sections above the turn of the bilge and/or where the floor frames end (see Figure 17 and Figure 43);
- Removal of the remnant stern assembly (Figure 44 and Figure 45);
- Reinforcement of the remaining upright stanchion close to the bow, if required and;
- On-going removal of loose wreckage as it becomes exposed.

The rationale for the removal of the loose debris and remnant upright frames is so as to reduce the risk to public safety. It is believed that, as the wreck continues to deteriorate and become less visible in what is considered the normal beach profile, users of the beach may not be aware that there is a wreck present and injure themselves on wreckage buried just below the beach surface.

The proposed impacts do not fully remove risk of injury as the basal part of the wreck will remain in place. However, it is believed that the risk of injury would be reduced as after the upright frames have been removed only the relatively flat and broad surfaces of the wreck will remain.

It may not be possible to satisfactorily remove the upright frames on the port side at mid-ships (see Figure 17). This is because these frames are below the LAT and attempting to remove them in near zero water visibility may damage/destabilise the remainder of the wreck and could pose a risk to those undertaking the removal if the cutting is to be done manually. The risk of injury, however, posed by the remaining frames on the port side would be mitigated because the remaining expanse of the starboard side of the wreck would become exposed first, thereby warning passers-by that there is a hazard present. Furthermore, at such times when the remaining wreck is exposed temporary, signage can alert the public as to the potential hazards of walking around the wreck.

Figure 43. Example of where frames are to be cut down to on starboard side. *The stubs in the foreground are the tips of the floors, the frames having been removed by recent storm surges.* (Cosmos Archaeology, 28 April, 2014)

Figure 44. Indicative cut for the removal of the stern assembly. *View from the starboard side.* (Cosmos Archaeology, 19 December, 2014)

Figure 45. Indicative cut for the removal of the stern assembly. *View from inside the wreck.* (Cosmos Archaeology, 19 December, 2014)

The removal of the stern assembly does not entirely conform to the rationale of the dangers posed by the mostly buried remains as it is the most conspicuous feature of the wreck and is never buried. However, the stern assembly is unstable and wobbles when pushed with minimal force. This has led to the re-evaluation of the long term stability of the feature it is considered that the collapse of the stern assembly will very likely occur within the next decade. To pre-empt its collapse, it was thought best for the stability of the wreck to remove it in a controlled manner. Cutting will take place at a location at the stern which will not de-stabilise the stern area of the wreck.

The proposal to remove loose wreckage extends to when such objects are exposed after a storm. Such removals could occur years after the main effort of cutting away frames has taken place. It is intended that this process be a permissible condition of the permit being currently sought.

The proposed stabilisation of the stanchion close to the bow is so that it can remain as a visible wreck marker for as long as possible. It is in effect to replace the stern assembly as the conspicuous feature of the wreck in normal beach profile situations.

6.1.2 Proposed Archaeological Mitigation

Detail on the particulars of proposed archaeological mitigation will be presented in the Conservation Management Plan, however some key measures are as follows:

- Recording by an archaeologist of intact frames/hull plates and stern assembly prior to removal;
- Recording in this context means photography, tagging of object with unique identification, recording its position and orientation onto a site plan, photogrammetry – where possible – and detailed description of the object after it has been removed;
- An archaeologist to locate and record any loose wreck material to be recovered in conjunction with works carried out to remove intact frames/hull and stern assembly;
- Recording in this context means photography, tagging of object with unique identification, recording its position and orientation and detailed description of the object after it has been removed;
- Establishment of archaeological management protocols for when the wreck becomes exposed after storm events. This includes the cutting and removal of intact frames, with and without an archaeologist present, and the removal of loose wreckage, and;
- Preparation of an artefact collection policy which would provide guidance on what should be conserved, buried or discarded.

The archaeological works proposed have the objectives of creating a record of the wreck and wreckage prior to any disturbance, ensuring the proposed impacts are within the scope of the permit, as well as having archaeologists on hand to provide guidance on the conduct of the works, which includes the opportunistic recovery of material and cutting of frames exposed after storms in the years to come.

