The collecting behaviour conundrum…or not:

a community and the *Amazon* shipwreck in Inverloch, Victoria

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The *Amazon* shipwreck exposed in 2017, © J. Laurie

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Abstract

Shipwrecks transform from existing merely as objects in the sea, into sites deposited in the environment, consequently undergoing site-formation processes due to varying natural and cultural factors. Oftentimes, natural processes such as waves, currents, corrosion and biodegradation, control the formation of the archaeological record, ultimately causing disintegration and potential dispersal of wreck components. This wreckage pattern differs depending on the shipwreck's location in the surrounding environment. A similar situation was encountered during the archaeological investigations of the nineteenth-century shipwreck *Amazon*, situated at the intertidal zone in Inverloch beach, Victoria, Australia. The wreck site is located in high dynamic environmental conditions, which possibly resulted in artefact transportation and overall site dispersal—two events normally consequential of such conditions. During the late 2018 fieldwork at Inverloch, team members became aware of the artefact collecting activity undertaken by the local community residents. Following several conversations with the Inverloch community members, it became clear that this behaviour originated from well-meaning intentions and this study considers the possibility of the shipwreck as an influencer of this behaviour and how it has enabled this practice. This thesis attempts to explore the proposed possibility by utilising various archaeological methods and interpreting the data acquired during fieldwork.

Human interactions with a shipwreck site are components of cultural site-formation processes and are common occurrences, irrespective of the site's location in the environment. Many times, these processes are inevitable. Such interactions encompass various aspects of relationships between humans and shipwrecks. Based on extensive archaeological evidence, certain human actions can be undoubtedly either presumed destructive or harmless to the archaeological remains. Although, there also exist some actions that are misunderstood and highly criticised in archaeology, such as the artefact collecting behaviour. Therefore, the author also presents an analysis of this behaviour by striving to understand the purpose and motivation driving this behaviour, through cultural survey questionnaires.

Declaration

I certify that this thesis does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any university; and that to the best of my knowledge and belief it does not contain any material previously or written by another person except where due reference is made in the text.

Madhumathy Chandrasekaran

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Chapter 1—Introduction

Introduction

Ships are one of the largest objects built by humans and when a shipwreck event occurs, an intangible amount of archaeological record is generated to be processed and deciphered. The shipwrecks then develop into a site by reaching an equilibrium with the surrounding marine environment. As a result, the shipwrecks undergo site-formation processes caused by natural and cultural phenomena, acting directly or indirectly upon the sites, thereby producing varying archaeological data even after the depositional event. Additionally, the presence of such shipwreck sites impacts on the local environment and the community of people existing in that environment. Such a site is the nineteenth-century barque *Amazon* in Inverloch, Victoria, that demised in 1863. The vessel is embedded at the intertidal zone in dynamic environmental conditions, that periodically expose and bury the site.

During site investigations from 25 November–5 December 2018, a research team from Heritage Victoria (HV) and Flinders University observed interactions between the shipwreck site and the local community in the form of artefact collecting activity. Casual conversations with the local residents revealed that the collecting activity had been pursued for decades, possibly due to artefact scatter caused by the high-energy environment. The residents appeared genuinely concerned about the condition of the shipwreck and expressed interest in preserving it. These individuals also voluntarily lent the artefacts to the research team for detailed recording, thereby adding knowledge to the current understanding of the shipwreck. This collecting behaviour of the Inverloch community is unique and warrants for further study.

Artefact collecting is often regarded as a destructive process in archaeology, since it may lead to a potential loss of archaeological data. While some situations indeed support this perception, there also exist several positive instances, such as the case with Inverloch community, that contribute to the archaeological record. Hence, it is academically unsound to claim this activity as harmful without proper research into the intentions influencing the collecting behaviour. To the extent of the author's knowledge, little research has been conducted into the thought processes of collectors amassing

artefacts. For that purpose, the author considers the *Amazon* shipwreck site as a potential enabler of the collecting behaviour and attempts to examine the motivations behind the activity.

Historical background

The coastal town of Inverloch

Inverloch is a coastal town situated approximately 143 kilometres southeast of Melbourne, Victoria in the Bass Coast Shire of Gippsland (Figure 1.1). The coastal environment of Inverloch is dynamic. Cold weather generated in Southern Ocean is channelled through the Bass Strait, creating acute wave action and winter swells along the shore (Agriculture Victoria 2019). Despite the foreshore accumulating sand during summer, the Inverloch beach has faced severe coastal erosion since 2012, with ten metre high sand dunes. Management strategies, such as wet picket fences along the shore, are being explored at present (Brian Martin pers. comm. 2018).

The town was initially settled by the Bunurong Aboriginal people—one of the six clans belonging to the Kulin language group (Inverloch Historical Society 2019). The Bunurong people or the Lowandjerri Buluk are members of the first Australians who lived in the Mordialloc district in Victoria and have been the custodians of the Bass Strait for thousands of years (Gamble 2011). This Indigenous group appear to have led a nomadic hunter-gatherer lifestyle (Presland 1994:50). The Bunurong men utilised weapons such as spears and boomerangs to hunt fish, birds and animals, whereas the women gathered food and dug for yams and edible tubers (Presland 1994:51). Since the Bunurong people lived close to the sea, shellfish were a significant part of their diet (Presland 1994:65); they enjoyed ample food supply due to low population and their shell middens remain under modern developments in Inverloch.

After founding Sydney in 1788, numerous Europeans travelled to southwest Victoria by sea and invaded the Aborigines' lands (Gamble 2011). Conflict and European diseases resulted in a decline of the native population by the 1840s, which forced the Bunurong people to join their remaining families around Melbourne (Gamble 2011). The

first European to settle in Inverloch was Samuel Anderson, a farmer (Brewster 1978:5). A Post Office was opened as Anderson's Inlel, named after Samuel Anderson in 1883 and later renamed as Inverloch in 1889 (Brewster 1978:5; Premier Postal Auctions 2005).

From 1900, Inverloch continuously developed into a seaport with ships carrying black coal from Powlett River coalfields to Melbourne; this continued until the State railway line connected to Wonthanggi in 1910 (Brewster 1978:9). Steam traction engine and bullock teams transported coal from Wonthaggi mines to steam traders at Inverloch jetty and sent to Melbourne (Brewster 1978:9). Inverloch remains a popular holiday and fishing town for vacationers, owing to its serene environment and history. The Inverloch Historical Society plan to build a historical and maritime museum to exhibit a collection of 4,000 historical items and the artefacts of the *Amazon* shipwreck (South Gippsland Sentinel Times 2017).

The *Amazon* shipwreck

This thesis focuses on the barque *Amazon* (Figure 1.2) that wrecked along the beach in Inverloch in 1863. *Amazon* was a wooden international trading vessel built in Jersey on the Channel Islands, U.K. in 1855 with a gross and net tonnage of 402 and 362 respectively; the vessel was sheathed with yellow metal over a layer of felt (Lloyd's Register 1860). The ship was constructed by the founder of Jersey's largest shipyard, Frederick Charles Clarke (The Island Wiki 2018) for Carrel & Co (Lloyd's Register 1860). *Amazon* is described as a three-masted barque with one and a quarter decks, wooden frames, a round stern, carvel planking and having a 'full woman' figurehead (Heritage Council Victoria 2019). The vessel measures 132.5 feet (40.39 metres) in length, 25.5 feet (7.77 metres) in width and 16.2 feet (4.94 metres) in depth (Heritage Council Victoria 2019).

On 12 December 1863, *Amazon* departed for Mauritius from Melbourne laden with salted meats (Geelong Advertiser 1864:2). The barque passed Port Phillip Heads on the same day at 8 pm and turned to starboard to head towards its final destination; on 13 December at 2 am, the wind had become stronger and by 4 am, the captain indicated that the gale had turned into a hurricane (Geelong Advertiser 1864:2).

Figure 1.1 Map of Inverloch (map by M. Chandrasekaran).

After several attempts at saving the ship, *Amazon* continued to drift east as the storm raged into the next day; at 10 am, the ship struck the beach near what is presently called the Inverloch Surf beach, Victoria and Captain Ogier kept the vessel on course to drive it up the beach as far as possible (Geelong Advertiser 1864:2). The watercraft was damaged beyond repair but the crew survived. They came ashore at 3 pm after spending

48 hours on deck (Geelong Advertiser 1864:2). The next day, the crew erected tents on the beach and waited for assistance from any inhabitants (Geelong Advertiser 1864:2). Eight days later, Mr Heales, who was visiting his family in Melbourne for Christmas, spotted a distress flag flying; he helped Captain Ogier to raise an alarm and the crew was successfully rescued by H.M.C.S *Victoria*—the first vessel of the Victorian Colonial Navy (Geelong Advertiser 1864:2). *Victoria*'s captain determined that the wreck was lying broadside onto the beach but, buried itself into the sand upto three metres in depth (Heritage Council Victoria 2019). The vessel was so high up the beach that it was dry at low tide (Geelong Advertiser 1864:2). The captain further reported that sixty feet (18.28 metres) of the main keel and forefoot was broken and lying on the beach at the high-water mark (The South Australian Register 1864:2). The ship was auctioned on 31 December 1863 without any information regarding its new owner, although reports detail that 100 casks of its provisions were salvaged and sold separately (The South Australian Register 1864:2).

Previous archaeological investigations

The first investigation of the site took place in March 1996, when local Inverloch resident Bob Young reported the exposure of artefacts, possibly caused by coastal erosion, to Maritime Archaeology Association of Victoria (MAAV). The MAAV members and Young located some archaeological remains of *Amazon* on the beach, whereas the original shipwreck was found with a magnetometer. The team acquired GPS points and planned for a magnetometer survey of the shipwreck site as it was completely buried under the sand. MAAV team members Malcolm Venturoni, James Parkinson and Peter Taylor returned in 1998 to conduct the survey. They set up a large grid around the shipwreck for mapping purposes. The team predicted that the wreck was buried under two meters of sand at the intertidal zone. Two large anomalies were identified, the largest one measured approximately 37 metres in length and 13 metres in width—a size similar to the *Amazon* ship—and the other anomaly was located ten metres inshore from the northern end of the site. The size of the second anomaly is unknown.

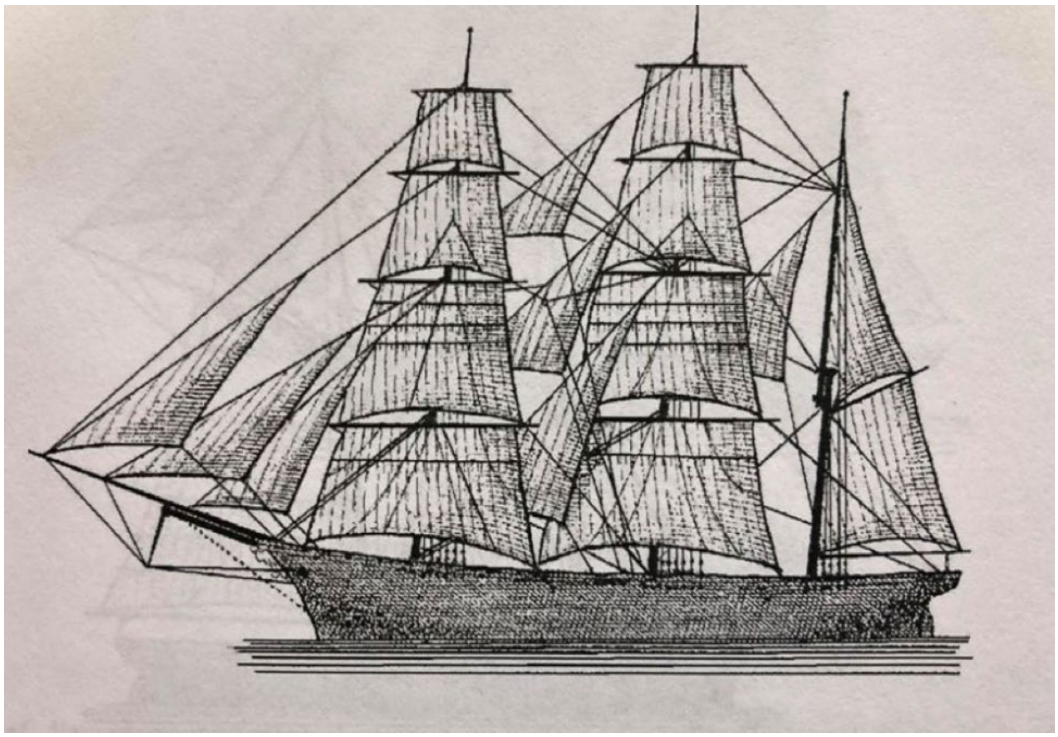

Figure 1.2 A barque similar to *Amazon* (Paasch 1885).

A second inspection of the site was conducted by HV maritime archaeologists Peter Harvey and Jane Mitchell on 23 April 2015. This investigation was mainly the result of local residents reporting further erosion on the beach. Harvey and Mitchell (2015) reported that the ship's frames, a water tank, a substantial ballast mound and ship fragments with copper bolts, including the keel, were exposed as the tide regressed. About 80 metres to the east of the main wreckage, ten concretions related to the wreckage were visible at the high tide mark. Harvey and Mitchell photographed and took measurements of the exposed ship-related materials on the beach. The oncoming tide meant that only certain sections of the wreck exposed at the low tide mark were photographed (Harvey and Mitchell 2015). During this survey, enthusiastic and interested locals reported to the team about the wreckage, such as a deadeye and a pulley block, they had collected (Harvey and Mitchell 2015).

Research question

This thesis strives to answer the question: how has the *Amazon* shipwreck site enabled the collecting behaviour of the Inverloch community?

Research aims

As aforementioned, external processes influence and still affect the formation of the *Amazon* shipwreck site, which potentially facilitate the artefact collecting behaviour. To identify these processes more specifically and effectively address the research question, the author aims to apply theories related to site-formation process and behavioural archaeology. An analysis of the site-formation of the *Amazon* shipwreck includes depositional and post depositional processes with an emphasis on the latter. Behavioural archaeology, on the other hand, is applied to investigate the nature of collecting behaviour and analyse the intentions and motivations behind this activity. The author strives to answer the research question by achieving the following aims:

- Provide a history of *Amazon.*

The purpose of this aim is to be conversant with the vessel and it consists of two sections. The first one includes the technical specifications of the ship to identify and better understand any possible surviving components of the vessel's remains today. The second section discusses the wrecking event to provide insights into the direct environment of the shipwreck and the site's layout.

- Examine the site-formation processes influencing the alteration and dispersal of the *Amazon* shipwreck site.

This aim focusses on identifying the external factors impacting on the shipwreck site and how such factors have influenced the collecting behaviour.

- Delineate the extent of the *Amazon* site.

This aim delves into the magnitude of site dispersal and how that relates to the collecting behaviour of the Inverloch community.

- Identify the intentions of the behaviour of artefact collecting.

This aim strives to examine the reason, method and purpose of artefact collecting, to address the issue of this behaviour often judged negatively without understanding the motivations propelling the activity (Sawaged 1999).

The depositional event of *Amazon* is addressed through historical research. The site-formation of *Amazon* post-desposition is analysed through the data collected during fieldwork and reviewing the literature relevant to site-formation processes. The subject of collecting behaviour is examined in the literature review using behavioural archaeology theory. Surveys are conducted with people who collected to understand the thought processes of the behaviour.

Research significance

This project is archaeologically significant for several reasons. Firstly, to the extent of the author's knowledge, the proposed theory of shipwreck sites influencing the artefact collecting activity has seen little to no research. This thesis develops a new theoretical framework and adds to the existing knowledge of shipwreck sites and the behaviour of artefact collecting. Flatman (2003:144) states that the theoretical perspectives challenge many assumptions regarding an archaeological site and are linked to meticulous archaeological evidence and approaches. Therefore, the significance of this project further stems from the necessity to conduct more theoretical studies of shipwrecks.

Secondly, the Inverloch beach is devoid of other shipwrecks in the vicinity of *Amazon*. This suggests that the artefacts collected certainly belong to the shipwreck of interest and that their context is intact, resulting in a reliable archaeological study that serves as a precedent for future research on this topic.

Lastly, results of previous archaeological investigations relating to *Amazon* remain unpublished and are considered grey literature. Therefore, this thesis will function as a foundation for future research regarding the site. Furthermore, this thesis also contributes new knowledge to limited literature concerning community interactions with shipwreck materials.

Limitations

The lack thereof publications or substantive research concerning the *Amazon* shipwreck site is one of the limitations of the project. Due to this, the results arising from this thesis cannot be compared and contrasted or place any inconsistencies that may arise during the project. The second limitation is that the location of the wreck is at the intertidal zone and in high-energy dynamic environment. All parts of the wreck are subjected to seasonal exposure and unpredictable weather. This made it impossible to create a site map of the wreck in the water, which could have provided a sense of how the site has been formed. While pictures of the wreck under water taken previously act as a source of reference, it is nevertheless challenging to envision any changes that occurred at the site since the ship's deposition.

Chapter outline

The thesis is organised into six chapters. Chapter 1 introduces the project, provides an historical background of the study area and outlines the research question and aims, the project's significance and the limitations to this study.

Chapter 2 reviews and analyses literature pertinent to the topic. This encompasses scholarly research of two theories: site-formation processes and behavioural archaeology emphasising on collecting behaviour. Furthermore, the chapter assesses previous archaeological investigations of the site to illuminate certain aspects in relation with the reviewed literature.

Chapter 3 deals with the methods employed during fieldwork to accumulate data. The author divides the methodologies into five phases: survey, excavation, site recording and documentation, documentary research and community engagement. The limitations encountered during fieldwork are also presented.

Chapter 4 presents the data acquired through fieldwork. The author segregates the results into three phases: survey, excavation and community interpretations.

Chapter 5 analyses and discusses the results of the data in two components. The first section of the chapter presents interpretations regarding the site-formation processes of

the *Amazon* shipwreck site and the possible reasons the collecting behaviour. The second section examines the results from community engagement to discern the intentions of the collecting activity.

Chapter 6 concludes the entire thesis by restating the research question and aims and explaining how the research project has addressed them. In this chapter, the author also recommends certain aspects of the current research and the shipwreck that can be studied in the future.

Chapter 2—Literature review

Introduction

The theoretical approaches applied to this research include site-formation process and behavioural archaeology. This chapter evaluates current knowledge relating to both theoretical frameworks and identifies gaps in knowledge that potentially can be filled by this research. Site-formation process theory is utilised to comprehend how the *Amazon* shipwreck site has altered since its deposition, whereas behavioural archaeology theory is placed alongside site-formation theory to understand the interactions between human behaviour and material culture of the *Amazon* shipwreck. Finally, previous archaeological investigations of *Amazon* are discussed to investigate if these theories can help to address the research question.

Site-formation theory

The approach to studying shipwrecks must go beyond viewing them as separate physical remnants in the environment. It is about conceptualising shipwrecks as sites—as part of the community and landscape—that undergo various site altering processes (Fowler 2011:1). The formation of every wreck site is unique and different depending on the surrounding environment. These formation processes influence the archaeological record emanating from a shipwreck site and must be interpreted to understand the site's transformation since the depositional event. The study of site-formation processes is often assumed to have begun with terrestrial sites; however, as early as the 1960s, Dumas (1962:1–15) considered sea-bed topography, weather and depositional events as factors influencing the formation of wrecks sites in the Mediterranean (Oxley and Keith 2016:2). Since then, several comprehensive studies on site-formation process have been conducted by many scholars, although the works of Muckelroy (1978) and Schiffer (1972, 1975, 1976, 1987, 1995) remain the most influential and relate to this thesis extensively.

Deriving from Schiffer's (1972) work on site-formation processes of a terrestrial archaeological site, Muckelroy (1978:158) created a model to discern the formation processes acting on a wreck site (Figure 2.1). This model illustrates the natural factors

influencing a ship's depositional and post-depositional stages. Therefore, there exists a considerable level of similarity between Schiffer's and Muckleroy's concepts (Richards 2002:38). Although, two significant differences exist in their studies. The first difference is that both cultural and natural factors transforming terrestrial archaeological sites were identified by Schiffer, whereas Muckelroy discussed environmental processes in detail and only recognised the cultural factors influencing a shipwreck's site-formation (Murphy 1983:77). Secondly, Muckelroy (1978) concentrated on depositional and post depositional stages, whereas Schiffer's ideas concerned only post-depositional stages of archaeological sites.

Site-formation processes are of two types: natural or N-processes and cultural or C-processes (Schiffer 1987). According to Schiffer (1987:7), natural processes are events of the natural environment that affect the archaeological remains. Such natural processes include physical, chemical and biological (Ward et al. 1998, 1999, Gibbs 2006:6). Cultural processes are defined as modification of material culture caused by human behaviour (Schiffer 1987:7). These cultural processes can occur before a shipwreck event takes place and continue to modify the archaeological record after deposition. For an inclusive study of the site-formation processes, it is crucial to understand both factors affecting a ship's depositional and post depositional stages. Stewart (1999:568) and O'Shea (2002:212) divided site-formation theory into two parts: depositional processes that deal with the circumstances of the wrecking event, where a shipwreck becomes a site and post-depositional processes concern the transformations occurring after the impact event. Both argued that incorporating these processes will enhance the research potential of shipwrecks and aid in the management and preservation of wrecks (Stewart 1999; O'Shea 2002).

Natural processes

The formation processes of submerged sites are a result of the environment and the site attaining equilibrium with each other (Ford et al. 2016:17). Muckelroy (1978:165–196) described two terms—extracting filters and scrambling devices—in his model, that affect the formation of shipwrecks during and after their deposition. According to Muckelroy,

Image removed due to copyright restriction.

Figure 2.1 Muckelroy's model of site-formation processes (Muckelroy 1978:158).

when a ship wrecks, the extracting filters act upon it by removing materials from the wreck. These extracting filters can be the wrecking process itself, salvage activities and disintegration of objects (Muckelroy 1978:165). The scrambling devices as defined by Muckelroy (1978:169) are mechanisms that move artefacts on the seabed post deposition. Such devices include physical processes like currents, wave action, disruptions from marine creatures and movement in the seabed (Muckelroy 1978:151; Stewart 1999:567). Several scholars have conducted their site-formation process studies based on Muckelroy's model to identify the extracting and scrambling devices. For instance, Lenihan et al. (1994) enquired into site-formation processes of nine shipwrecks in Isle Royale National Park, USA and discovered that ice heaving, salvage attempts and weather were the influencing factors. Some scholars have modified Muckelroy's model depending on the nature of their site. For example, Keith and Simmons (1985) reversed

Muckelroy's model to study the Molasses Reef Wreck in Turks and Caicos, as they identified that any remaining information after a shipwreck event can be gained only after the scrambling filters act on the ship.

Expansion of Muckelroy's model

Ward et al. (1998:109, 1999:561) criticised Muckelroy for failing to incorporate other natural processes such as chemical and biological that affect the shipwreck's attributes and control its site-formation. They argued that Muckleroy's model delineates a wreck's site-formation as a single process and enables only a processual interpretation of the site (Ward et al. 1999:563). Hence, Ward et al. (1999) expanded on Muckelroy's model by incorporating physical, chemical and biological processes as part of overall environmental processes, in order to create an inclusive model for conservation and management of the site (Fowler 2011:12) (Figure 2.2). Employing *Pandora* (1791) wreck in the Great Barrier Reef as a case study, Ward et al. (1998:109) identified that the physical processes presided over the wreck's disintegration followed by biological and chemical parameters. Leino et al. (2011) conducted a similar study where they included all three parameters while investigating an eighteenth-century shipwreck *Vrouw Maria* (1771) in the Northern Baltic Sea. This enabled them to predict the site's conditions to preserve the wreck from future environmental threats. Wrecks constructed with different materials undergo different deterioration and disintegration processes. Wooden wrecks are affected by physical and biological processes, while iron wrecks are more influenced by physical and chemical processes (Ward et al. 1999:564). These processes also have varying effects on different parts of the wreck. The interior part of the wreck forms differently than the exterior as water movement is restricted inside the hull (Leino et al. 2011:134).

In their new model, Ward et al. (1999) established sedimentary processes and hydrodynamic environment as two primary factors affecting a shipwreck post deposition. These two factors are interlinked. Sedimentation occurs due to waves and currents that control removal and accumulation of sediment and the texture of sediment transported to the shipwreck site; hydrodynamic environment is characterised by elements that influence

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Figure 2.2 Muckelroy's model expanded to include physical, biological and chemical site-formation processes (Ward 1999:564).

the sedimentary processes and cause scouring (Ward et al. 1999:564–565). While such processes can cause detrimental effects, there are instances where they are advantageous to the archaeological record. Quinn et al. (2007) applied Ward et al's theory to examine the evolution of Mombasa Harbour in Kenya using marine geophysical surveys and SCUBA systems. They identified that the harbour's long-term stability and success was a consequence of sedimentary and hydrodynamic processes acting on the harbour as well as the geological setting (Quinn et al. 2007:1459). Their research demonstrates that incorporating geoarchaeological data within this framework enhances such process-based models at different temporal and spatial scales (Quinn et al. 2007:1459).

Hydrodynamic processes such as waves, tides and currents cause sediment erosion (Ward et al. 1998, 1999; Masselink et al. 2014; Keith and Evans 2016:44–69) which

significantly threaten the integrity of a shipwreck site. For instance, Hosty (1988) and Harvey (1996) discovered that the *William Salthouse* shipwreck in Port Phillip Bay, Victoria, was threatened by erosion that would expose the wreck's hull and associated contents, thereby destroying its archaeological significance. Mitigating strategies such as wire mesh, sand sediment traps and sediment replenishment were adopted to stabilise the wreck (Hosty 1988; Harvey 1996). Such hydrodynamic processes also cause erosion of artefacts, which when removed out of context are then transported by currents (Stewart 1999:582). This situation becomes extremely problematic if there are multiple wrecks in the same area, as it would be difficult to establish the nature of the artefacts.

Ward et al. (1998, 1999) identified fungi and bacteria as two types of biological organisms severely threatening wooden shipwrecks in addition to wood-borers. Gregory (2016:116) further added that several other organisms such as diatoms, microalgae, protozoa and wood boring molluscs colonise the exposed wood materials. 'Exposed' is the key word here, as wood materials covered by sediments receive less oxygen, which disallows several biological organisms to thrive (Björdal and Nilsson 2008:869; Gregory et al. 2012:139). Björdal and Nilsson (2008) conducted an experiment with three different types of wood—oak, pine and birch— to study the bio-protective nature of sediment. Their study established that wood materials exposed were more prone to biological hazards than the wood materials buried (Björdal and Nilsson 2008). Although, Gregory (2016:126–128) detected degradation in barrels belonging to a sixteenth-century shipwreck in northwest Ireland, caused by erosion bacteria that thrive in anaerobic conditions. Therefore, wood materials can be affected in both aerobic and anaerobic conditions but the rate of degradation differs. Furthermore, Björdal and Nilsson (2008) concluded that reburial of wooden shipwrecks has the ability to preserve wooden shipwrecks and protect their archaeological value. While reburial is considered a simple and efficient preservation method (Björdal and Nilsson 2008:861; Richards 2011, 2012), this process may prove unsuccessful in high dynamic sites subjected to constant sedimentary and hydrodynamic processes, as they bury and expose the sites frequently.

Shipwrecks are subjected to chemical processes that cause degradation. McCarthy (2001) and Ward et al. (1998) analysed hydrodynamic process and corrosion as natural processes affecting the structural integrity of iron-hulled paddle steamer *Xantho* in

Western Australia and *Pandora* respectively. Ian MacLeod pioneered the study of corrosion in ferrous and non-ferrous shipwrecks and provided management strategies (MacLeod 1991; MacLeod and Steyne 2011; MacLeod 2016). Scholars also factored in other environmental processes that have influenced corrosion of shipwrecks such as typhoons (MacLeod et al. 2017, MacLeod and Viduka 2011).

Behavioural archaeology

Cultural processes

In maritime archaeology, site-formation processes studies have predominantly dealt with natural factors impacting on shipwreck sites (Gibbs 2006:6; Gibbs and Duncan 2016:179). It is crucial to acknowledge that both natural and cultural processes simultaneously alter a shipwreck site. Souza (1998) touched on several cultural influences such as removal of artefacts by looters and collectors, dragging caused by anchors, activities of archaeologists and loading materials on to an existing shipwreck site from stranded ships (Souza 1998; Gibbs 2006:6; Fowler 2011:13). Souza (1998) criticised both Muckelroy and Schiffer for discounting the pre-depositional processes that disclose the behaviour and actions of crew members or individuals prior to the depositional event. While Souza's work only indirectly relates to this thesis, referring to this study is important, since her study is seminal as one of the earliest attempts at studying cultural and pre-depositional site-formation processes.

Human behaviour as a cultural process

Gibbs (2006) recognised the necessity to include human behaviour as a cultural process impacting on shipwreck site-formation. The way the shipwreck site is formed also concerns the human behavioural activities. Therefore, by incorporating Schiffer's ideas Gibbs (2006) expanded on Ward et al's. (1999) and Muckelroy's model (1978) by adopting a disaster response framework, to identify cultural formation processes acting upon a five-stage process of a shipwreck: pre-impact, impact, recoil, rescue and post trauma (Figure 2.3). This model aids in understanding human behaviours encircling

shipwrecks by providing a comparison between wreck and salvage events (Gibbs 2006), since salvaging remains as one of the primary cultural factors that negatively impact on shipwrecks. Wilde-Ramsing (2009), in his dissertation, tested Gibbs' model on the *Queen Anne's Revenge* (1718) wreck at Beaufort Inlet, North Carolina, by dividing the shipwreck into five stages. By applying this model, he (2009) was able to provide suggestions to better understand the site and incident at Beaufort Inlet and confirm historical records of the ship's demise. Wilde-Ramsing (2009) further identified that the wrecking event of *Queen Anne's Revenge* may have depended on the behavioural actions of some of the individuals related to the ship. Building on Gibbs' model, many researchers conducted their studies focussing on the behavioural aspect involved in shipwrecks. For instance, to enhance the understanding of site-formation processes and the management of iron shipwrecks, Bera (2015) considered human decision-making process as a cultural phenomenon by using the early twentieth-century steel oil tanker *Paraguay* and late nineteenth-century iron sloop-of-war USS *Huron* (1877) as case studies. Bera (2015) determined that human error caused *Huron* to run aground, while extensive salvaging on both shipwreck sites and aerial assault on *Paraguay* substantially damaged the ships. Richards (2002, 2008, 2011) concentrated on abandonment process as a cultural influence impacting on the formation of a shipwreck site. Richards' work demonstrates that even through discarded or abandoned shipwrecks, a substantial amount of information can be gained that are pertinent to evolving economy, human behaviour, technological change and social history. The studies undertaken by Richards, Wilde-Ramsing and Berra are indicative of human behaviour as a cultural influence that determine the formation of a shipwreck site.

In addition to aforementioned human influences, there still exists a wide variety of various aspects of human behaviour acting on or near a shipwreck site. Fowler (2011:9) claimed that human behaviour in maritime archaeology has yet to be dealt with in detail, especially the impacts of shipwrecks on local communities. Throughout her thesis (2011), she argued that, while human interferences and interactions with shipwrecks affect them, shipwrecks also impact on people. For instance, Port MacDonnell community based their identity on the shipwrecks and memorialised the shipwrecks by naming some streets (Fowler 2011:88–90). This local community responded to the shipwreck event by rescuing

Image removed due to copyright restriction.

Figure 2.3 Gibbs' model after adopting a disaster framework (Gibbs 2006:16).

crew passengers involved in the impact event; exploitation of shipwreck materials was also evident within the Port MacDonnell community (Fowler 2011:88–90). Such activities would not have taken place without the presence of shipwrecks. This interaction between humans and shipwrecks is a cycle. Fowler's research demonstrates that the cause and effect of shipwrecks must also be viewed from human behavioural perspective for an unbiased interpretation. This aspect is particularly relevant to this thesis, as the presence of *Amazon* may have enabled the artefact collecting behaviour of the Inverloch community.

The link between human behaviour and archaeological materials can be understood by incorporating behavioural archaeology (Schiffer 1985, 1987), as it contributes to the understating of both natural and cultural processes generating the archaeological record (Skibo and Schiffer 2008:6). Behavioural archaeology and site-formation processes are therefore interlinked. Schiffer (1987) associated cultural formation process with four sub-processes: reuse, discard, reclamation and disturbance processes. The process of reclamation involving the action of collecting is especially pertinent to this thesis, as the artefacts from the *Amazon* shipwreck site were collected.

The collecting behaviour

Collecting behaviour involves human interaction with the archaeological record and therefore, can be placed under the umbrella of behavioural archaeology. Schiffer (1987:114) recognised collecting and pothunting as two of the cultural processes affecting a site's formation. He defines collecting processes as those that disturb, remove and transport materials on the surface, whereas pothunting is referred as a process disturbing, removing and transporting subsurface materials (Schiffer 1987:114). The artefact removal process conducted by the Inverloch community must be clearly defined to interpret the *Amazon* site appropriately. The archaeological materials belonging to the *Amazon* shipwreck site were discovered on shore and collected by the local community. Hence, this behaviour can be classified as collecting instead of pothunting. Collecting exists in various forms and fields and the definition can vary depending on its context.

Belk (1995:67) defines collecting by basing the activity on consumerism as, "a process of actively, passionately and selectively acquiring and possessing things removed from ordinary use and perceives it as part of a set of non-identical objects and experiences." Pearce (1995, 1998) conducted an extensive investigation into collecting, which she considers an aspect of an individual, human experience, social practice and an activity which people simply undertake. Pearce (1995:4) further stated that this collecting practice is significant in fabricating the way an individual related to the material world. From such statements asserted by her, Pearce (1995:4) raised three questions: what is our relationship with the material world? what part of that relationship accounts for

'collecting'? and how can we study collecting and collections in a way that would illuminate the nature of the experience they express? To answer these questions, Pearce (1995:28–33) divided collecting process into three parts:

- Collecting as practice;
- Collecting as poetics; and
- Collecting as politics.

Placing collecting as a social practice aids in understanding the strategies developed by collectors to accumulate objects, the way these material objects are viewed by collectors and how such objects attract the collectors (Pearce 1995:28–31). For instance, collectors are sometimes enticed by the size of the artefacts (Schiffer 1987:116), or they are driven by curiosities and fanaticism (Pomian 1990), or passion and desire (Baudrillard 1994:7–8; Belk 1995:148), or a sense of urgency to collect objects before it is too late (Griffiths 1996:25). Considering collecting as poetics reveals how collecting affects the collectors and their outlook on the act of collecting itself (Pearce 1995:31). According to Belk (1995:141–151), collecting affects the individual both positively and negatively. For example, the collector identifies themselves as suffering from a disease, as often collecting can become obsessive or addictive, or society characterises the collector as a hoarder (Belk 1995:143). The positive effects of collecting on an individual are that collectors become altruistic towards objects and this behaviour is reported as self-transcendent (Belk 1995:148). Combining the social practice and poetics of collecting will demonstrate the importance of the collected objects and their differing values, thereby contributing to the discussion of collecting as politics (Pearce 1995:33). One of Schiffer's (1976) four behavioural strategies is to examine current material culture and continuous cultural systems to delineate present human behaviour. Similarly, Rodrigues (2009:161) mentioned that assessing the artefact collections helps to gain a perception of the collector's likes or dislikes and patterns and the importance of the collection. For instance, several collections of a same type of item, say pottery, can indicate that the collector's interest lies in ceramics.

Although, such assessments or examinations of artefacts can be conducted only if they are accessible. As looting of shipwreck sites in Australia had become an obvious issue

by the mid-1980s, a substantial amount of information about Australian maritime heritage disappeared into private hands (Rodrigues 2009:153). Consequently, an amnesty was proclaimed in 1993 in Australia encouraging members possessing historical shipwreck materials to declare them to their State cultural heritage agencies (Rodrigues 2009:153). Rodrigues (2009:153) stated that the amnesty exists only for the sole purpose of recording lost information and that the general public will be protected from indictment for declaring those materials. Furthermore, once these materials are recorded, they are returned to the notifier on a condition that they sufficiently and properly care for them (Rodrigues 2009:154). This concept relates to this thesis in a way that the artefacts loaned to archaeologists during fieldwork by the Inverloch community, were returned to the collectors after documentation and registered to them as custodians.

Gap in literature

Pearce (1995,1998), in her book, neither criticises the act of collecting nor approves of it. Her ideas remain neutral throughout. Her main objective is to understand the practice and the collector's relationship with material objects. Although, a common approach to this topic is unbiased, especially by archaeologists. Studies on collecting have predominantly focussed on two things: understanding the collecting culture that involves the relationship between material objects and human beings and the destructive impacts of collecting artefacts. While there is substantial amount of research conducted on negative impacts of collecting, also referred to as looting, scavenging or treasure hunting (Schiffer 1987), there is limited research undertaken on understanding the motivations and intentions behind the collecting activity.

Gerstenblith (2013) identified that there is a division between archaeologists and collectors who have little understanding of each other. Collecting is often regarded by archaeologists as a threat to the archaeological site and collected sites are frequently considered as places requiring intervention, to save the sites from destruction by looters and artefact collectors (Hart and Chilton 2014:318). Hart and Chilton (2014:318) argued that archaeologists disregard the motivations and meanings behind the collecting practice. It is crucial to understand the agenda behind collecting before judging the

collector's actions as negative or otherwise. It is also important to understand how the cultural material was collected and the purpose for collecting it. These actions are interconnected and a proper understanding of collecting behaviour cannot be achieved without exploring the three actions (Figure 2.4). Sawaged (1999:80) also acknowledged this existing problem and expressed that the scientific community has failed to develop strategies to curb activities of collectors or looters partially due to the lack of understanding of motivations behind such activities. She states that collectors are driven by the same motivations as the scientist but have agendas that are different (Sawaged 1999:86). These differing agendas do not necessarily mean that the collectors are criminals. To rectify this issue, Sawaged (1999) provided archaeologists with an understanding of the collecting customs from a collector's point of view, encouraged to adopt a multidisciplinary approach towards this issue and offered suggestions to create new initiatives. Her initiatives predominantly involve increasing awareness concerning the values and importance of an artefact amongst collectors (Sawaged 1999).

These studies do have drawbacks. Sawaged (1999:86) concluded that the collectors are not captivated by objects. This statement needs analysing because, as Schiffer (1995:116) pointed out, the collectors "go for the goodies." If the objects fail to entrance a collector or pique their curiosity, the act will be non-existent. Hence, Sawaged's statement goes against the core and fundamental reason behind collecting artefacts or any objects. Hart and Chilton (2014) advocated for understanding motivations behind these actions, although they seem to have focussed more on the problems of looting and artefact collecting. Gerstenblith (2013) undertook a similar approach but placed the law as a mediator to bridge the gap between archaeologists and collectors. Sawaged's article (1999) and Pearce's (1998) research are more influential and preferable for this thesis as they approached the collecting behaviour impartially and attempted to understand the activity from the collector's perspective.

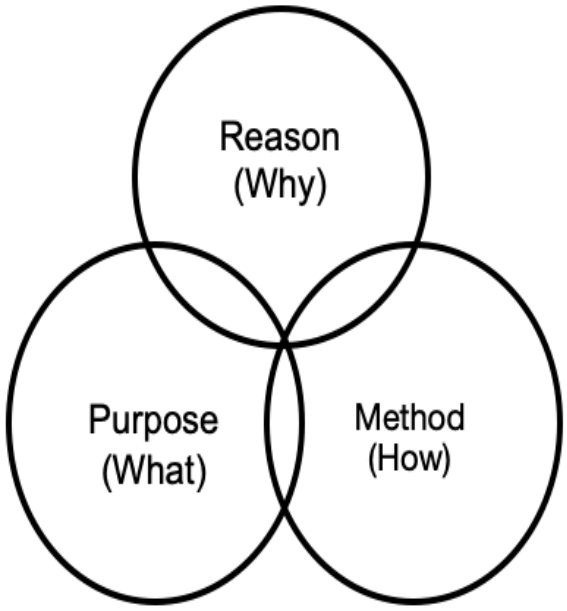

Figure 2.4 The collecting behaviour thought processes (illustration by M. Chandrasekaran).

The barque *Amazon*

In July 2018, a storm exposed *Amazon* at the intertidal zone and after an examination by HV staff, it was confirmed that the site was eroded, engulfing 10–20 metres of sand dunes. A thorough examination was deemed necessary to record the site before further degradation. Hence, a season of fieldwork was organised between 25 November and 5 December 2018 by HV, who enlisted help from MaP Fund and Flinders University, in which the author participated. A report of the findings was produced by the research team and submitted to HV (McAllister et al. 2018).