6.1.3 Proposed Conservation Mitigation

Detail on the particulars of proposed conservation measures will be presented in the Conservation Management Plan, however some key approaches are as follows:

- Examination of the suitability of anodic protection for the *in situ* wreck;
- Treatment of recovered objects for outdoor display – this may include de-concretion, grinding, re-shaping and/or stabilisation;
- Treatment of the vessel's propeller currently covered in fibreglass and on display in a car park nearby;
- Treatment of recovered objects for above ground storage as part of a type collection; and,
- Appropriate methods of burial or discard for artefacts.

The proposed conservation treatments for the wreck and associated artefacts are confined to what is to be recovered from the wreck site as part of these works, those artefacts currently held at the SSC depot and the propeller on display at a nearby car park.

The treatments will range from burial to conserving for either outdoor display or storage. The proportion of what will be treated, buried or discarded cannot be stated at present as this depends mostly on what material is recovered from the wreck site and what will be used in

the outdoor display. The creation of the artefact collection policy will also provide some guidance. The artefact collection policy will outline the requirements for the retention of select artefacts – more precisely, components of the wreck – to be accessible for research and teaching purposes. Such artefacts would need to be conserved in a manner for them to remain stable and would also need to be stored in a suitable environment.

The examination of the suitability of installing anodes on the wreck site is in response to leaving the wreck *in situ*. Such a measure may prolong the structural integrity of the wreck at a relatively inexpensive investment.

6.1.4 Proposed Interpretation Plan

The proposed interpretation of the site will focus on the installation of an outdoor interpretative display on the grassed area between the Dicky Beach car park and the beach (Figure 46). This location was chosen by the SCC as it is close to and maintains a line of sight to the wreck.

Figure 46. Proposed location for the outdoor display of S.S* Dicky *within the red circle.
(Basemap source: Google Earth)

The objective of the outdoor interpretative display is to provide an above ground representation of the wreck in effect replacing what has been gradually disappearing over recent decades, a process which will be accelerated by the proposed works. The outdoor display will utilise a range of materials including elements of the wreck. These elements could be those recovered from the wreck site as part of the proposed works, elements already held in storage at the SCC depot or and the propeller currently on display at the Dicky Beach Park car park. More detail on the display is provided in the Interpretation Plan.

The Interpretation Plan also provides detail on a travelling museum display on the S.S*. Dicky* and a substitute site marker to replace the bow stanchion should it collapse in the future.

7 HERITAGE IMPACT ASSESSMENT

7.1 Impact Assessment of the Physical Elements of the Wreck

The following assessment in Table 5 examines the impact of the proposed works on the individual elements/components of the S.S. *Dicky*. These components were identified and assessed in **Section 4.2.2** of this report.

Table 5. Impact assessment on the physical elements of the wreck.

Element	Significance	Impact	Assessment	Mitigation
Stern Assembly	The stern assembly has great value as a visually iconic part of the S.S. *Dicky*. This value gives it a high significance that must be considered and protected but it also gives it great potential to be utilised in future interpretation.	To be removed.	This is the most conspicuous feature of the wreck today. Its removal will have a substantial impact on its aesthetic and interpretive significance of the element and the wreck as a whole.	The impact to the aesthetic and interpretive significance of the element will be mitigated by the creation of the outdoor interpretative display. This display will in effect provide a high profile/above ground replacement for the wreck. The stern assembly, however, may not be used in the display as it is believed that out of its context it would provide little interpretive value. The archaeological, scientific and technical values of the element will be maintained through recording and retention.
Extant Starboard Side Hull and Frames	Although it does not have a high potential to yield new information, the extant remains starboard hull has been consistently exposed and has become a significant part of the form of the wreck, also being the most prominent piece remaining, after the stern assembly, to demonstrate the changing conditions of shipwrecks over time.	To be removed.	This is the most expansive section of the wreck still visible all of the time. Its removal will have a substantial impact on its aesthetic and interpretive significance of the element and the wreck as a whole.	The impact to the aesthetic and interpretive significance of the element will be mitigated by the creation of the outdoor interpretative display. This display will provide a high profile/above ground replacement for the wreck. The extant starboard side of the hull may be used in the display. The archaeological, scientific and technical values of the element will be maintained through recording and partial or total retention.
Extant Port Side Hull and Frames	Despite now being mostly buried, the extant remains of the port hull may be more complete in form – that is, preserved beyond the turn of the bilge – providing material that may be utilised for interpretation.	To be partially removed.	The proposed physical impact to this element is likely to be minor.	The mitigation for this element will be that of recording and retention of removed frames, if that occurs.
Detached Sections of Hull	Although these sections of hull have been disassociated with the wreck and contain limited information, they have the potential to be useful elements for interpretation as	To be removed.	The removal of the detached hull sections will result in the loss of information about the construction of the vessel and the manner in which the	Recording their position and orientation before removal will mitigate the impact to the significance of these elements as will detailed examination after removal. A