By comparing this report with prior archaeological investigations, a pattern can be determined. Firstly, the shipwreck site is sporadically exposed and buried. Secondly, the local environmental conditions possibly transport archaeological materials of *Amazon* to the shore, enabling the Inverloch community to collect. Consequently, the local community members who are concerned about the condition of the shipwreck, notify the appropriate authorities for actions to be taken.

Conclusion

This chapter has reviewed literature pertaining to site-formation processes and behavioural archaeology with an emphasis on collecting behaviour. An evaluation of the literature has revealed that shipwreck sites are subjected to alterations by various natural and cultural processes, in the time of pre, during and post depositional phases. This is evident in the *Amazon* shipwreck site.as both natural and cultural factors collectively work together. The author combines this information with the data collected during fieldwork, to identify the specific processes and how they have possibly enabled the artefact collecting behaviour of the Inverloch community.

This chapter has also divulged that several studies conducted on collecting behaviour are prejudiced and generalised. The collectors are criminalised and compared with salvors, treasure-hunters or looters, without identifying the intentions, motivations and reasons behind that action. Such is the issue the thesis attempts to resolve by striving to understand the thought process of this activity demonstrated by the Inverloch community.

Chapter 3—Methodology

Introduction

This research project is a result of fieldwork conducted in late 2018, for which several methodologies were adopted to examine the *Amazon* shipwreck site. Therefore, the author presents only selected methods which are suitable to address the thesis question effectively. Both practical and theoretical methods were exercised to collect data. Practical methodology comprises site surveying and recording, whereas theoretical aspects encompass cultural survey and consulting documentary sources. Results from previous archaeological investigations of the site influenced the research team's overall approach of the site at the beginning of fieldwork.

Fieldwork

Staff and students from Flinders University and maritime archaeologists from HV undertook fieldwork to locate, identify and record the *Amazon* shipwreck site. Participants from the Philippines and Indonesia funded by MaP Fund and a local resident undertaking an Australian Institute of Maritime Archaeology/ National Archaeology Society (AIMA/ NAS) Part two course joined the investigation. The participants were divided into blue and green team for the entirety of the project. The methods adopted for the investigation are categorised into five sections: survey, excavation, site-recording and documentation, documentary research and community survey.

Survey

According to previous site investigation reports, an exposed piece of timber and a bow-shackle attached to a timber were known to exist on shore. The participants located the former immediately, while the latter was presumably buried. Hence, to determine and quantify the extent of the site, both teams collectively began the first phase of investigations with two kinds of survey: a walking visual survey and a metal detector survey. These surveys were also partially influenced by information obtained from the

Inverloch community members concerning the location of the shipwreck at the intertidal zone.

Walking visual survey

The primary aim of this survey was to cover the beach area surrounding the shipwreck in order to locate any artefacts from the shipwreck and also to locate the shipwreck underwater (Figure 3.1). The exposed timber facing north from the beach was deemed the most suitable point to begin this survey. Both blue and green teams combined to walk transects westward approximately three metres apart from each person. Each transect line was 150 metres long and 70 metres wide along the beach and moved towards the shallow waters. The objects of potential cultural significance found during this survey were marked, inspected and recorded with a Global Positioning System (GPS). During the final transect run, the *Amazon* shipwreck was relocated at the intertidal zone at a depth of one metre. While the visibility was too poor to examine the vessel, the author and other team members confirmed that some wrecks components were exposed on the seabed. The team managed to measure the length of the site as accurately as possible and acquired the distance between the exposed timber and the shipwreck. The location of the vessel was recorded with GPS.

Metal detector survey

Upon contemplating the results from the walking visual survey, a metal detector survey was deemed necessary to locate any possible metal features, such as the bow-shackle site. For this purpose, two metal detector models with the ability to operate in intertidal areas were employed: a J.W. Fisher Plus 8x and a Minelab Excalibur 1000. This survey took place over two consecutive days (Figure 3.2). On the first day, the transect lines of the survey extended 112 meters to the west and 32 meters to the south from the exposed timber, ending at an arbitrary region relatively adjacent to the shipwreck site under water. On the second day, the transect lines extended 30 meters to the east and 18 meters

Figure 3.1 Walking visual survey (photograph by S. Landicho).

towards the waterline from the exposed timber. Each transect line was two metres in distance, allowing a one metre overlap to cover the ground as extensively as possible. Collectively, the survey area spanned 142 metres in length and 50 metres in width. Both surveys were 50 metres wide, with each transect line two meters apart, allowing operators to cover the ground as quickly as possible. Anomalies located were marked by flags and then verified by using the second metal detector for better accuracy. The bow-shackle site was successfully discovered during the survey. GPS points were obtained of this site and all anomalies. The anomalies were then examined by test digging using hand or trowels to groundwater level

Excavation

A sizeable metal anomaly—possibly the bow-shackle—located by the metal detector and the exposed timber were excavated to establish their nature and to record the

Figure 3.2 Blue team conducting metal detector survey (photograph by W. van Duivenvoorde).

findings. The exposed timber was named Site A, while the bow-shackle site was called Site B. The excavation at both Sites A and B was undertaken over a period of three days. Site A was of high interest due to its possibility of being part of the shipwreck's bow section

Site A

Site A is situated 160 metres northeast from the wreck site in water with a 200-degree bearing. In total, three 3 by 4 metre grids (Figure 3.3) surrounding the exposed timber were created (Figure 3.3). The first position—Point A—of Grid 1 or Trench 1 was set up

in the northwestern corner with an arbitrary distance of 1.5 metres between Point A and the exposed timber. The second position or Point B was then placed three meters south of Point A. Subsequently, the third and fourth positions of Trench 1, i.e. Points C and D, were placed four metres west from Points A and B respectively. All four corners were established at a 90-degree angle using triangulation. Once Trench 1 was set up, it was

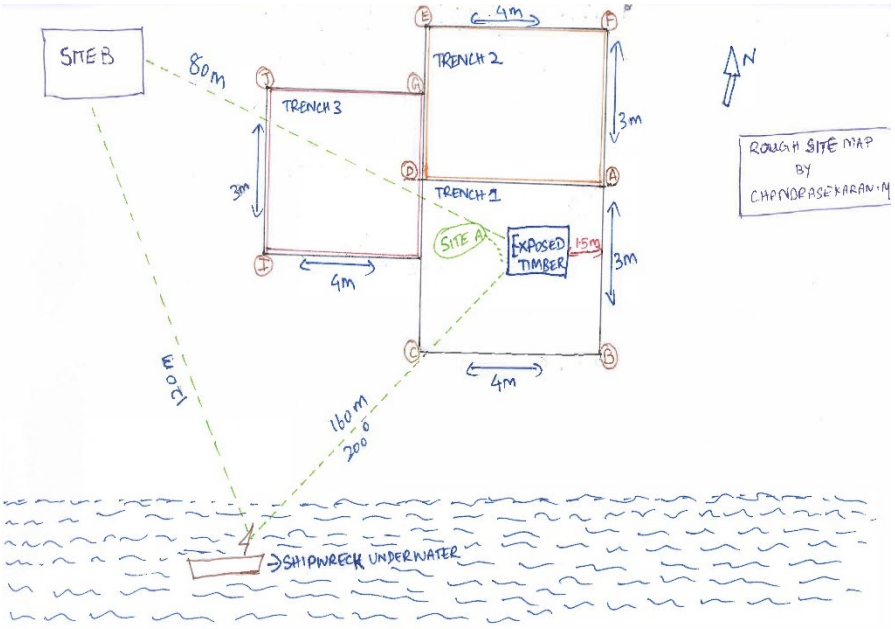

Figure 3.3 A rough site map indicating Sites A and B and shipwreck underwater (illustration by M. Chandrasekaran).

excavated using hand tools such as shovels and trowels to uncover the timber. This excavation revealed the presence of additional contents associated with the exposed timber. Therefore, the following day, two more 3 by 4 grids or Trenches 2 and 3 were laid out.

Grid 2 or Trench 2 was extended 3 by 4 metres further north in alignment with Points A and D. The northwestern and northeastern corners of Trench 2 were named Points E and F respectively. Grid 3 or Trench 3 was established 3 by 4 metres west of Trenches 1 and 2, where the northwestern (Point G) and southwestern (Point H) corners were situated at the midpoint between Points D and E and Points C and D respectively. The southwestern and northwestern corners—Points I and J were then established using triangulation.

As the excavation took place, water was seeping through the sand dunes from Wreck Creek north of the excavation site. This situation impaired the excavation process as the water frequently submerged the uncovered archaeological materials within the trenches. Therefore, to minimise this problem, drainage channels were created near Points C and I to drain the water into the sea. In addition, more precautions were taken to prevent the trench walls from collapsing by transporting the removed sediments in buckets away from the trenches. Furthermore, sediments were removed from the grids with great caution to avoid any accidental damage to the archaeological contents within.

Site B

Site B is located approximately 120 metres northwest from the shipwreck site in water and around 80 metres west off of Site A (Figure 3.3). Unlike Site A, a grid was not established for Site B due to the possible lack of original context the anomaly was discovered in. Excavation was conducted by following the exposed materials in Site B to uncover as much as possible (Figure 3.4).

Backfilling

Upon completing the excavation and documentation of both sites, the trenches were backfilled with spoil. Only the exposed archaeological materials were backfilled to protect them from any cultural or environmental threats, while the remainder of the trenches were left to be backfilled naturally by the oncoming tides.

Site-recording and documentation

Site-recording was conducted extensively of both excavated sites using a variety of strategies such as aerial imagery, archaeological illustration, artefact sampling, photography and geospatial recording using a GPS.

Aerial imagery

Two drone models, a DJI Phantom 3 and DJI Mavic 2 Pro were utilised to conduct aerial survey of the excavated sites and the areas surrounding the sites. The primary intention of this survey was to locate and identify the wreck site in the water by creating

Figure 3.4 Initial excavation of Site B (photograph by R. Galloso).

a geo-referenced imagery for high level of accuracy. Additionally, digital elevation models (DEM) and orthomosaics of the sites were generated from the drone data to understand the basic layout of all three sites in the landscape and their positions relative to each other (Appendix A).

Photography and archaeological illustration

A few members from blue and green teams drafted mud maps of Sites A and B respectively with measurements. To measure the features found in Site A, trilateration was used for accurate results (Figure 3.5). Tape measures were attached to Points A and B in Trench 1 and then extended to a particular point on a feature of interest. These specific points were selected depending on accessibility and necessity. A designated

illustrator plotted the acquired measurements into a mylar graph sheet. Similarly, Site B and any associated artefacts were measured using baseline offset method and drawn roughly on the field. Baseline offset technique was deemed fit for Site B, as the contents appeared more levelled to the ground and less scattered compared to Site A. Preliminary sketches and scaled illustrations of both sites were produced by respective teams.

Photographs of the site were taken using Nikon D3400 DSLR camera and Olympus TG 3. For Site A, photographs were taken of the grids prior to the excavation to review their layout, so that changes can be applied if required. All photographs consisted of a photo board containing the site name, the trench number, the date and the team name. Range poles functioned as scales for the site and features and north arrows were placed to indicate the orientation of the site in the photographs. During the excavation process, any feature of archaeological interest found was photographed with north arrows and scales. The same action was carried out post-excavation with a photo board. In the case of Site B, the lack thereof grid system meant that photography had to be an ongoing process in conjunction with the excavation. Identical to Site A, features of high interest in Site B and of potential archaeological significance were photographed with scales and north arrows.

Global Positioning System (GPS)

Geospatial recording of the site was undertaken with a handheld Garmin GPSMAP 64s. GPS points were acquired of Sites A and B, the position of all the trenches, the beginning and ends of transect lines from metal detector and walking visual surveys, the anomalies found during excavation and surveys, the reference points for grids, the baselines and the shipwreck at the intertidal zone. The Garmin operates on a three-metre error to create geo-referenced site plan and maps of the archaeological data. The acquired Garmin GPS were plotted into GIS ArcMAP 10.6 software, with a world imagery World Geodetic System (WGS) 84 as the base map (Appendix B).

Artefacts documentation

Apart from the artefacts found during surveys and excavation, several other cultural objects collected by the local Inverloch community were loaned to the team for detailed recording. Some artefacts were drawn to scale and sketched, while all were catalogued

Figure 3.5 Participants measuring Site A using trilateration with C. King illustrating the site (photograph by S. Landicho).

and photographed. Furthermore, samples were obtained from artefacts for laboratory analysis. The author meticulously examined the condition, material and value of the artefacts—specifically the collected items—to understand the reason behind the collectors' attraction towards them.

In order to catalogue all the relevant artefacts, three types of forms such as the Artefact Acquisition Sheet, Artefact Catalogue Sheet, and the Catalogue Inventory Sheet, were created. The Artefact Acquisition Form was created to keep a record of the artefact acquirer and the method of acquisition. The Artefact Catalogue Sheet encompassed details such as artefact registration number, site name, site type, object description including its name, material type, condition and dimensions, artefact illustrations and

photographs, artefact photographs and the custodian of the artefacts (Appendix C). The Catalogue Inventory Sheet contained a checklist to verify if all the artefacts had been photographed and allotted a catalogue number and a custodian, in addition to examining which artefact had been illustrated and sampled.

For high quality photographs of the artefacts, Nikon D3400 DSLR Camera with DX lens was utilised once again. The artefacts were placed on a white bed sheet to provide a neutral background and the lighting was controlled by torches and reflectors. Any important feature on an artefact was captured as a close-up shot using macro setting. All photographs of artefacts contained a scale. In addition to photography, the artefacts were illustrated on an A4 sheet at 1:1 scale and a mylar sheet at a scale chosen by the illustrator, depending on the size of the artefact.

Material sampling

During fieldwork, wood samples were acquired for identification. Timber sampling and identification from shipwrecks is a method of research that has existed in maritime archaeology for decades. Identifying timbers from shipwrecks can divulge information regarding a wreck's construction period, shipbuilding centres, possible trade routes of the ship and the life expectancy of the wood (Domínguez-Delmás et al. 2019:231). The aims of this process were to ascertain if Site B belonged to the shipwreck and confirm the identity of *Amazon*. Since the shipwreck underwater was inaccessible, timber samples from only Sites A and B were collected in situ with chisel and saw. To place the samples into its original context, the location of the sample was recorded. These samples were then labelled with information such as the date, artefact context and site information. To retain moisture in the sampled artefacts, they were submerged in Ziplock bags containing water and stored in the refrigerator. Stringent efforts were taken to sample wood only from the most intact region of the wreck assemblage and to avoid sampling any loose fragments due to their lack of context. Six samples from Site A and four from Site B were obtained in total and dispatched to Jugo Illic from Know Your Wood for identification (Appendix D).

Metal artefacts were sampled for elemental composition analysis. This procedure was undertaken to verify the vessel's specifications as mentioned in Lloyd's. This process also aids in validating the identity of *Amazon* as well as establish Site B's association with the shipwreck. In total, seven samples were acquired from the *Amazon* artefacts collection and underwent metallurgical analysis at Adelaide Microscopy, South Australia, conducted by Wendy van Duivenvoorde. A Quanta 450 FEG Environmental Scanning Electron Microscope was utilized for this process. This device determines a sample's elemental composition using an SDD EDS detector through x-ray detection (Adelaide Microscopy 2016).

Documentary research

The author undertook documentary research to provide the background history of Inverloch and *Amazon*. The history of both Inverloch and the vessel is scarcely documented, which proved challenging to acquire information from authentic sources. The author visited the local library at Inverloch to obtain information about the Inverloch town, although any information encountered was only from brochures and tourist pamphlets. The author came across only one publication by a local historian Eulalie Brewster, which was particularly helpful in providing certain historical events of the town. The life of Bunurong Aboriginal People is substantially chronicled by many scholarly individuals, although only one book about the Indigenous people was accessible. The author also discovered much of the documentation relating to Bunurong people on websites. Therefore, the author carefully selected the most authentic websites to present basic background knowledge of this Indigenous group. Some of the key words—but not limited to—generated for this part of the research were Inverloch, Wonthaggi, Inverloch jetty, Bunurong, Kulin and Luduwenjerri.

To provide a comprehensive life history of the *Amazon* shipwreck, newspaper accounts, Lloyd's Shipping Register, previous archaeological reports and HV's shipwreck database were utilised. The author accessed newspaper accounts on Trove (National Library of Australia) (Appendix E). Fowler (2011:29) mentioned newspaper accounts as exemplars of biased sources but nevertheless provide community viewpoints. These

newspaper records were particularly helpful in understanding the cause of the wrecking event, visualising the site layout post-deposition, events that occurred after the wrecking event such as salvage operations and auctioning. Lloyd's Shipping Register was referred to, to obtain details about *Amazon*'s technical specifications (Lloyd's Register 1860).

Community engagement

As the Inverloch beach is a popular dog walking beach, the research team encountered several interested members of the public throughout the project. Emphasis was laid on community outreach and engagement during fieldwork, owing to the local community's overwhelmingly positive response towards the *Amazon* shipwreck. It was because of the community's notifications and concerns about the shipwreck that this project came to fruition, as evidenced by previous archaeological reports. Therefore, participants tried to continually interact with people interested in the shipwreck and keep them informed about the activities that were being undertaken.

Survey questionnaire

From previous archaeological reports and the November 2018 fieldwork, the author identified an active relationship between the Inverloch community and the shipwreck in the form of artefact collecting practice. As mentioned in Chapter 2, collecting in archaeology is often considered unethical and immoral without understanding the rationale that initiated the behaviour. Therefore, it was decided to thoroughly explore how the community's collecting behaviour was influenced and the impacts of this behaviour on the archaeological record. For this purpose, a survey questionnaire developed by the author was circulated electronically by HV—the governing authority—to only selected members of the community. Electronic surveys are a time efficient and an inexpensive research method that allows for quick responses and reaching multiple targets swiftly (Jones et al. 2013:5). Consequently, the author preferred electronic surveys for the research to avoid biased answers and causing any discomfort to the participant due to the sensitivity and controversy surrounding the topic of collecting in archaeology.

Subjects for this survey were chosen based on two criteria: the participant must have collected artefacts of *Amazon* and must be a resident of Inverloch for at least two years. An exception was made for one participant who lives eight kilometres from Inverloch as they had collected artefacts and possessed knowledge about the shipwreck site. These participants were identified through interactions on the field, during a barbeque event and by collecting details of people who lent cultural objects for documentation. The survey was sent via e-mail to five participants and the Inverloch Historical Society (IHS), who were requested to spread the survey to the people who fit the criteria. To maximise the response rate, questions were formed in a way that can be easily understood and answered. Caution was taken to keep the questions concise, relevant, polite and impersonal so that information could be conveyed authentically. The questions were formulated on the basis of the author's three-step model (see Chapter 2, p.24) to effectively understand the intentions behind the collecting behaviour. The survey contained three questionnaires. The first questionnaire comprised of seven background questions. The second questionnaire consisted of five questions relating to the participants' connection with the artefacts. The third questionnaire was divided into three sections. The first section contained three 'why' or 'reason' questions. The second section presented two 'how' or 'method' questions and the third section put forth four 'what' or 'purpose' questions. In total, 21 questions were formulated. All five participants were quick to respond. The responses from the survey were tabulated to interpret the similarities and differences in opinions.

Limitations

Some problems were experienced by the team during fieldwork. To begin with, participants were unable to survey the shipwreck site underwater due to unpredictable weather conditions. Strong winds resulted in high swells and acute waves that broke at the reefs where the shipwreck is embedded. The participants also encountered strong currents and surge while in contact with the wreck. Therefore, it was considered hazardous to approach the shipwreck furthermore due to these factors. Consequently, it

was unfeasible to develop a site plan of the vessel underwater or survey the site using a snorkel or SCUBA diving equipment.

Aerial survey using drones was undertaken to locate the shipwreck underwater as other techniques were ineffective; however, it was challenging to capture decent images of the site due to low visibility caused by a combination of rainfall and strong winds. As there was acute water movement like white chops generated by winds, creating photomosaics of the shipwreck site in the water was impossible. Secondly, team members wanted to conduct a coastal survey in an effort to record a boat ramp, a trackway, beach shacks and a mine cart which existed near the wreck site. The participants were unable to document these cultural features due to site concealment from asbestos contamination.

Chapter 4—Data

Introduction

In this chapter, the author presents the data collected during fieldwork in three phases: survey, excavation and community interpretations. The first phase provides data acquired during the walking visual and metal detector surveys. The most significant discoveries from the surveys are discussed briefly. The second phase puts forward the data collected from the excavation of Sites A and B, the results of timber samples and the artefact collection of the *Amazon* ship. The final phase deals with results from the community engagement aspect of fieldwork.

Phase 1

Survey anomalies

This section of the results is divided into two parts: anomalies from walking visual survey and anomalies from metal detector survey. The chief goals of the walking visual survey were to familiarise the research team with the Inverloch beach, to relocate the *Amazon* shipwreck in the water and any associated materials on shore (Appendix F). In total, the teams identified eight anomalies scattered across the beach and one anomaly at the intertidal zone indicating the shipwreck (Table 4.1). The eight anomalies were a mixture of glass shards and rusted iron fragments (Figures 4.1 and 4.2). These objects were modern in nature and lacked any archaeological or cultural significance. The most significant find of this survey was the shipwreck relocated during the final transit run.

Table 4.1 Anomaly results from walking visual survey

Anomaly no.	Object	Anomaly location	GPS Location
1	Iron fragment	Beach surface	S 38.64777, E 145.69765
2	Modern glass	Beach surface	S 38.647887E 145.69664
3	Iron fragment	Beach surface	S 38.64779, E 145.69652
4	Modern glass	Beach surface	S 38.64800, E 145.69614
5	Modern glass	Beach surface	S 38.64788, E 145.69809

Anomaly no.	Object	Anomaly location	GPS Location
6	Modern glass	Beach surface	S 38.64813, E 145.69702
7	Modern glass	Beach surface	S 38.69814, E 145.69682
8	Rusted metal fragment	Beach surface	S 38.64821, E 145.69670
9	Shipwreck	Intertidal zone	S 38.64874, E 145.69653

Figure 4.1 Glass shard found during walking visual survey (photograph by S. Landicho).

The shipwreck

The overall length of the shipwreck site is approximately 28.5 metres. The vessel lies at a depth of one metre at low tide. Located at the intertidal zone, the shipwreck lies in an area of high wave energy resulting in poor visibility. The team, therefore, was unable to

complete a detailed survey of the wreck. As such, a thorough appraisal of the vessel's conditions and remaining components remains the work of future researchers.

The metal detector survey yielded 16 targets in total (Table 4.2) (Appendix F). Target 1 is the bow-shackle site that covers and uncovers occasionally. It was found at a depth of 15 centimetres below the surface of the sand. This target was by far the most noteworthy discovery amongst other targets. The other targets were either insignificant or irrelevant to the site. Some objects found include a can ring, modern iron wire and fragment and a brass bullet casing.

Figure 4.2 Iron fragment discovered during walking visual survey (photograph by S. Landicho).

Table 4.2 Targets from metal detector survey

Target no.	Object	Target Location	GPS location
1	Timber with bow-shackle	Beach surface	S 38.64765, E 145.69652
2	Not found (N/F)	Beach surface	S 38.64790, E 145.69655

Target no.	Object	Target Location	GPS location
3	N/F	Beach surface	S 38.69655, E 145.69667
4	N/F	Beach surface	S 38.64787, E 145.69670
5	N/F	Beach surface	S 38.64786, E 145.69672
6	N/F	Beach surface	S 38.64786, E 145.69675
7	N/F	Beach surface	S 38.64785, E 145.69676
8	N/F	Beach surface	S 38.64784, E 145.69678
9	Can ring	Beach surface	S 38.64764, E 145.69722
10	N/F	Beach surface	S 38.64764, E 145.69722
11	N/F	Beach surface	S 38.64766, E 145.64794
12	Modern iron wire	Beach surface	S 38.64756, E 145.69676
13	Modern iron piece	Beach surface	S 38.64756, E 145.69745
14	Iron fragment	Beach surface	S 38.64786, E 145.69699
15	N/F	Beach surface	S 38.64793, E 145.69672
16	Brass bullet shell	Beach surface	S 38.64786, E 145.69707

Phase 2

Excavation of Site A

A part of Site A was partially exposed prior to the commencement of fieldwork, which then became a reference to begin the walking visual and metal detector surveys. The excavation conducted on Trench 1 of Site A uncovered a possible deadwood and some parts of frame timbers (Figure 4.3) (Appendix A). An unidentified piece of timber with a concreted metal part was also uncovered. To reveal more of the frame timbers, two other trenches were excavated. These trenches revealed additional sections of frame timbers with hull planking attached; however, the team was unable to record the hull planks due to sand coverage caused by water seepage from Wreck Creek. One team recorded the site using trilateration to create a site map while the other team recorded the features present within the site (Figure 4.4) (Table 4.3).

Table 4.3 Trilateration points of Site A

Point	Distance from Point A (m)	Distance from Point B (m)	Description of the point
1	1.96	1.74	Northeast end of deadwood
2	1.85	1.86	Northwest end of deadwood
3	2.10	1.83	East side of deadwood
4	2.38	2.24	East side of deadwood
5	2.71	3.20	First bolt in deadwood
6	3.00	3.14	East side of deadwood
7	2.94	3.49	Mortice of deadwood
8	3.10	3.82	Second bolt in deadwood
9	3.46	4.36	South end of deadwood
10	2.94	3.50	Mortice of deadwood
11	3.62	4.62	Timber with concretion
12	3.48	4.43	Timber with concretion
13	3.20	4.37	Timber with concretion
14	3.17	4.26	Timber with concretion
15	2.53	3.95	Timber with concretion
16	2.67	3.99	Timber with concretion
17	4.61	5.98	Southwest end of frame timber
18	4.61	5.87	West end of frame timber 10
19	3.56	3.67	East end of frame timber 10
20	3.63	3.95	West end of frame timber 10/ east end of frame timber 9
21	3.70	4.13	West end of frame timber 9
22	3.66	4.15	East end of frame timber 8
23	3.70	4.34	West end of frame timber 8/ east end of frame timber 7
24	3.82	4.51	West end of frame timber 7/ east end of frame timber 6
25	3.90	4.72	West end of frame timber 6/ east end of frame timber 5
26	3.95	4.87	West end of frame timber 5/ east end of frame timber 4
27	4.15	5.16	West end of frame timber 4/ east end of frame timber 3
28	4.14	5.24	West end of frame timber 3/ east end of frame timber 2
29	4.28	5.44	West end of frame timber 2/ east end of frame timber 1
30	4.56	6.00	Northwest end of frame timber 1

Point	Distance from Point A (m)	Distance from Point B (m)	Description of the point
31	4.28	5.57	Northeast end of frame timber 1

Figure 4.3 Features in Site A (photograph by S. Landicho).

Deadwood are blocks of timbers assembled atop a keel in order to occupy the narrowest parts of the ship, usually at the aft end (Steffy 1994:270). The deadwood can also belong to a vessel's stem assembly, which becomes the substructure to abut the heels of the forward frames (van Gassbeek 1919:19). The deadwood found in Site A measures approximately 1.89 metres in length from the top to the most exposed part in the water table. It contained four treenail holes, a mortice and two copper alloy fasteners. The treenail holes are an average 3.75 centimetres in diameter with visible erosion. One copper alloy fastener is nine centimetres long, with a head diameter of 3.5 centimetres, head thickness of 0.5 centimetre and a shaft measuring three centimetres, whereas the other fastener is four centimetres long with a head thickness, diameter and shaft of one, four and three centimetres respectively. Damage from *Teredo navalis* is visible in certain

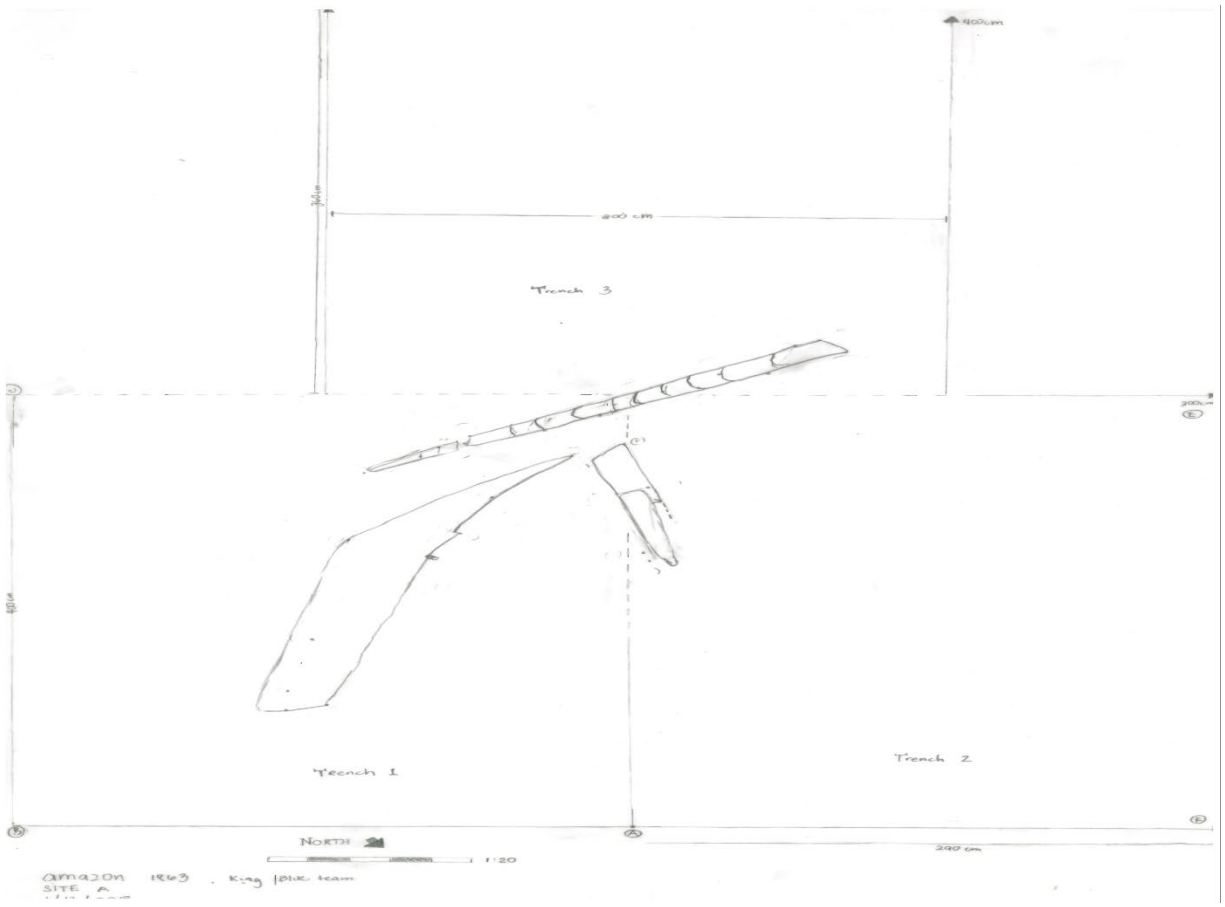

Figure 4.4 Site plan of Site A (photograph by C. King).

areas and the condition of the deadwood appeared to be deteriorating—especially at the surface—due to rot, which caused wood particles to disintegrate upon touch.

Ten frame timbers were uncovered during the excavation and recorded. As values recorded for the frame timbers on the field are lost, the author retrieved the measurements from photographs which were calibrated to scale in Agisoft Metashape software. Therefore, a certain level of inaccuracy is expected. The overall length of the exposed frame timbers is 2.34 metres. The measurements and features of the frame timbers are best represented in a tabular form (Table 4.4).

Table 4.4 Dimensions of frame timbers in Site A

Frame timber nos. from southeast corner	Exposed length (cm)	Exposed width (cm)	Feature	Condition

1	38.8	8.25	Copper bolt approximately 3 cm in diameter	Broken edges at surface. Bore holes by *Teredo Navalis* and partial wood rot are visible.
2	39	13.7	Treenail hole approximately 4 cm in diameter	Broken edges at surface. Bore holes by *Teredo Navalis* and partial wood rot are visible.
3	37	16.3	Nil	Broken edges at surface. Bore holes by *Teredo Navalis* and partial wood rot are visible.
4	34.4	16.8	Nil	Broken edges at surface. Bore holes by *Teredo Navalis* and partial wood rot are visible.
5	32.4	18.8	Nil	Broken edges at surface. Bore holes by *Teredo Navalis* and partial wood rot are visible.
6	27.5	14.8	Nil	Broken edges at surface. Bore holes by *Teredo Navalis* and partial wood rot are visible.
7	12.4	14	Nil	Broken edges at surface. Bore holes by *Teredo Navalis* and partial wood rot are visible.
8	9.43	17.8	Nil	Broken edges at surface. Bore holes by *Teredo* Navalis can be seen. Rot is visible throughout.
9	9.6	9.5	Nil	Broken edges at surface. Bore holes by *Teredo Navalis* and partial wood rot are visible.
10	13.7	22.8	Nil	Broken edges at surface. Bore holes by *Teredo Navalis* and partial wood rot are visible.

Similarly, values for the third component of Site A were also retrieved from Agisoft Metashape. The unidentified timber approximately measures 62.9 centimetres, 15.6 centimetres and 9.75 centimetres in length, width and breadth respectively. Atop this timber is a concreted metal part which is an estimated 71.2 centimetres long with a width and height of 4.75 centimetres and 3.62 centimetres respectively. The metal object

consists of a copper alloy bolt which is around 2.5 centimetres in diameter and five centimetres long.

Excavation of Site B

Site B represents the bow-shackle site relocated during the metal detector survey (Figure 4.5) (Appendix A). This site contained more contents than expected. In addition to the bow-shackle timber, the excavation revealed four other pieces of timber—three run parallel to each other, while one is perpendicular in relation to the rest of the timbers.

The bow-shackle is attached to Timber 1 with a mortise at the bottom and a notch on the topside (Figures 4.6 and 4.7). The overall length of the bow-shackle is 9.5 centimetres. Its exterior length is 8.5 centimetres and measures 12 centimetres in width. The total curvature length of the bow-shackle is 5.3 centimetres. Timber 1 measures 3.99 metres in length and 25 centimetres in width. Timber 1 consists of metal fasteners which include an iron bolt measuring four centimetres in both length and diameter; iron and copper alloy nails measuring one centimetre in width; an iron shackle measuring 9.5 centimetres in height and 6–10 centimetres in width and a treenail that is three centimetres deep and four centimetres wide.

Timber 2 is the central parallel timber and the largest, measuring 4.3 metres in length and 28 centimetres in width (Figure 4.7). Similar to Timber 1, the fasteners found are made of metal including an iron bolt measuring two centimetres in height out of beam and 2.5 centimetres in diameter, a square iron nail flat to surface measuring one centimetre in width; a square iron spike end which is 19 centimetres long out of beam and two centimetres wide, a copper alloy nail of seven millimeters width and one treenail hole measuring three centimetres in depth and two centimetres in diameter.

Timber 3 is located at the northern end of Site B and measures 1.7 metres and 14 centimetres in length and width respectively (Figure 4.7). The fasteners attached to this timber are a 12 centimetre long iron bolt with a four centimetre diameter shaft, a square iron nail measuring 5.5 centimetres in length and one centimetre in width and a one centimetre wide square copper alloy nail.

Figure 4.5 Features of Site B (photograph by H. Boyle).

Timber 4 runs perpendicular to the rest of the timbers (Figure 4.7). While it is the smallest in length measuring only one metre, it is the largest in width measuring 44 centimetres. This timber is heavier than the rest and joins Timbers 1, 2 and 3 together. It is also devoid of any obvious construction features compared to other timbers.

Figure 4.6 Bow-shackle attached to Timber 1 (photograph by R. Galloso).

Site B was illustrated to scale (Figure 4.7). During the excavation, there appeared to be more components of Sites A and B. Although, the tidal conditions and water seepage from the creek made it impossible to excavate further. This certainly limited data collection. According to recent information from one of the Inverloch residents, the bow-shackle timber has been washed away and its current location remains unknown.

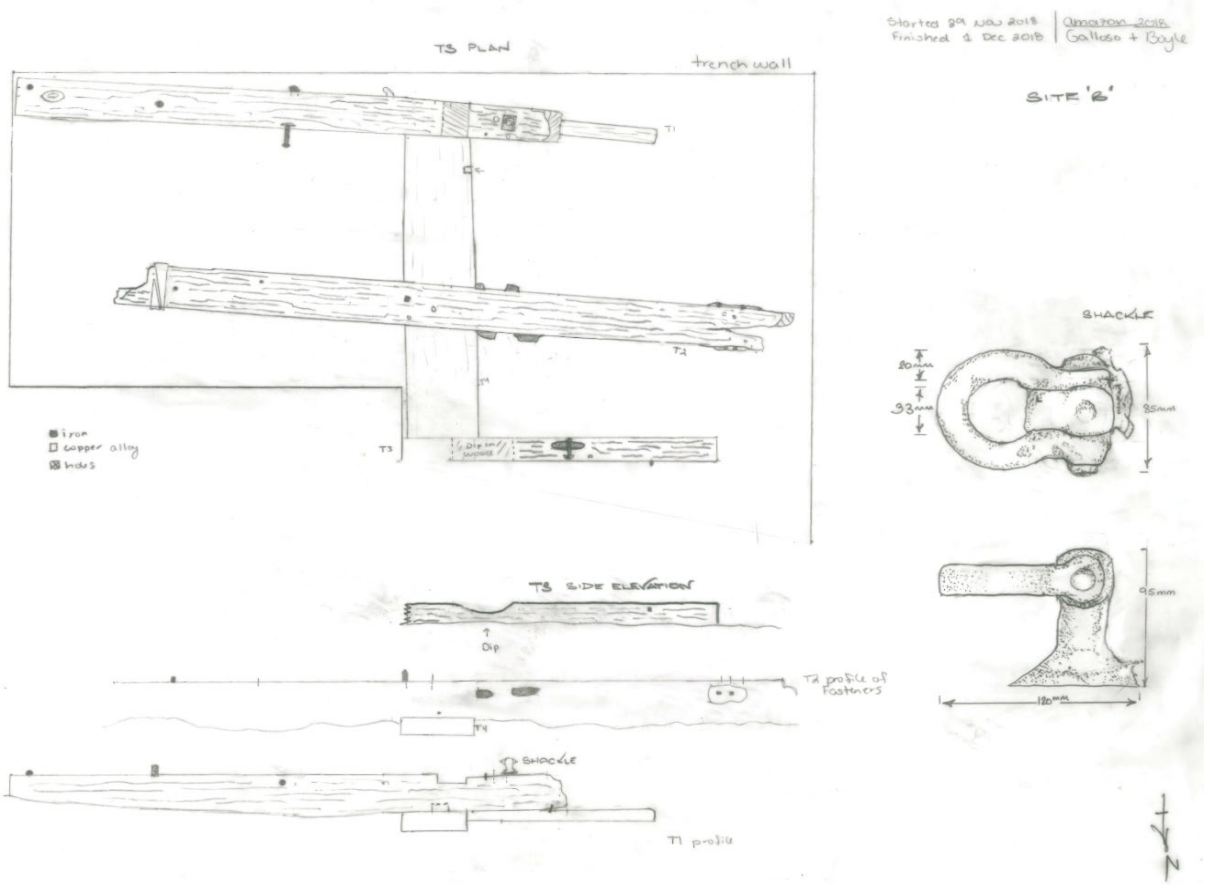

Figure 4.7 Site plan of Site B (photograph by R. Galloso and H. Boyle).

Timber identification

The results of ten timber samples collected are best represented in a tabular form (Table 4.5).

Table 4.5 Timber identification results

Location	Sample number	Description	Scientific name	Common name
Site A	T 10	Frame timber 10	*Pinus sylvestris*	Baltic or Scots pine
Site A	T 12	Frame timber 4	*Pinus sylvestris*	Baltic or Scots pine
Site A	T 14	Frame timber	*Quercus? robur*	White oak group
Site A	T 15	Frame timber 2, treenail	*Quercus? robur*	White oak group
Site A	T 16	Frame timber 6, inside	*Pinus sylvestris*	Baltic or Scots pine

Location	Sample number	Description	Scientific name	Common name
Site A	T 17	Deadwood	*Quercus? robur*	White oak group
Site B	T 01	Timber 1	*Pinus sylvestris*	Baltic or Scots pine
Site B	T 02	Timber 2	*Quercus? robur*	White oak group
Site B	T 04	Timber 3	*Quercus? robur*	White oak group
Site B	T 06	Timber 4	*Quercus? robur*	White oak group

The timber components found at both Sites A and B were built with *Quercus robur* and *Pinus sylvestris*—two types of wood that are very commonly used for shipbuilding. *Quercus robur* is a particular variety of hardwood white oak and is also known as English or European oak (Hoadley 1990:6). This wood is distributed across Great Britain, central and western Europe, North Africa and Asia Minor and is considered strong with good resistance to decay (Bootle 2005:313; The Wood Database 2008–2019). *Pinus sylvestris,* also called Baltic or Scots pine is found across Eurasia; it is a highly commercialised tree species in Europe as it can be easily worked and is primarily used as construction timber and pulpwood (Mátyás et al 2004:2).