	representations of the hull without requiring cutting/impacting the complete hull remains.		wreck broke up. The proposed impact will have a substantial impact to the archaeological, interpretative and scientific significance of the wreck.	portion of these elements are likely to be retained either as part of a type collection or buried. Their interpretative significance will be enhanced through their potential use in the outdoor display.
Internal Structure	The extant and *in situ* stanchion and other internal structure that may be present in and around the hull can provide some limited contribution to the significance of the wreck, primarily with regards to archaeological, interpretative and technical significance.	The extant and *in situ* stanchion will be disturbed by the proposed works in an effort to further secure it.	Attempts to secure the stanchion will be a positive impact.	Not required as the proposed works is a form of mitigation.
Bilge / Basal Area	Although it has rarely been exposed, the bilge is a complex structural area that may be utilised for research but also to create new public awareness of the previously hidden components of S.S. *Dicky* and the benefits of undertaking excavation/ removal.	This element of the wreck will not be directly impacted by the proposed works. There is a possibility that the removal of the remaining starboard side of the hull and the stern assembly could lead to scouring within the bilge area.	As the bilge of the wreck is mostly exposed to surf conditions, it is believed that the removal of the extant section of starboard hull will have a minor impact on the archaeological values of the wreck. The removal of the stern assembly will be conducted so as to avoid the destabilisation and possible opening up of the stern area.	The proposed measure to mitigate the potential loss of archaeological information arising from possible scouring is to establish a monitoring protocol to record the wreck when it is exposed after a big storm.
Form	The form of S.S. *Dicky* has heavily influenced its aesthetics and the type of interaction with it. Although the form of the wreck is gradually deteriorating it still holds physical information and its deteriorating condition has heightened concerns for the future of the wreck. Consideration of form in the past and its change over time should be considered in any interpretation.	The removal of the extant remains of the hull on the starboard side will affect the form of the hull.	The impact to the understanding of the form of the hull will be minor.	The impact to the significance of the form of the hull can be mitigated by detailed recording prior to removal. This has commenced with the test excavation conducted in April 2014 and the recording of key features with a Total Station. This could be augmented by photogrammetry.
Setting	The presence of the S.S. *Dicky* wreck at Dicky Beach is a large component of its cultural significance. It has greatly impacted the community by being a prominent and	The highly visible remains of the wreck are to be removed.	Though the overwhelming bulk of the surviving wreck will remain in place, it will be mostly buried for the greater part of the year, likely to be exposed only	The impact to the aesthetic and interpretive significance of the element will be mitigated by the creation of the outdoor interpretative display. This display will provide a high

	accessible feature on the beach for over 120 years.		after storms. The proposed works will therefore have a substantial impact to the significance of this element of the wreck.	profile/above ground replacement for the wreck. The display will be in a location which will have line of sight to the wreck, thereby retaining a connection with the site.

7.2 Impact Assessment of the Wreck as a Whole

The following assessment examines the impact of the proposed works on the S.S. *Dicky* wreck as a whole. The heritage significance of the wreck was assessed in **Section 4.2** of this report. The impact assessment for the S.S. *Dicky* is as follows.

The wreck of the S.S. *Dicky* has been assessed to have *moderate* aesthetic significance. The proposed removal of the stern assembly and the extant section of hull on the starboard side will have a substantial impact on this value. This is because the bulk of the wreck, which will be left *in situ*, will be buried for most of the time and when exposed after storms it will display a low broad profile. The rib-like frames so evocative of shipwrecks and a key visual characteristic of the wreck since WWII will be missing. In recent years the frames have been steadily falling away due to a combination of corrosion and mechanical damage from waves and tide. The proposed impact is in effect an acceleration of this natural process. The proposed mitigation to replace this iconic image of the wreck is to create an outdoor display within line of sight of the wreck site. Though not attempting to create a facsimile of the wreck site, the display will reference the striking visual features and characteristics of the wreck.

The *moderate* archaeological and technical significance of the S.S. *Dicky* will be impacted in a minor manner by the removal and recovery of structural elements of the vessel. This impact will be minimised by recording of all objects recovered and retention of select items for future study and teaching. The low risk of increased scouring within the wreck, which may lead to the loss of archaeological information, would be mitigated by the establishment of a monitoring protocol for when the wreck is exposed after storms.

The architectural values of the wreck, being assessed as *low*, will not be impacted by the proposed development.

The establishment of an outdoor interpretative display for the S.S. *Dicky* will enhance the *moderate* historical and *high* interpretative values of the wreck. At present there is no informative display for such a significant historical site in the Caloundra area. The propeller monument at the Dicky Beach Park car park has very limited information about the wreck and though the propeller is an impressive artefact it does not capture the essence of the wreck site.

The examination, conservation and select burial of wreck components associated with the S.S. *Dicky* will enhance the *moderate* scientific significance of the wreck by increasing our understanding of the wreck deterioration process and the development of techniques to manage and sustain the wreck and associated artefacts.

The S.S. *Dicky* has *high* social significance and the proposed outdoor display and attention that this wreck is receiving from the SSC is recognition of this level of significance.

In summary, the proposed cutting away of the upper portions and the stern assembly of the wreck will have an impact to the significance of the S.S. *Dicky* wreck, however, the proposed archaeological recording, conservation and interpretation should satisfactorily mitigate this impact.

7.3 Compliance with Relevant Non-Statutory Heritage Guidelines

This section examines the proposed works as well as the associated proposed mitigation measures and appraises them against relevant heritage guidelines discussed in **Section 3.3** of the report. The appraisal is presented below:

Table 6. Appraisal of proposed works and mitigation measures against heritage guidelines.

Guidelines	Key Points	Appraisal
The Burra Charter 1999	• Conservation of places of cultural significance; • Take into consideration all aspects of cultural significance;	The proposed works and mitigation seeks to conserve the wreck in its current position with removing elements for both preservation as well as health and safety reasons. The

	• Retention of an appropriate visual setting; and, • Removal of contents, fixtures and objects is not acceptable unless it is the sole means of ensuring their security, preservation, cultural reasons, for health and safety reasons or to protect the place.	proposed outdoor display seeks in part to retain a visual setting of the wreck and some connection with the site.
UNESCO Convention for the Protection of the Underwater Cultural Heritage 2001	• In situ preservation should be considered as a first option; • The recovery of heritage should ensure maximum protection; and, • Establishment of a project design for any activity relating to the site.	The bulk of the wreck is to be preserved *in situ* while the heritage that is recovered will be recorded in detail – a form of protection – conserved and/or buried. Some objects maybe discarded. A project design – Conservation Management Plan and an Interpretation Plan – will be prepared.
Guidelines for the Management of Australia's shipwrecks 1994	• All activities to be guided by a management plan; • Controls to minimise adverse human impacts; and, • Survey and inventory to be undertaken in a scientific manner.	A Conservation Management Plan which will detail survey and inventory methodology is being prepared and measures are proposed to minimise adverse impacts to the site.
Requirements of DEHP	Eleven questions concerning the rationale and the conduct of the works have been posed that need to be addressed for consent to proceed with the works.	We believe some of the questions have been addressed in this document and the remainder will be addressed in the Conservation Management Plan and Interpretation Plan.