The artefact collection

A total of 27 artefacts belonging to the *Amazon* shipwreck were catalogued, 11 out of which containing significant features were recorded by sketches and scaled archaeological illustrations. All cultural items catalogued were loaned to the research team by the members of Inverloch. The register number of the artefacts is S23 in accordance with the Victorian Heritage Register. Private individuals contributed 63% of the artefacts while 37% of the materials were lent by the IHS. These artefacts are a mix of metal, wood and leather materials.

Metal artefacts

This category of artefacts dominated the collection as 22 objects were of copper construction. In sum, 18 fragments of copper of various dimensions, shapes and conditions were catalogued. The sheet of copper are made of yellow metal, which confirms the construction specifications mentioned on Lloyd's Register (Lloyd's Register 1860). Results of samples taken from four copper fragments for metal analysis reveal an average copper and zinc elemental composition of 63.49% and 36.16% respectively (Appendix G). This chemical composition is very similar to Muntz metal which is composed of 60% copper and 40% zinc (Bingeman 2018:460), although these copper fragments were manufactured by Williams Foster & Co, as evidenced by the maker's stamp discovered on two of the copper fragements (Figure 4.8). Williams Foster & Co is a copper manufacturing company from London that was established in the early nineteenth-century (Grace's Guide to British Industrial History 2014). Williams Foster & Co along with Vivian and Sons and Pascoe Grenfell and Sons owned by Williams Foster & Co, later formed a separate entity in 1924 named the British Copper Manufacturers Ltd. (Grace's Guide to British Industrial History 2014). This further confirms that *Amazon* was most possibly built in the UK.

Other metal artefacts include two copper bolts and three copper tacks, which were sampled for metal analysis and a concreted triangular iron rigging object. One copper bolt with a length of 38.5 centimetres, head diameter of 3.5 centimetres and a diameter of 20 centimetres is intact and well-preserved. The second copper belt is bent and lacks a head. The unbent length is 39.9 centimetres while the bent length is 41 centimetres. The diameter and circumference of the bolt are 2.5 centimetres and 8.5 centimetres respectively. Patina is present on both bolts. All copper tacks are curved and bent at the head and tip. The tacks measure an average length of 2.56 centimetres, head width of 0.4 centimetre, head circumference of 3 centimetres, head diameter of 0.5 centimetres and shaft width of 1.7 centimetres. The two copper bolts contain an average 60.52% and 37.29% of copper and zinc respectively, whereas the two copper tacks samples are composed of an average 86.25% copper and 8.41% zinc. The concentration of copper in the tacks is much higher compared to the bolts and sheets of copper as fasteners are required to be stronger. All metal artefacts contained little or no lead and iron.

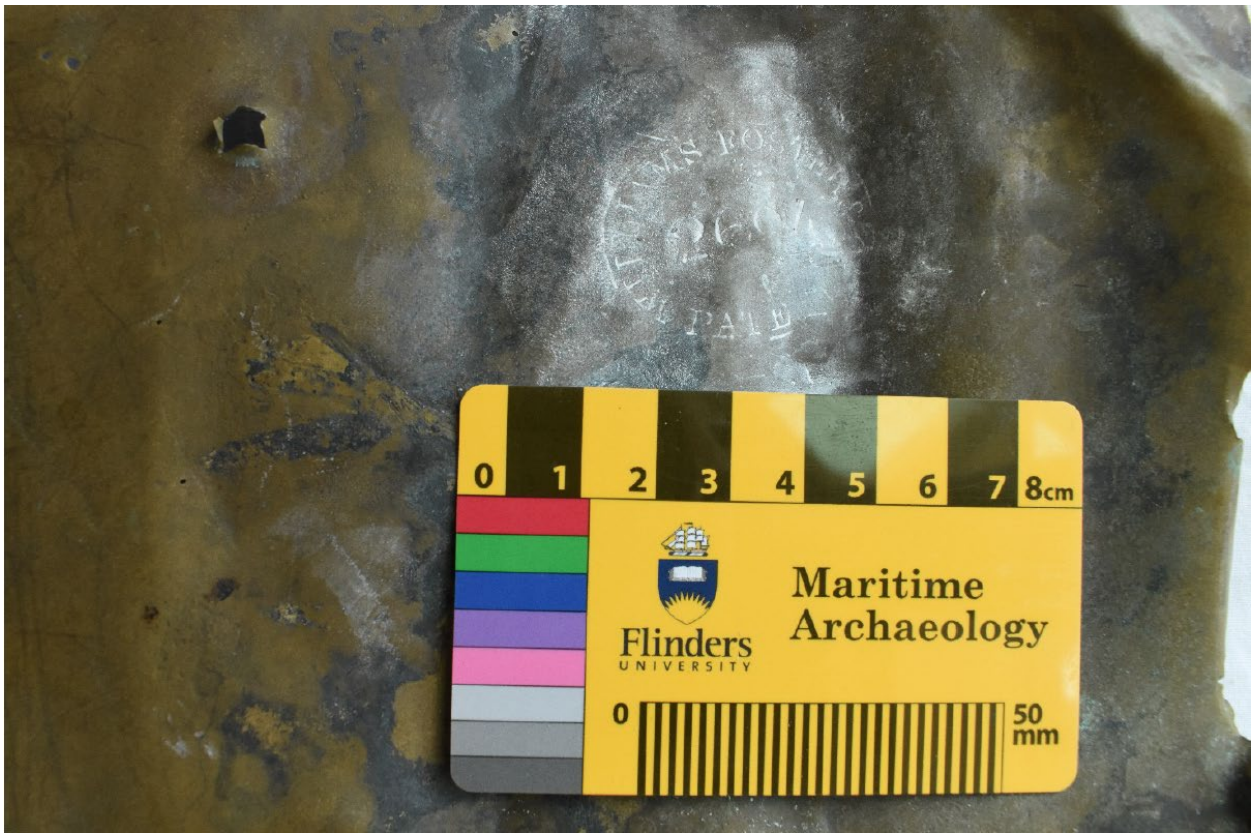

Figure 4.8 Maker's stamp on copper sheathing (photograph by R. Galloso).

Wood artefacts

The second most prevalent objects in the artefact collection are composed of wood. The team recorded four cultural objects such as two possible frame timbers with treenails and two unique and well-preserved rigging components such as the fairlead and the deadeye (Figures 4.9 and 4.10). Both timbers are in poor condition, while one timber (artefact 23.00015) is severely damaged by *Teredo navalis*, and the other (artefact 23.00021) is rotted. The former measures 48.8 centimetres in length, 20.2 centimetres in width and has a breath and circumference of 17.2 centimetres and 53.2 centimetres respectively, whereas the latter is 1.21 metres long, 12.7 centimetres wide and 14.8 centimetres thick. The deadeye (artefact 23.00001) is circular with three holes at the centre. Three concentric lines are visible exterior to the centre holes. One face of the object is preserved well and displays the circular shape, while the other face is oblong in nature due to scratches and dog bites from the artefact custodian's dog. The overall

diameter of the deadeye is approximately 20 centimetres and the length is five centimetres.

Figure 4.9 Fairlead (photograph by C. King).

The fairlead (artefact 23.00005) measures 8.5 centimetres in diameter and length and is 8.5 centimetres thick. There are two large holes at the centre and several cracks are visible throughout. Apart from these objects, an artefact parcelled in leather and containing fibrous rope material suspected to be a rigging component of *Amazon,* is also part of the collection (Figure 4.11). This measures 17 centimetres in length and seven centimetres in diameter and thickness. HV accessioned the deadeye, the fairlead, a well-preserved sheet of copper and the leather-bound artefact for conservation, while the rest were returned to the respective custodians.

Figure 4.10 Deadeye (photograph by C. King).

Phase 3

Community engagement

A major part of the fieldwork was to involve the Inverloch community as much as possible without impeding the investigations. Two categories of population frequented the shipwreck site on Inverloch beach—vacationers/ visitors and long-term residents. Therefore, it was crucial to segregate them and implement appropriate strategies to gain an insight into their attitudes and feelings towards the shipwreck. Individuals belonging to the first category predominantly exhibited interest in the shipwreck's contents and often talked about finding "treasure", whereas the second category of people displayed genuine interest, concerns and appreciation towards the shipwreck as well as Inverloch's and Victoria's maritime cultural heritage. This analysis is based on the author's conversations with several passers-by and the information gained from other team members.

Figure 4.11 A leather-parcelled artefact (photograph by C. King).

Furthermore, many people belonging to the second category were instrumental in the development of the project and provided a wealth of knowledge and information about the site. Some also supplied photographs and videos of the site and participated in the excavation. As mentioned earlier, several members of the Inverloch community voluntarily lent several artefacts collected by them to the team for detailed recording and documentation. It is important to note that some residents are still in contact with maritime

archaeologists from HV and and have provided pictures taken of the site after fieldwork. These pictures illustrate an aerial view of the shipwreck site at the intertidal zone as well as some submerged wreck components—both impossible to acquire during fieldwork (Figures 4.12 and 4.13).

Figure 4.12 Aerial view of the *Amazon* shipwreck (photograph by J. Laurie).

As mentioned in preceding chapters, the artefact collecting practice of the Inverloch community was known and evident. The answers to the survey questionnaire, developed to understand the reason behind this particular practice, reveal a personal connection between the collector and the shipwreck. The results from the survey are discussed in the next chapter.

Figure 4.13 Gudgeon and sternpost of *Amazon* (photograph by J. Laurie).

Chapter 5—Discussion

Introduction

The *Amazon* shipwreck was subjected to archaeological investigations to determine the formation processes acting upon the site as well as the Inverloch community's relationship with the material remains. While it is evident that natural formation processes such as coastal erosion is severe in this region and has affected the Inverloch beach acutely, a part of the thesis also attempts to determine how such factors have enabled the community's collecting behaviour. For this purpose, the chapter is divided into two sections. The first one deals with both natural and cultural processes impacting on the shipwreck sites. The author also strives to determine the nature of Site B based on available data as part of the thesis' aims. Secondly, the results from the community survey questionnaire are analysed to establish whether the collecting behaviour is destructive or non-destructive.

Site-formation process

To reiterate Muckleroy's (1978:165–196) study on site-formation processes, extracting filters and scrambling devices collectively work together to alter a shipwreck site during and after deposition. The extracting filters are the process of wrecking, salvage activities and disintegration of objects, whereas the scrambling devices are the physical processes that alter a shipwreck site post the depositional event. Archaeological investigations conducted at Inverloch indicate that the shipwreck has disintegrated into at least two parts—the shipwreck at the intertidal zone and a section, Site A, situated approximately 160 metres northeast off the shipwreck. Site B located on shore, may also be part of the original shipwreck. The site-formation discussion presented in this chapter applies to the underwater shipwreck site, Site A and Site B.

The shipwreck lies at a water depth of one metre at the intertidal zone and contains a water tank, ship fragments and frames and large amounts of ballast mounds. From aerial photographs, it is evident that the shipwreck lies parallel to the beach with the bow facing east (see Figure 4.12). This orientation is consistent with the historic account by Captain

Matthew of the rescue ship HMCS *Victoria*, who reported the ship lying broadside. The vessel is broken up and dispersed, although to an undetermined extent. Site A is most likely the ship's bow section, including deadwood, frame timbers and an unidentified timber with metal concretion. The 2018 excavation of this site exposed the aforementioned timbers, although more ship remains possibly exist deeper in the sand below the unexposed remains. Site B holds a structure of four timbers and is situated near the sand dunes, approximately 120 metres northwest off the shipwreck.

Impacts of natural processes

The underwater components of the *Amazon* site were inaccessible during fieldwork and therefore, the author was unable to assess the magnitude of the environmental impacts on the vessel. Although, certain hypotheses can be formed based on observations made during fieldwork, photographs and the data collected. The site is significantly threatened by its environmental surroundings as it is located in a high-energy environment. The *Amazon* shipwreck is, therefore, more susceptible to scrambling devices in the form of waves, storm surges, currents and tides as opposed to weather events or currents in mid to deep-water surroundings (Keith and Evans 2016:45). In addition, the Inverloch beach is at risk due to severe coastal erosion caused by such hydraulic forces that are significant during winters. People of Inverloch also noticed that the rate of erosion after extreme weather events, such storm surges, notably surpass the rate of sand accretion during calm weather conditions.

The waves and currents generated are higher in intensity during winters and reach the landmass farther and more severely than regular and gradual hydraulic forces. During this specific period of time, the sand accumulation rate surmounts the depositional rate. This causes coastal recession and it is unmistakably evident in the map generated (Figure 5.1). Public buildings and roads are threatened by erosion, specifically the foreshore ahead of Inverloch Surf Life Saving Club and Bunurong road. The map illustrates that coastal erosion since 2010 has accelerated in Inverloch beach, leading to a significant loss of sand dunes and vegetation. Since 2012, both areas have been subjected to an average 33.5 m coastal retreat; the Inverloch Surf Club building is at a mere distance of

16 m from sand dunes and Bunurong road just six metres within the eroding edge (Bass Coast Shire 2019). Between 2010 and 2016, there appears to have been an alarmingly rapid onset of coastal erosion, whereas from 2016–2019, the episodes of erosion have progressed gradually. Such an occurrence in common as the coastal erosion process takes place at different paces based on the intensity of weather events.

Physical deterioration processes

Coastal erosion can expose the shipwreck sites to high-energy waves, increasing the rate of deterioration. During the magnetometry survey of the site in 1998, the shipwreck was buried in sand at a water depth of 2–3 metres. Although, at present, the wreck is at one metre water depth, exposed and easily accessible during calm weather conditions. This is a common occurrence in shallow water shipwreck sites situated in dynamic environments. Furthermore, this high-energy environment controls the formation of the *Amazon* shipwreck site and continues to alter it post deposition. Following Delgado and Murphy (1984), Gearhart (1998:298–300) utilised three types of wreckage namely buoyant hull, buoyant hull fracture and buoyant structures to recognise the anomaly pattern produced by such environmentally exposed shipwrecks in a dynamic environmental surrounding similar to *Amazon*, as well as their cause of deposition (Babits 2013:180). This study can aid in understanding how physical processes continue to alter the *Amazon* site.

Buoyant hull sites occur when a vessel comes onshore and embeds into the sand fairly intact. These vessels create a linear distribution of anomalies caused by the remains of an intact hull (Babits 2013:180). The buoyant hull fracture sites arise when a ship runs aground relatively undamaged, although breaks apart ashore and is disseminated by waves causing a horizontal diffusion of archaeological remains. The second category directly applies to *Amazon*, as the vessel struck the beach and broke apart. Lastly, buoyant structure sites are a result of watercraft disintegrating offshore due to physical processes, followed by eventual diffusion of wreckage along the shoreline. This generates uneven wreck or site scatter due to which the context of the archaeological remains is

Figure 5.1 Coastal recession caused by erosion in Inverloch (map by M. Chandrasekaran).

lost. The third classification is highly applicable to the artefacts of *Amazon* shipwreck, as the local community residents retrieved artefacts in various areas of the beach. Such areas include sand dunes which have eroded considerably in Inverloch since 2010.

Considering the location of the shipwreck, waves primarily provide the energy that cause sediment transportation in the area, consequently exposing and moving the

artefacts as part of the sediment budget that is vulnerable to erosion (Ford et al. 2016:20). Similar to Gearhart's (1998:300) example of the *Aberdeen* wreck, the *Amazon* site has dispersed several small artefacts such as copper sheathing fragments and wooden articles to the shore. These artefacts are less dense than other components of the shipwreck such as the water tank, for example, and this is recurrent in many shipwreck sites existing in high energy sites such as Inverloch. Records mention that the vessel was stripped off metal in several places and the large amounts of copper sheathings found on shore are indicative of this.

Biological deterioration processes

Wooden objects are bound to deteriorate regardless of their location in the marine environment. The exposed wooden ship structures are attacked by marine organisms that thrive in aerobic environments such as *Teredo navalis* or commonly known as shipworms, whereas buried wooden objects are attacked by anaerobic organisms such as erosion bacteria. As the *Amazon* shipwreck is frequently buried and exposed due to dynamic site conditions, it is affected by both types of biological mechanisms. The magnitude of biological deterioration processes is controlled by the weather conditions of the site. While the erosion caused during storm surges at Inverloch removes the substrate and decreases biological processes, after the storms, the site is exposed to re-oxygenated sediments favouring biological organisms (Ward et al. 1999:566)

Photographs in 2015 taken of the submerged shipwreck when exposed, reveal bore holes caused by shipworms (*Teredo navalis*) that have damaged the integrity of the timbers (Figure 5.2). As the physical processes have exposed many parts of the ship, the biological degradation has catalysed. It is unknown whether there exists any degradation due to anaerobic marine organisms or how much of the shipwreck is buried. The wooden objects such as deadeye and fairlead were surprisingly well-preserved, particularly the deadeye when it was located at the high tide mark in 2015 by HV. The deadeye was buried until its exposure due to erosion. It was further preserved by its collector in fresh water. The two large timber objects in the artefact collection, 23.00021 and 23.00015, also display damage by soft-rot and shipworms respectively. It is possible that artefact

23.00021 was less exposed to biological processes than artefact 23.00015 due to a lesser degree of attack by marine organisms like *Teredo navalis*.

The wooden structures in Sites A and B appear comparatively better preserved than the shipwreck underwater. The reason is the sites' location on the beach. They remain buried in the sand to a greater extent in comparison to the shipwreck. The sustenance of shipworms is derived from water, allowing the organisms to thrive out of the water only for a short period of time. This situation favours the preservative condition of the archaeological remains in both sites.

Figure 5.2 *Teredo navalis* attack on frame timber (photograph by J. Mitchell).

Chemical deterioration processes

Metal artefacts dominate the artefact collection, mainly sheets of copper (Figure 5.3). These objects display signs of corrosion due to chemical processes as they were submerged in salt water. The corrosion may have increased during storm surges that

expose artefacts, which in turn experience an increased flow of oxygenated water (Ward et al. 1999:568).

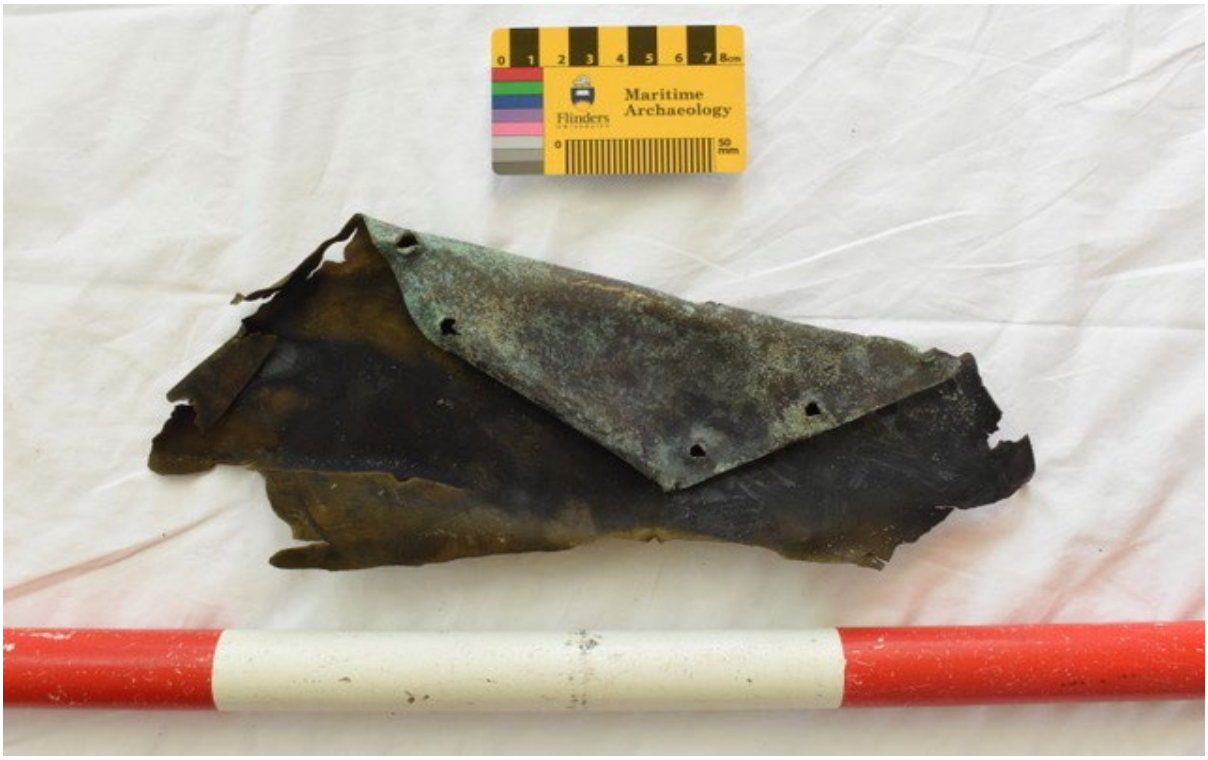

Figure 5.3 Corroded fragment of copper (photograph by R. Galloso).

Site B

Reports of archaeological investigations conducted in late 1990s mention solely the submerged shipwreck and Site A. It was only recently in 2012 that Site B was assumingly first located. Throughout fieldwork, continuous discussions took place regarding the association of this structure with *Amazon*. There are two hypotheses for what Site B possibly is. The first possibility is that *Amazon* is unrelated to Site B due to the timber arrangement and that these timbers were salvaged from the shipwreck site to build a jetty. The second possibility is that Site B belongs to *Amazon*'s deck or upper hull structure.

The first possibility is unlikely for several reasons. To begin with, the timbers in Sites A and B are of European Oak and Scots/ Baltic pine. These species are foreign to Victoria, as some of the common timber trees found in this region are boxes, ironbarks, gums, stringy-barks and a variety of pines (Mann 1905:111). While Baltic pine was imported into Victoria and other Australian colonies, it was utilised primarily to construct buildings from

later nineteenth-century until World War I (Barnard 2008:39). Archaeological studies reveal the use of *Eucalyptus marginata* (Jarrah) and *Eucalyptus diversicolor* (Karri)—two popular Australian hardwoods—in the construction of jetties. Both species are native of Western Australia and commonly found in jetties across the state, such as the Hamlin Bay Jetty and Albany Town Jetty (Gainsford 2004:1; Richards 1995:5). Archaeological evidence also suggests that these timbers were circulated throughout Australia, wherein Jarrah was more predominant in the establishment of jetty piles and decking in Victoria (Mann 1905:113), while both Jarrah and Karri along with other similar hardwoods were utilised to erect jetties and wharves in South Australia, such as the jetty in Port Vincent and Queens Wharf in Port Pirie (Collins 2005:61,107).

It is possible that both hardwoods and other similar species were preferred due to their durability and natural resistance to decay; they are also some of the tallest trees, making them highly suitable for jetty construction which requires long timbers (Wengert 2003:24; Bootle 2005:291). The molluscs damaged the Karri timber more than Jarrah, which replaced Karri in marine constructions (Collins 2005:25). Shortly, the turpentine timber replaced Jarrah since they displayed better resistance to decay from marine bio organisms (Collins 2005:25). Similarly, even though Oak and Scots pine are considered suitable in the construction of marine structures like wharves, jetties, marinas and such, they are non-resistant to marine borers without an additional preservative layer (Oliver 1974:42–48). The timbers in Sites B lacked such a protective layer, however, thereby substantially minimising the possibility of reuse. Secondly, records describe that the ship was substantially broken up during the wrecking event. Therefore, it is improbable that the timbers found on Site B were in acceptable shape or condition to construct marine structures. Thirdly, the bow-shackle on Timber 1 is a feature that is uncommon in jetties.

The second possibility appears to be more suitable for Site B. Since *Amazon* is in a high energy environment, the Site B buoyant structures potentially washed ashore post deposition due to hydrodynamic forces. The rigging materials such as deadeye and fairlead discovered indicate that this part the ship potentially survived during the depositional event. It is difficult to identify the purpose of the bow-shackle as it is commonly used as a joinery in various parts of a ship. Although, in relation with the deck structure, it seems as though the bow-shackle was attached to the deck in order to join

tackles in the ship's running rigging (Figure 5.4) (Underhill 1972:275). Furthermore, the copper tacks and nails found on Site B timbers are consistent with shipbuilding features.

It is crucial to acknowledge that owing to the absence of any historical records or accounts referring to Site B, its nature can only be postulated. If Site B is the deck structure of *Amazon*, it may have been overlooked until its exposure, possibly by remaining buried and protected in the sand dunes.

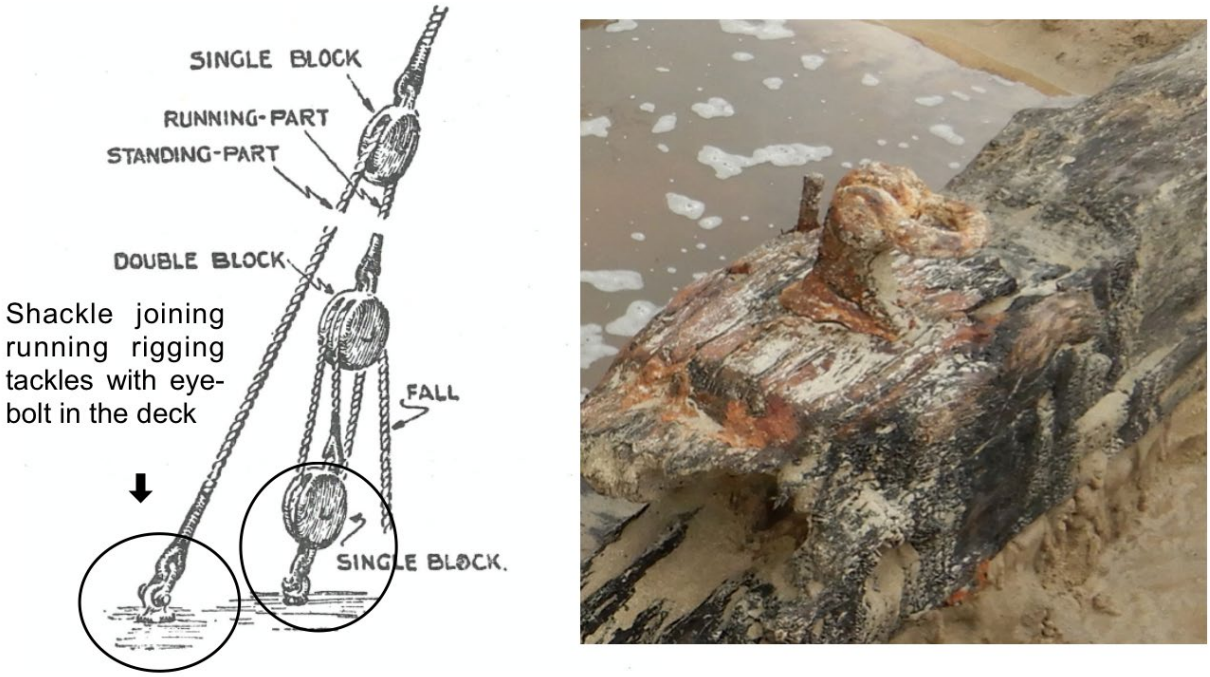

Figure 5.4 Possible use of a bow-shackle in a ship's upper works (after Underhill 1972:275).

Impacts of cultural processes

Cultural formation processes involve the relationship between human behaviour and the archaeological record. While not all actions of human beings cause site alterations, certain behaviour dramatically changes the formation of the archaeological record. Such actions begin prior to the depositional event and continue to transform a shipwreck site post deposition in conjunction with natural formation processes. These cultural processes can involve diving a shipwreck site, looting artefacts and many other human activities

surrounding the shipwreck. The cultural processes identified at the *Amazon* sites are minimal compared to natural processes.

The Amazon shipwreck site

Historical records mention that the survivors salvaged 100 casks of provisions post wreckage, possibly the salted meats. The vessel was also auctioned on 31 December 1863, although any information about the new owner remains unknown till date (The South Australian Register 1864:2). The shipwreck is easily accessible to people during calm weather conditions, although its location at the intertidal zone and frequent storms protect it from certain aggressive forms of cultural threats such as looting. There have been instances, pre and post fieldwork, where people have snorkelled and photographed the site. Without proper examination of the shipwreck under water, the effects of these will remain undetermined.

Sites A and B

Sites A and B are more at risk from cultural processes than the submerged shipwreck. These sites are easily accessible throughout the year, especially when exposed after storm surges. Site A has always been known to the public because of the exposed deadwood. An incident occurred where an individual dug at Site A and retrieved some parts, only to share a picture of those on Facebook. This is illegal as the site is protected by *Victorian Heritage Act 2017* and the Commonwealth *Historic Shipwrecks Act 1976*. The author was informed of the incident by one of the survey participants who, upon discovering this incident, immediately contacted the individual and warned them. The Facebook post was later deleted. The *Amazon* shipwreck site, inclusive of Sites A and B, holds tremendous potential for further research and the above-mentioned action causes irretrievable data loss. In the case of Site B, it is possible that it gained attention only after the excavation conducted during fieldwork. Site B, to the extent the author's knowledge, had never exposed further than the bow-shackle prior to fieldwork. Owing to the size of the shackle, it is easy to overlook.

A behavioural analysis of collecting

The cultural contact with shipwrecks is sometimes non-physical, however, and often non-destructive to the site. The artefact collecting is one such cultural process present in the Inverloch region. It is evident that the people of Inverloch have repeatedly collected items belonging to the *Amazon* shipwreck. This activity is continued into the present day. In archaeology, the collecting practice is commonly placed *on par* with activities such as salvaging or looting, which are sometimes legal but always unethical and destructive. This is a highly biased categorisation, as the reasons and intentions of collectors vary. It is unmerited to claim that artefact collecting behaviour is delinquent without analysing the motivations behind the activity. For this purpose, the author presents a separate discussion by analysing the results from the survey questionnaire. A condensed account of results from the survey is provided in a tabular form to better illuminate the similarities and differences in opinions and thoughts. To read the unedited results, see Appendix H

Questionnaire 1

In the first part of the survey questionnaire, the author sought background information of the candidates (Table 5.1). This aided in understanding their general mentality towards the shipwreck itself. The residency period of five participants range from 2–42 years and each candidate has known about the shipwreck's existence ranging from 2—20 years. All participants received their information regarding the shipwreck from different sources such as a Parks Victoria signage, word of mouth, the exposure of archaeological remains, childhood tales and tourist information centre at Inverloch. The participants were asked if they regarded themselves as collectors. The candidates considered themselves as collectors, although not of artefacts but of general objects such as shells, coins and more items unrelated to *Amazon* or any shipwreck. Therefore, it is crucial to establish that this particular demographic cannot be compared with treasure hunters or salvors who specifically collect shipwreck objects, often through destructive methods. When asked how important the shipwreck is to them and its impact on them, all five participants revealed that *Amazon* is a significant part of their history and the local community. Participant five further added that the shipwreck's archaeological remains aided in honing

their skills in maritime archaeology. Furthermore, the candidates mentioned that the collected remains should be preserved, restored and displayed at the Inverloch museum once it is built in a few years. They have agreed to preserve and care for the artefacts until a suitable place is found for display. The willingness to preserve and return the artefacts clearly suggests that the residents possess a genuine interest and care towards the shipwreck. It is also evident that they are unwilling to commercialise the shipwreck's remains as treasure hunters or salvors strive to do.

Table 5.1 Background survey questionnaire

Background Questions	**Participant 1**	**Participant 2**	**Participant 3**	**Participant 4**	**Participant 5**
How long have you resided in Inverloch?	Nine years	Two years	20 years	42 years - born and raised in Inverloch	Lives in Wonthaggi since 2017
How long have you known about the *Amazon* ship?	Two–three years	Two years	10 years	Childhood till present	Almost two decades
What was your source of information about the shipwreck?	A Parks Victoria signage at the Inverloch beach access	A few archaeological remains were spotted by the candidate	Word of mouth	Childhood tales	Tourist Information Centres, Marine Museum in Inverloch and books
How significant is the shipwreck to you?	Very significant as it is the candidate's part of Inverloch's history	Very significant as it is the candidate's part of Inverloch's history	Very significant as it is the candidate's part of Inverloch's history	Very significant as it connects the candidate to the past	Very significant to the local community and personally significant since it further hones the candidate's skills in maritime archaeology
What actions would you like to be taken concerning the shipwreck?	Raise, restore and display	Display in the local museum	Preserved in the local museum	Preserved and displayed in the local museum	Ideally, preserved and displayed in the local museum. If not, at least

					fully surveyed and shielded
Do you have any prior maritime or nautical knowledge?	No	No	Yes	No	Yes
Are you a collector? Do you have a collection?	Yes/ shells	Yes/ antiques and old China	Yes/ various collections from metal detection	Yes/ beach items like shells etc	Yes/ various collections

Questionnaire 2

The second questionnaire sought information regarding the participants' connection to the artefacts (Table 5.2). The first question concerned when the artefact was initially found, to which only four participants remembered the period of time. The artefacts were acquired predominantly after storms. As mentioned previously, the shipwreck is embedded in a high energy environment and is affected by coastal erosion caused by multiple physical processes such as storm surges. Hence, it is common for artefacts to erode and deposit onshore. The next question aimed to examine if the candidates deliberately foraged for the artefacts like treasure hunters. All five participants accidentally discovered the artefacts, however, out of which two fortuitously located them while metal detecting for unrelated objects such as coins for instance.

The third question focussed on the reason behind voluntarily lending the artefacts to archaeologists during fieldwork. Out of five participants, three desired to help in preserving the artefacts by returning or lending them to trained professionals, while two merely wanted them identified. This behaviour is consistent with Belk's (1995:48) theory of a collector's altruism towards the collected objects. Moreover, when asked if the partakers reported the artefacts, except one who was not aware of the process, three reported to Heritage Victoria, while one reported to the research team during fieldwork. Additionally, the artefacts have impacted on the participants positively by educating them in maritime and local heritage. For participant three, identifying the artefacts has solved the mystery of their origins and for the fifth participant, simply possessing the artefacts brings excitement. An effect such as this is very similar to Belk's (1995:141–151)

explanation relating to the positive influences of collecting, as mentioned in Chapter 2 (p.13). This relationship with the material culture is unique and uncommon in collectors who are characterised as salvors or pot-hunters, as they only seek to monetise their findings. In this case, the participating individuals are unacquisitive and solely care for the well-being of artefacts.

Table 5.2 Artefacts survey questionnaire

Artefact questions	**Participant 1**	**Participant 2**	**Participant 3**	**Participant 4**	**Participant 5**
When did you come by your first artefact, i.e. after or before the storms?	After storms	After storms	Before and after storms	Does not remember	Possibly before the storms
Did you find the artefacts accidentally or purposely?	Accidentally	Accidentally	Accidentally while metal detecting on the beach for miscellaneous items	Accidentally	Accidentally while metal detecting on the beach for miscellaneous items
What caused you to lend the collected artefacts during fieldwork?	To have them identified out of curiosity	For the competent authorities to view, label and keep	To confirm if the artefacts belonged to the shipwre-ck	To have it protected by the right people	To preserve a part of the local history
How have the artefacts impacted on your life?	Educated the candidate about maritime history	Educated the candidate about maritime history	They have filled in the missing pieces of the mystery behind the artefacts' origins	Educated the candidate about the local history	They bring excitement to the candidate who is in awe whenever they look at the artefacts
Did you report the artefacts	No, as the candidate was unaware of it	Yes, and the candidate asked for information to preserve the artefacts	Yes, during fieldwork	Yes, to Heritage Victoria	Yes, to Heritage Victoria

Questionnaire 3

This part of the questionnaire delves into the thought processes and intentions influencing the collecting behaviour of the Inverloch community. The author presents this

segment in three sections that deal with the 'why' or the reason of collecting, the 'how' or the method of collecting and the 'what' or the purpose for collecting.

Section 1

Attraction towards an object is often caused by its potential or assumed value. This is the fundamental reason for treasure hunting, as the artefacts are frequently romanticised. This situation is different from current circumstances involving the participants (Table 5.3). All except two were aware that the objects they collected were in fact artefacts; participants four and five knew the objects' nature due to prior nautical knowledge. Participant two was unsure, although guessed that they could be from *Amazon* as they had spotted exposed parts of the shipwreck. These three participants collected the artefacts out of interest in the shipwreck and to protect the cultural objects from the threatening dynamic environment. What caused the other two candidates to collect was curiosity and a passion for old things. Participant three did mention that they would have sold their collection of copper sheets as scrap metal, although this was before confirming the artefacts' identity (Appendix H). The cultural items that were collected comprise primarily degraded sheets of copper. On evaluating the physical condition of these artefacts, it is evident that they are degrading. While they are historically and archaeologically significant, owing to their current state of preservation, if sold, monetary profits would be scarce. Furthermore, the participants were cognizant of this fact as they vociferously expressed their concerns about the preservative state of the artefacts. Therefore, it is highly unlikely that they were attracted to the objects for their worth.

Table 5.3 The reason for collecting

The 'why' questions	**Participant 1**	**Participant 2**	**Participant 3**	**Participant 4**	**Participant 5**
Did you know initially that it was an artefact you collected?	No	Maybe	Vaguely	No	Yes

If you knew that the objects were artefacts, why did you collect?	Not Applicable	Interest in the *Amazon* shipwreck and wanted to protect them as they would otherwise wash away	General interest in shipwrecks	Not Applicable	Accidentally found and collected to protect them
If you did not know that the objects were artefacts, why did you still collect?	Curiosity because they appeared old	Not Applicable	Not Applicable	They looked interesting to the candidate's artistic view	Not Applicable

Section 2

In archaeology, collectors are compared with those who acquire archaeological remains illegally or unethically through destructive methods. During this process, the site is oftentimes damaged and loses its prospective archaeological significance. Data are substantially lost. Albeit, the survey results have substantiated that the participants' method of collecting is non-destructive (Table 5.4). Three out of five candidates retrieved the artefacts with their hands, while partakers three and five employed a sand scoop and a shovel to excavate the area. These artefacts were removed from the beach by all five candidates and not from the shipwreck itself. The shipwreck site is challenging to access due to its environmental surroundings and the absence of physical contact with the shipwreck further suggests that no harm was caused to the shipwreck. All participants discovered the artefacts accidentally. Therefore, they lacked the preparation to react appropriately during their contact with the artefacts, which in turn enabled them to extract the artefacts without causing any detrimental effects.

Table 5.4 The method of collecting

The 'how' questions	**Participant 1**	**Participant 2**	**Participant 3**	**Participant 4**	**Participant 5**
Where did you find the artefacts, i.e.	On shore	On shore	On shore	On shore	On shore

beach or underwater?					
How did you collect the artefacts?	Hand	Hand	Sand scoop	Hand	Shovel to excavate the area

Section 3

Artefact collectors are commonly criticised for their intended purpose of amassing the objects. There are two common types of collectors: those who collect artefacts for monetary purposes and those who collect solely due to enticement towards the objects. Both accumulate objects legally and illegally. The first kind of collectors most definitely threaten the integrity of the artefacts and the archaeological site, whereas the second kind is regularly accused of being obsessive or possessive about the artefacts. The second type of collectors enjoy exhibiting the collections, often in their homes. This relationship and purpose are personal. Despite being comparatively less consumeristic towards the artefacts, the latter kind can still cause damage to the objects as they are unprepared to satisfactorily care for the artefacts, thereby causing disintegration. This occurrence is different from the situation faced by the Inverloch residents for various reasons (Table 5.5). Firstly, the relationship between the material culture and the collectors is that of a custodian. The governing authority bestowed artefacts upon the candidates due to lack of funds to sufficiently preserve them. The candidates did not actively seek the artefacts and are eager to part with them when a safe place is established. Until then, the partakers consent to conserving the artefacts. They also view the artefacts as instruments with educational and historical significance that must be restored and displayed in a public platform for communal enjoyment, rather than viewing them exclusively as profits that can be gained. Apart from the above-mentioned reasons for collecting, there are no other intentions influencing this behaviour. Hence, based on answers from this and previous questionnaire, it appears as though the chief reason for this activity is entirely to protect the artefacts from threats. This reason unquestionably favours and promoted the welfare of the artefacts.