7.4 Legislative Compliance and Other Requirements

When comparing the proposed works against the thresholds provided in State and Commonwealth legislation (see **Section 3.0**), the following compliances are considered to be required:

Queensland Heritage and Other Legislation Amendment Bill 2007

The wreck of the S.S. *Dicky* is automatically protected under this Act and consent from the Queensland EPA is required to damage, destroy, disturb, expose or remove the wreck.

Sunshine Coast Planning Scheme 2014 (Integrated Planning Act 1997)

Though the site of the S.S. *Dicky* is on the *Heritage and Character Areas Overlay Map*, it is believed that the proposed impacts do not constitute demolition, relocation or removal and as such the planning scheme is not required to be used for assessing impact.

7.5 Why This Option Was Chosen Over Others

One of the purposes of this document was to find a balance between reducing the public safety risk that the wreck poses while minimising the impact to its significance against a backdrop of cost. The initial approach taken was to examine the feasibility of the complete removal of the wreck. This would completely remove public safety risk, however, mitigation required to offset this overwhelming impact to the significance of the wreck was considered too costly (dry cofferdam) or too high a risk of failure (wet bund or removal in one piece over one tide). There was also the consideration of additional legislative compliance with the accompanying cost and risk of rejection (covering the wreck or depositing wreckage in deeper water).

The agreed option or proposal strikes a balance of substantially reducing the risk to public safety while minimising impact to the heritage significance of the S.S. *Dicky* wreck. It could also be argued that the proposed works will enhance the significance of this site through the creation of an outdoor display within line of sight of the wreck site.

8 CONCLUSION

This report has examined a wide variety of options relevant to the twin aims of this study – the reduction of risk to public safety that the wreck currently poses and the retention, if not enhancement, of the cultural heritage significance values of the wreck. The report found that an acceptable reduction of risk to public safety could be achieved by undertaking the following:

- Removal of loose wreck debris from around the wreck;
- Removal of frames and hull sections above the turn of the bilge and/or where the floor frames end;
- Removal of the remnant stern assembly;
- Reinforcement of the remaining upright stanchion close to the bow, if required and;
- On-going removal of loose wreckage as it becomes exposed.

These impacts were assessed to be acceptable on condition that the following mitigation measures are applied:

- Recording by an archaeologist of intact frames/hull plates and stern assembly prior to removal;
- Recording in this context means photography, tagging of object with unique identification, recording its position and orientation onto a site plan, photogrammetry – where possible – and detailed description of the object after it has been removed;
- An archaeologist to locate and record any loose wreck material to be recovered in conjunction with works carried out to remove intact frames/hull and stern assembly;
- Recording in this context means photography, tagging of object with unique identification, recording its position and orientation and detailed description of the object after it has been removed;
- Establishment of archaeological management protocols for when the wreck becomes exposed after storm events. This includes the cutting and removal of intact frames, with and without an archaeologist present, and the removal of loose wreckage;
- Preparation of an artefact collection policy which would provide guidance on what should be conserved, buried or discarded;
- Creation of an outdoor display in the grassed area of the Dicky Beach Park Carpark;
- Preparation of a travelling museum display on the S.S. *Dicky*;
- Examination of the suitability of anodic protection for the *in-situ* wreck;
- Treatment of recovered objects for outdoor display – this may include de-concretion, grinding, re-shaping and/or stabilisation;
- Treatment of the vessel's propeller currently covered in fibreglass and on display in a car park nearby;
- Treatment of recovered objects for above ground storage as part of a type collection, and;
- Appropriate methods of burial or discard for artefacts.

These proposed mitigation measures will be discussed in detail in the accompanying Conservation Management Plan and Interpretation Plan.