Table 5.5 The purpose of collecting

The 'what' questions	Participant 1	Participant 2	Participant 3	Participant 4	Participant 5
What is your relationship with the artefacts?	Custodian	Custodian	Custodian	Custodian	Custodian
What purpose do the artefacts serve?	Historical	Historical	Historical	Historical	Educational and historical
How do you view the artefacts?	Candidate finds them to be fantastic and wants to preserve them for the history they behold.	Candidate feels responsible for them and wants to preserve them.	The artefacts excite the candidate as they are a part of history	Candidate feels very protective about them and care for them	Candidate feels that they played an important role in Australia's establishment as a world trader
What do you intend to do with the artefacts?	Store them and ultimately give them to the right authorities	Protect them but the candidate is willing to give them to the right authorities	Display them in a museum in Inverloch	Preserve them till the candidate finds an appropriate place to display them	Store them and display if required

Conclusion

The author has presented an analysis of the site-formation processes that have altered the *Amazon* shipwreck sites and enabled the collecting behaviour of the Inverloch community. By analysing the motivations behind the collecting activity and the relationship between the collectors and the artefacts, this research has demonstrated that the artefact collecting behaviour of the Inverloch residents is non-destructive. The survey results establish that it is unjust to make the same broad generalisations and categorisations about the nature of this behaviour without proper and thorough analysis.

It is common to come across curious individuals during an archaeological investigation, although, it is uncommon for those curious individuals to continually care for the archaeological site and contact the concerned authorities with any new information gained of that site. This behaviour demonstrated by the Inverloch community residents is

unique and advantageous to the protection of the *Amazon* shipwreck. The information gained from this chapter will be concluded to ultimately answer the research question.

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Chapter 6—Conclusion

Research question and aims

This thesis strives to address the following research question: how has the *Amazon* shipwreck site enabled the collecting behaviour of the Inverloch community? To answer this question, four specific aims were presented. Such aims are:

- Provide a history of *Amazon.*

A biography of *Amazon* was provided as part of the historical background to better familiarise with the vessel and associated contents, whereas an account of the wrecking event of the ship was outlined to discern the site's layout and the extent of dispersal post deposition.

- Examine the site-formation processes influencing the alteration and dispersal of the *Amazon* shipwreck site.

This aim investigated the possible post-deposition natural and cultural site-formation processes that could have potentially enabled the collecting behaviour observed in Inverloch. Several theories relating to site-formation processes and the collecting behaviour were gathered and assessed. As a result, the author observed that coastal erosion caused by high energy waves is the primary source of artefact transportation to the shore, which in turn allowed the local community members to collect the artefacts.

- Delineate the extent of the *Amazon* site.

The fieldwork conducted in Inverloch revealed Site B within which four timbers were discovered. Site B's nature and association with the shipwreck was discussed throughout fieldwork, leading to the possibility of Site B belonging to a jetty or the deck structure of *Amazon*. Owing to the presence of the bow-shackle and timber species identical to Site A, the thesis has presented hypotheses that are consistent with Site B belonging to the deck structure rather than a jetty. This possible dispersal of Site B's features indicates the immensely potent hydraulic forces in action at the Inverloch beach.

- Identify the intentions of the behaviour of artefact collecting.

The purpose of this aim was to address the issue of collecting behaviour often being judged negatively. A survey questionnaire developed according to the author's thought-process methodology strived to understand the Inverloch residents' reason, method and purpose of collecting artefacts. The thesis has revealed that the behaviour was harmless to the *Amazon* shipwreck and therefore, categorising artefact collectors with salvors or treasure hunters—who often accumulate artefacts through destructive methods—is unreasonable.

This study reveals that the *Amazo*n shipwreck is predominantly affected by environmental factors that influence its site-formation. The shipwreck is in a high dynamic environmental condition and has undergone two types wreckage post-deposition—buoyant hull fracture and buoyant structure—that have dispersed artefacts to the shore. Identifying this wreckage pattern has also aided in determining Site B's possible association with the vessel. This research has additionally demonstrated that sweeping generalisations and prejudiced categorisations of collecting behaviour in archaeology are unsound and invalid without adequate investigation into the reasons and motivations behind the activity itself. Furthermore, the thesis demonstrates that the environmental conditions encircling the shipwreck have enabled the collecting behaviour of the Inverloch community, as the local residents did not actively seek the collected archaeological remains.

Methodology

This thesis is primarily based on fieldwork conducted between 15 November and 5 December 2018, as part of the Flinders University's Maritime Archaeology Practicum. A wide range of methods were employed, which have aided in addressing the research question. The methods adopted include excavation, metal detecting and walking visual surveys, photography and illustration, cataloguing, timber and metal analysis, community survey and historical research. The walking visual and metal detecting surveys familiarised the research team with the site. The former and the latter aided in relocating the shipwreck under water and Site B respectively. The excavation at Sites A and B revealed archaeological remains that were previously unexposed, thereby contributing to

the overall archaeological record pertinent to *Amazon.* Site documentation has helped to better manage the material culture of *Amazon*, whereas the timber and metal analysis aided in determining the nature of Site B as well as confirming the origins of *Amazon*. The community survey conducted has illuminated the prejudice existing within the archaeology community while addressing the collecting activity and demonstrated that collectors have differing agendas that are also harmless to the archaeological record.

Significance

This thesis provides a new approach to studying shipwrecks by investigating the initialisation of collecting behaviour caused by shipwreck sites. By doing so, the thesis questions common and biased beliefs regarding the collecting behaviour and stresses the necessity to adequately understand the behaviour prior to any negative judgements or characterisations. Such prejudiced assumptions are a persistent gap in archaeological literature that the thesis has filled through a behavioural analysis of the collecting activity. Additionally, the current research has added new knowledge to existing sparse theories or literature pertaining to the *Amazon* shipwreck and the extent of the local community's involvement with the vessel. For that reason, this study is effective as a foundation for future research concerning the shipwreck.

Recommendations for future research

There are several aspects of the shipwreck site that can be pursued for future research. Firstly, this research can be improved upon by developing an environmental assessment plan that quantifies the rate and extent of erosion in the area for the purpose of preserving and managing the shipwreck. Furthermore, establishing a strong relationship with the local community through ongoing communication can aid in monitoring the condition of the shipwreck in a cost-effective way.

Secondly, the *Amazon* shipwreck is a rare exemplar of a nineteenth-century wooden international trading vessel present in Victorian waters. While myriads of iron and steel trading shipwreck exist in this region, *Amazon* is the only wooden trading vessel and holds the potential to reveal more insights into the economic contributions made to Australia

through meat trading practices. Additionally, delving into the technical features of the shipwreck in detail may disclose shipbuilding techniques and traditions of the Jersey Islands.

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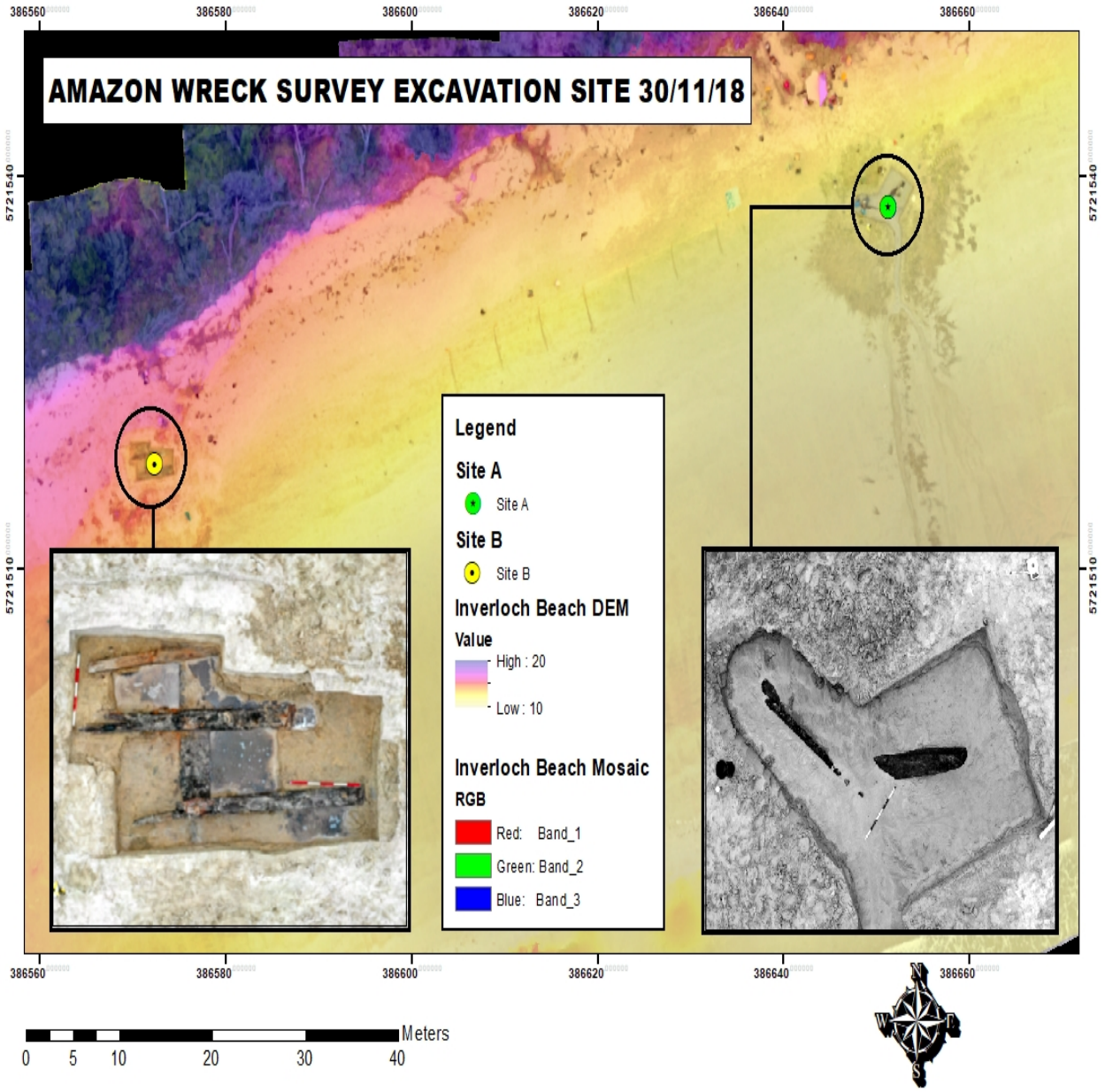
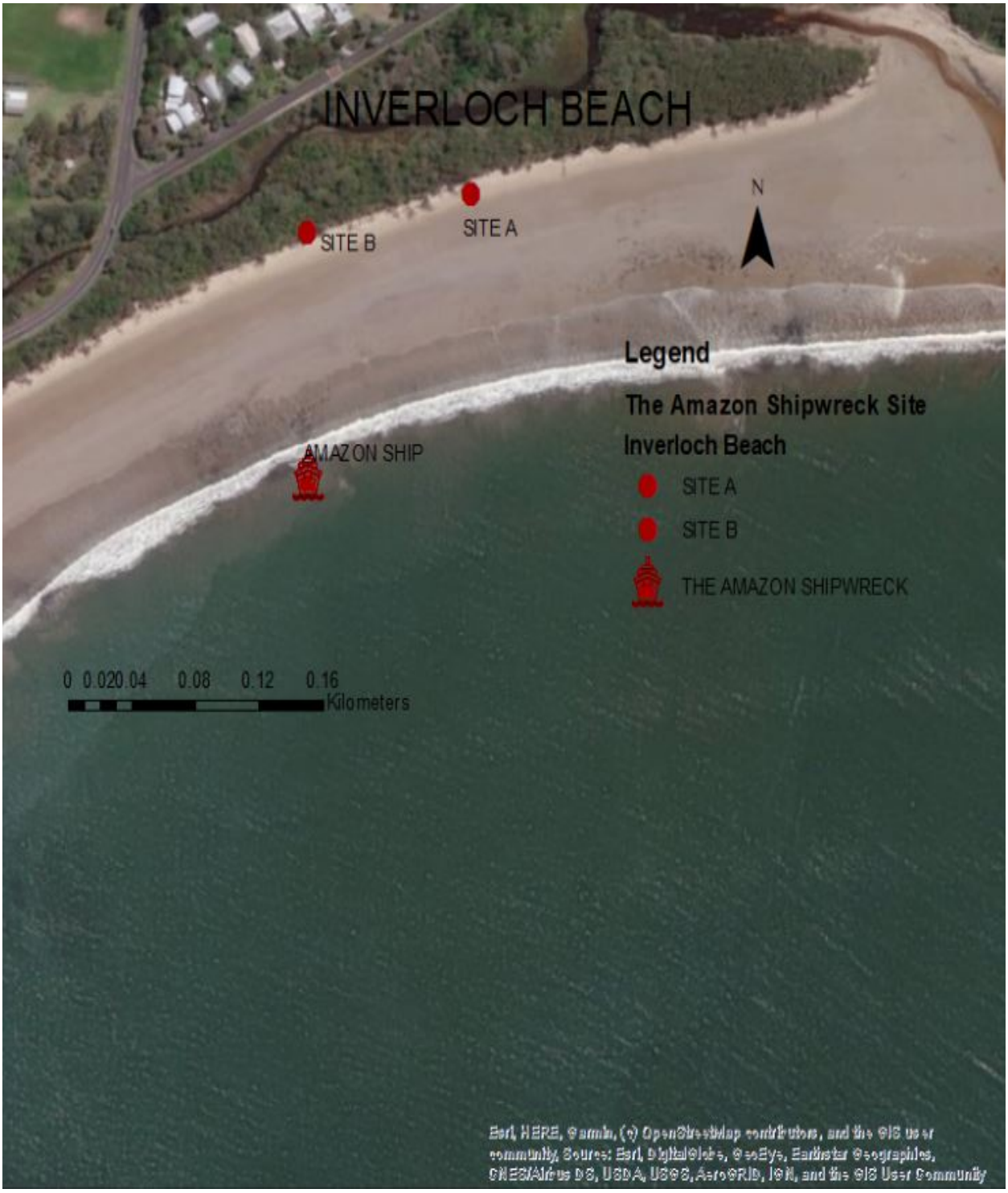
Appendix A

DEM model of the *Amazon* site (map by J. Leach and M.D. Khoiru)



Appendix B

ArcGIS map of shipwreck points in Inverloch beach (map by M. Chandrasekaran)



Appendix C

Artefact Catalogues

Registration No.: 23.00001 Site Name: *Amazon*

Object Name: Deadeye Site Type: Wreck

Local Government Authority: Heritage Victoria

Description: Wooden deadeye, circular with three centre holes. Exterior to the centre are three concentric superficial lines for decoration. All three circular holes continue through to the other side via width. One of the faces is in good condition and shows the original circular shape whilst the other holes areas appear oblong due to wear. The face in poorer condition shows many scratches and cracks, due to dog bites as per custodians' description of acquisition. The width of the object has a smooth man-made indentation, half mooned. Has been submerged in a bucket of fresh water for preservation.

Material: Wood Condition: Good- Fair

Object Dimensions

Length [mm]:

Width [mm]:

Thickness [mm]:

Photograph(s)

File Name(s)	Details	Photographer
LMP_0754→ LMP_0777	Top, back	Robin Galloso,
	Profile #1, #2	Catherine King

Illustration(s)

Type: Scale Drawing (1:2)

Title: Deadeye Drawing Artist: Liam Phillips

Custodian: Trilby

Catalogued By: Katherine Laczko, Shekinah Landicho

Registration No.: 23.00002 Site Name: *Amazon*

Object Name: Copper sheathing Site Type: Wreck

Local Government Authority: Heritage Victoria

Description: Large rectangular sheet of copper sheathing. Square-copper tack marks approximately 6-8mm diameter, 35mm approximate distance from one hole to another. About 5mm distance from edge to perforated outline of tack marks. Slightly crumpled with multiple indentations. Tack marks aligned on a diagonal axis within tacked bordering.

Material: Metal, copper Condition: Good–Fair

Object Dimensions

Length [mm]: 1205mm

Width [mm]: 355mm

Thickness [mm]: 2mm

Photograph(s)

File Name(s)	Details	Photographer
LMP_0393→ LMP_0450	Top, back	Robin Galloso, Catherine King

Illustration(s): Not Available

Custodian: Trilby

Catalogued By: Katherine Laczko, Shekinah Landicho

Registration No.: 23.0003 Site Name: *Amazon*

Object Name: Copper Sheathing Fragment Site Type: Wreck

Local Government Authority: Heritage Victoria

Description: Fragment of metal sheathing. Square perforation, approx. 5mm diameter, along edge. Bent. Very corroded. Large areas of patina visible.

Material: Metal, Copper Condition: Fair

Object Dimensions

Length [mm]: 115

Width [mm]: 70

Thickness [mm]: 2

Photograph(s)

File Name(s)	Details	Photographer
LMP_0333→ LMP_0355	Top, back	Robin Galloso, Catherine King

Illustration(s)

Type: Scale Drawing (1:1)

Title: Corroded Copper Fragment Artist: Robin Galloso

Custodian: Adrian Brewer

Catalogued By: Shekinah Landicho

Registration No.: 23.00004 Site Name: *Amazon*

Object Name: Small Copper Fragment #2 Site Type: Wreck

Local Government Authority: Heritage Victoria

Description: Copper sheathing fragment of irregular shaping. Bent. One side folded. Patina largely present on one side.

Material: Metal, copper alloy Condition: Acceptable

Object Dimensions

Length [mm]: 230

Width [mm]: 120

Thickness [mm]: 0.75- 1.0

Photograph(s)

File Name(s)	Details	Photographer(s)
LMP_0357→ LMP_0377	Top, back	Robin Galloso, Catherine King

Illustration(s)

Type: Scale Drawing (1:1)

Title: Copper Sheathing Fragment Artist: Robin Galloso

Custodian: Adrian Brewer

Catalogued By: Shekinah Landicho

Registration No.: 23.00005 Site Name: *Amazon*

Object Name: Fairlead Site Type: Wreck

Local Government Authority: Heritage Victoria

Description: Wooden fairlead with various cracks. Broken barrier between two large holes within face. Grooved indentation along height. Rigid indentation along centre circumference extending from one end of groove to another groove end.

Material: Wood Condition: Fair

Object Dimensions

Length [mm]: 85

Width [mm]: 85

Thickness [mm]: 85

Photograph(s)

File Name(s)	Details	Photographer(s)
LMP_0582→ LMP_0604	Top, back	Robin Galloso,
	Profile #1	Catherine King

Profile #2 Catherine King

Illustration(s)

Type: Scale Drawing (1:1)

Title: My Fairlead Artist: Robin Galloso

Custodian: Daryl

Catalogued By: Shekinah Landicho

Registration No.: 23.00006 Site Name: *Amazon*

Object Name: Large Rope Section Site Type: Wreck

Local Government Authority: Heritage Victoria

Description: Piece of large rope part of standing rigging. Section has been wormed, seized and parcelled. One end heavily frayed. Broken leather parcelling.

Material: Rope- unknown fibre. Leather parcelling. Condition: Fragile. Most parts missing

Object Dimensions

Length [mm]: 170

Width [mm]: 70

Thickness [mm]: 70

Photograph(s)

File Name(s)	Details	Photographer(s)
LMP_0605→ LMP_0616	Top, back	Robin Galloso,
	Profile #1	Catherine King

Profile #2 Catherine King

Illustration(s)

Type: Sketch Drawing

Title: Thread Lightly Artist: Robin Galloso

Custodian: Daryl

Catalogued By: Shekinah Landicho

Registration No.: 23.00007 Site Name: *Amazon*

Object Name: Copper Bolt #1 Site Type: Wreck

Local Government Authority: Heritage Victoria

Description: Long copper bolt with head. Slight bend. Patina presence.

Material: Metal, copper alloy Condition: Excellent, intact

Object Dimensions

Length [mm]: 385

Head Diameter [mm]: 35, max.

Diameter [mm]: 20

Photograph(s)

File Name(s)	Details	Photographer(s)
LMP_0535→ LMP_0543	Profile #1	Robine Galloso, Catherine King

Illustration(s)

Type: Scale Drawing (1:1)

Title: Intact Bolt Artist: Madhumathy Chandrasekaran

Custodian: Daryl

Catalogued By: Shekinah Landicho

Registration No.: 23.00008 Site Name: *Amazon*

Object Name: Copper Bolt #2 Site Type: Wreck

Local Government Authority: Heritage Victoria

Description: Long copper bolt, bent. Patina present. Two bends. Exposed bolt opening on crack near base, and smoothed curvature towards head.

Material: Metal, copper alloy Condition: Good

Object Dimensions

Length [mm]

Unbent: 399

Bent: 410

Diameter[mm]: 25

Circumference [mm]: 85

Photograph(s)

File Name(s)	Details	Photographer(s)
LMP_0560→ LMP_0577	Profile	Robin Galloso, Catherine King

Illustration(s)

Type: Scale Drawing (1:1)

Title: Bent Bolt Artist: Katherine Laczko

Custodian: Daryl

Catalogued By: Shekinah Landicho

Registration No.: 23.00009 Site Name: *Amazon*

Object Name: Copper Tacks (3) Site Type: Wreck

Local Government Authority: Heritage Victoria

Description: Three small bent copper tacks. All bent at base head and tip. Two tacks sharply bent at tip, one with U-bend visible.

Material: Metal, copper alloy Condition: Great-- intact.

Object Dimensions

Tack 1

Length [mm]: 28

Head Width [mm]: 4.5

Head Circumference [mm]: 30

Head Diameter, max [mm]: 6

Shaft Width [mm]: 21

Tack 2

Length [mm]: 24

Head Width [mm]: 5

Head Circumference [mm]: 32

Head Diameter, max [mm]: 5

Shaft Width [mm]: 19

Tack 3

Length [mm]: 25

Head Width [mm]: 3

Head Circumference [mm]: 30

Head Diameter, max [mm]: 4

Shaft Width [mm]: 1

Photograph(s)

File Name(s) LMP_0617→ LMP_0623

Details: Profile; top

Photographer: Robin Galloso, Catherine King

Illustration(s) Not Available

Custodian: Peter

Catalogued By: Shekinah Landicho

Registration No.: 23.00010 Site Name: *Amazon*

Object Name: Small Copper Strip Site Type: Wreck

Local Government Authority: Heritage Victoria

Description: Corroded copper metal strip with jagged, square perforations. One length displays clean straight-lined edge. Other side length is corroded and jagged. Fragmented.

Material: Metal, copper alloy Condition: Fair

Object Dimensions

Length [mm]: 296

Width [mm]: 31

Height [mm]: 1

Tack Hole Diameter [mm]: 7

Photograph(s)

File Name(s)	Details	Photographer(s)
LMP_0624→ LMP_0627	Top, back	Robin Galloso, Catherine King

Illustration(s)

Type: Scale Drawing (1:1)

Title: Small Copper Strip Artist: Robin Galloso

Custodian: Peter

Catalogued By: Shekinah Landicho

Registration No.: 23.00011 Site Name: *Amazon*

Object Name: Copper Sheet Fragment #1 Site Type: Wreck

Local Government Authority: Heritage Victoria

Description: Large metal copper sheet with hole perforations alongside edge and middle. Corroded. Patine present. Displays jagged edges.

Material: Metal, copper alloy Condition: Fair

Object Dimensions

Length [mm]: 843, bent

Length, max [mm]: 868, bent

Width [mm]: 359

Height [mm]: 2

Hole Diameter, max [mm]: 12

Photograph(s)

File Name(s)	Details	Photographer(s)
LMP_0779→ LMP_0788	Back, front	Robin Galloso, Catherine King

Illustration(s)

Type: Sketch (1:1)

Title: Maker's Mark Artist: Howard Boyle

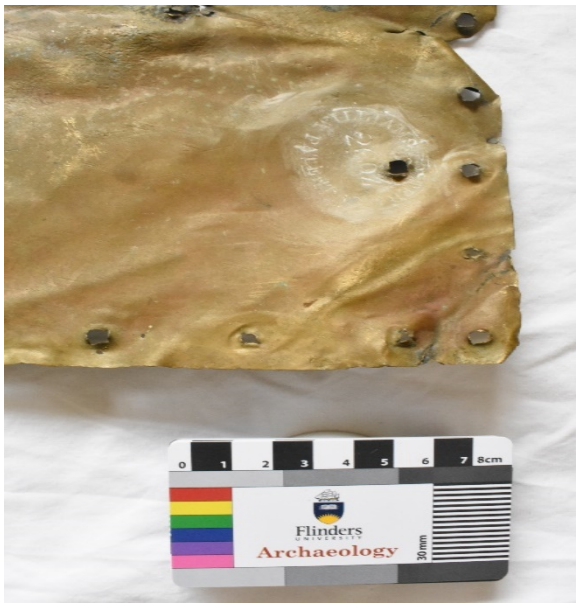
Custodian: Grant

Catalogued By: Shekinah Landicho

Registration No.: 23.00012 Site Name: *Amazon*

Object Name: Copper Sheet with Tack Site Type: Wreck

Local Government Authority: Heritage Victoria



Description: Segment of large metal copper sheet. Hole perforations alongside edges. Diagonally- spaced perforations present within face. Severely crumpled on single edge width. Tack included. Corroded; patina present. Maker's mark, "Williams Foster," present.

Material: Metal, copper alloy Condition: Good

Object Dimensions

Length [mm]: 611

Width [mm]: 349

Thickness [mm]: 2

Photograph(s)

File Name(s)	Details	Photographer(s)
LMP_0451→ LMP_0534	Top, back	Robin Galloso, Catherine King

Illustration(s)

Type: Scale Drawing (1:1)

Title: 23.00012 Artist: Catherine King

Custodian: Peter

Catalogued By: Shekinah Landicho

Registration No.: 23.00013 Site Name: *Amazon*

Object Name: Copper Sheet Fragment #2 Site Type: Wreck

Local Government Authority: Heritage Victoria

Description: Section of copper sheet. Straightened edges on both lengths and one width. Other width is jagged. Large crack formed near middle of section. Hole perforations alongside edging. Diagonal- lining perforations on face. Corroded, visible patina.

Material: Metal, copper alloy Condition: Acceptable

Object Dimensions

Length [mm]: 769

Width [mm]: 355

Height [mm]: 2

Photograph(s)

File Name(s)	Details	Photographer(s)
LMP_0628→ LMP_0633	Top, back	Robin Galloso, Catherine King

Illustration(s): Not Available

Custodian: Inverloch Historical Society

Catalogued By: Shekinah Landicho

Registration No.: 23.00014 Site Name: *Amazon*

Object Name: Large Copper Sheathing Site Type: Wreck

Local Government Authority: Heritage Victoria

Description: Large metal sheet with straight- lined, intact edges. Perforations alongside edges and within face in a diagonally- line manner. Gold surface colouring. Various dents along face. Single jagged corner edge. Minor cracks on face.

Material: Metal, copper alloy Condition: Excellent

Object Dimensions

Length [mm]: 1210

Width [mm]: 355

Height [mm]: 2

Photograph(s)

File Name(s)	Details	Photographer(s)
LMP_0635→ LMP_0658	Top, back	Robin Galloso, Catherine King

Illustration(s): Not Available

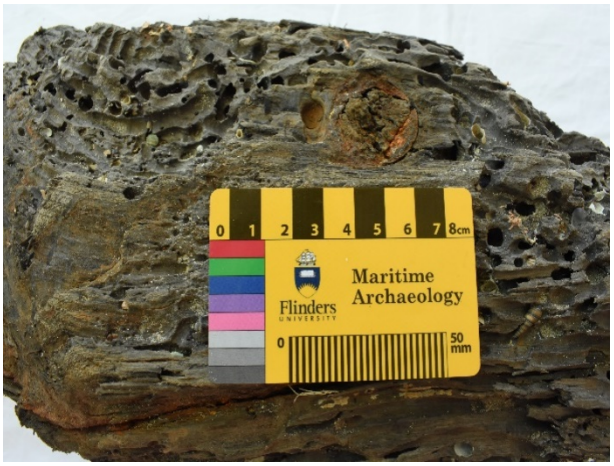
Custodian: Inverloch Historical Society

Catalogued By: Shekinah Landicho

Registration No.: 23.00015 Site Name: *Amazon*

Object Name: Timber Frame Site Type: Wreck

Local Government Authority: Heritage Victoria



Description: Wooden frame chunk, timber. Trunnell and spike hole present. Very heavily massacred by teredo worms.

Material: Wooden, timber Condition: Poor

Object Dimensions

Length [mm]: 488

Width [mm]: 202

Height [mm]: 172

Circumference [mm]: 532

Photograph(s)

File Name(s)	Details	Photographer(s)
LMP_0659→ LMP_0687	Top, back	Robin Galloso, Catherine King

Illustration(s)

Type: Sketch Drawing

Title: Shipworm Timber Artist: Madhumathy Chandrasekaran

Custodian: Inverloch Historical Society

Catalogued By: Shekinah Landicho

Registration No.: 23.00016 Site Name: *Amazon*

Object Name: Full Copper Sheet, Folded Site Type: Wreck

Local Government Authority: Heritage Victoria

Description: Full copper sheet that has been sharply folded to various degrees. Corroded. Perforations alongside edge and face.

Material: Metal, copper alloy Condition: Poor

Object Dimensions

Length [mm]: 1124

Width [mm]: 356

Thickness [mm]: 310

Photograph(s)

File Name(s)	Details	Photographer(s)
LMP_0688→ LMP_0698	Top, back	Robin Galloso,
	Profile #1	Catherine King

Illustration(s): Not Available

Custodian: Inverloch Historical Society

Catalogued By: Shekinah Landicho

Registration No.: 23.00017 Site Name: *Amazon*

Object Name: Copper Sheet Fragment #3 Site Type: Wreck

Local Government Authority: Heritage Victoria

Description: Fragment metal sheathing. Various hole perforations on face. Jagged edges. Crumpled piece. Folded.

Material: Metal, copper alloy Condition: Poor

Object Dimensions

Length [mm]: 528

Width [mm]: 167

Thickness [mm]: 53

Photograph(s)

File Name(s)	Details	Photographer(s)
LMP_ 0699→ LMP_0707	Top, back	Robin Galloso, Catherine King

Illustration(s): Not Available

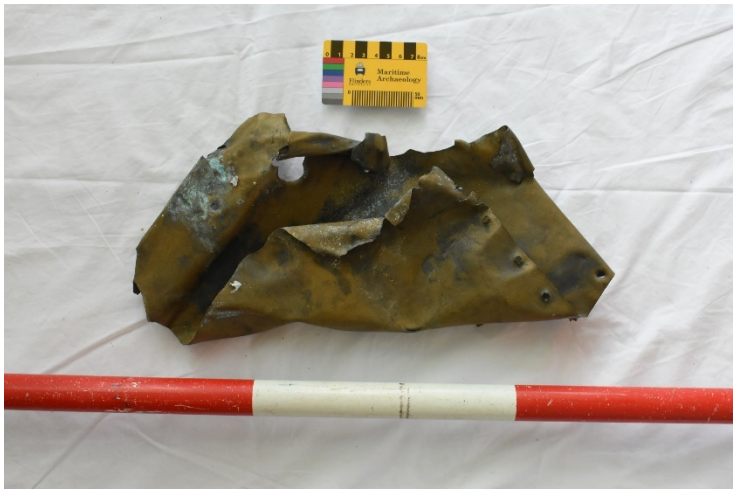
Custodian: Inverloch Historical Society

Catalogued By: Shekinah Landicho

Registration No.: 23.00018 Site Name: *Amazon*

Object Name: Copper Sheet Fragment #4 Site Type: Wreck

Local Government Authority: Heritage Victoria



Description: Folded metal copper sheet section. Jagged edges. Perforations alongside one edge and face. Sharply bent. Torn fragment.

Material: Metal, copper alloy Condition: Poor

Object Dimensions

Length [mm]: 380

Width [mm]: 167

Height [mm]: 53

Photograph(s)

File Name(s)	Details	Photographer(s)
LMP_0708→ LMP_0710	Top, back	Robin Galloso, Catherine King

Illustration(s): Not Available

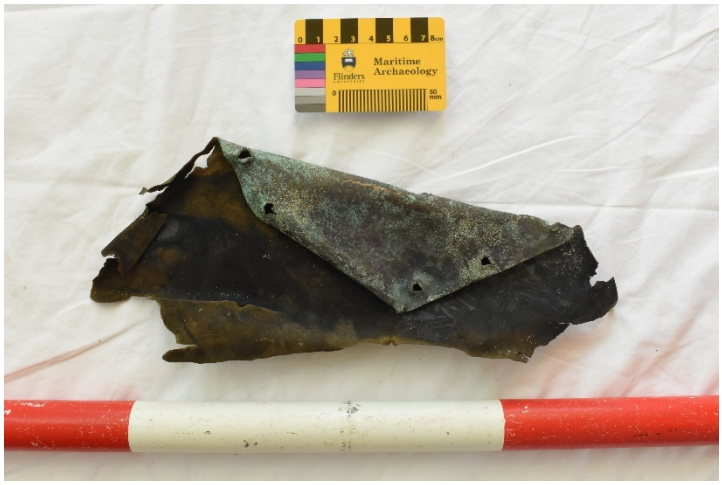
Custodian: Inverloch Historical Society

Catalogued By: Shekinah Landicho

Registration No.: 23.00019 Site Name: *Amazon*

Object Name: Copper Sheet Fragment #5 Site Type: Wreck

Local Government Authority: Heritage Victoria



Description: Fragment copper piece. Bent. Jagged sharp edges. Small, and torn. Corrosion, patina present.

Material: Metal, copper alloy Condition: Poor

Object Dimensions

Length [mm]: 301

Width [mm]: 129

Height [mm]: 29

Photograph(s)

File Name(s)	Details	Photographer(s)
LMP_0711→ LMP_0713	Top, back	Robin Galloso, Catherine King

Illustration(s): Not Available

Custodian: Inverloch Historical Society

Catalogued By: Shekinah Landicho

Registration No.: 23.00020 Site Name: *Amazon*

Object Name: Small Copper Strip #2 Site Type: Wreck

Local Government Authority: Heritage Victoria

Description: Small, corroded copper strip. Perforations alongside one edge. Straight-lined edging on single length- side and width- side. Other length and width edge jagged. Patina present.

Material: Metal, copper alloy Condition: Acceptable

Object Dimensions

Length [mm]: 254

Width [mm]: 61

Height [mm]: 25

Photograph(s)

File Name(s)	Details	Photographer(s)
LMP_0715→ LMP_0719	Top, back	Robin Galloso, Catherine King

Illustration(s): Not Available

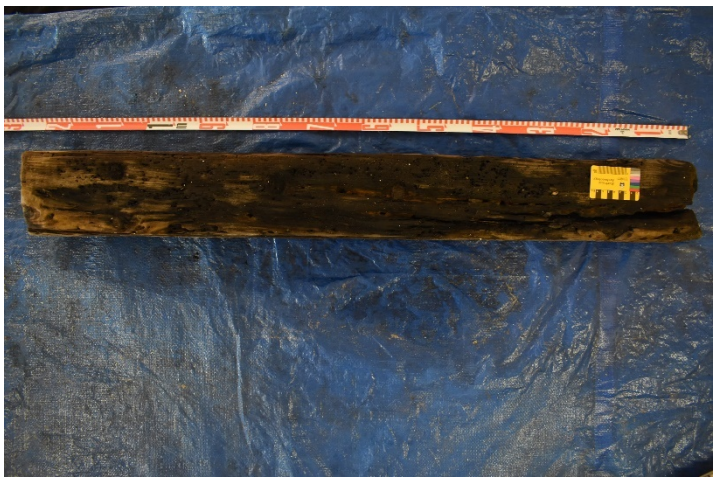
Custodian: Inverloch Historical Society

Catalogued By: Shekinah Landicho

Registration No.: 23.00021 Site Name: *Amazon*

Object Name: Large Wet Timber with Treenails Site Type: Wreck

Local Government Authority: Heritage Victoria



Description: Large wet timber with tree nails.

Material: Wood Condition: Poor

Object Dimensions

Length [mm]: 1210

Width [mm]: 127

Thickness [mm]: 148

Photograph(s)

File Name(s)	Details	Photographer(s)
LMP_0793→ LMP_0816	Profile #1, 2, 3, 4	Robin Galloso, Catherine King

Illustration(s)

Type: Detailed Sketch

Title: Timber Artist(s): Liam Phillips, Pornnatcha “Jo” Sankhaprasit, Muslim “Dimas” Khoiru

Custodian: Andrew and Marian Chapman

Catalogued By: Shekinah Landicho

Registration No.: 23.00022 Site Name: *Amazon*

Object Name: Iron Rigging Concretion Site Type: Wreck

Local Government Authority: Heritage Victoria

Description: Heavy iron rigging concretion with rope imprint. Much corrosion. Orange discoloration on surface. Triangular shape.

Material: Metal, copper alloy Condition: Acceptable

Object Dimensions

Edge- to- Edge Lengths [mm]: 392, 295, 330

Height [mm]: 100

Diameter [mm]: 342

Photograph(s)

File Name(s)	Details	Photographer(s)
LMP_0720→ LMP_0727	Top, back	Robin Galloso, Catherine King

Illustration(s): Not Available

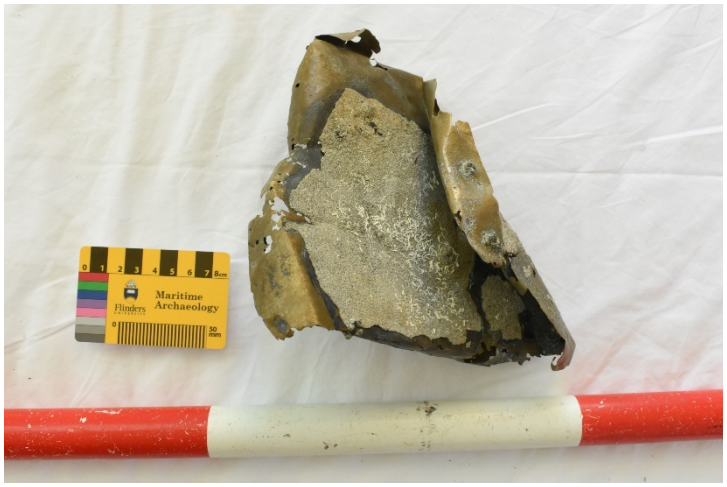
Custodian: Daryl

Catalogued By: Shekinah Landicho

Registration No.: 23.00023 Site Name: *Amazon*

Object Name: Copper Sheet Fragment #6 Site Type: Wreck

Local Government Authority: Heritage Victoria



Description: Copper metal fragment, bent in trangule formation. Perforations along single edge. Sharp, jagged exterior edging on others. Heavy corrosion.

Material: Metal, copper alloy Condition: Poor

Object Dimensions

Length [mm]: 290

Width [mm]: 184

Thickness [mm]: 2

Photograph(s)

File Name(s)	Details	Photographer(s)
LMP_0728→ LMP_0732	Top, back	Robin Galloso, Catherine King

Illustration(s): Not Available

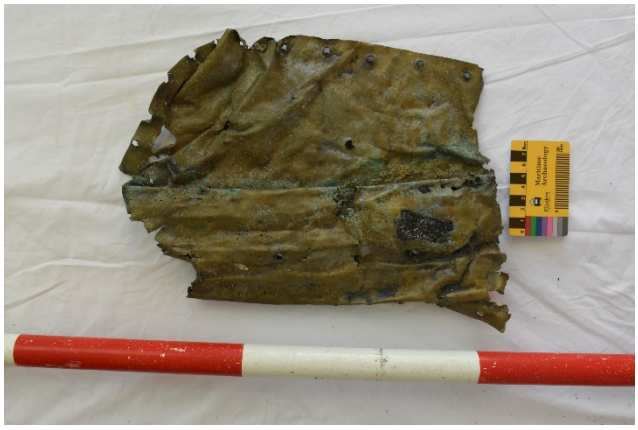
Custodian: Jackie

Catalogued By: Shekinah Landicho

Registration No.: 23.00024 Site Name: *Amazon*

Object Name: Copper Sheet Fragment #7 Site Type: Wreck

Local Government Authority: Heritage Victoria



Description: Fragmented copper metal piece from sheet. Hole perforations alongside interior or single edge. Other edges display sharped, jagged tearing. Crumpled middle. Hole perforations present on face. Heavily corrode; visible patina.

Material: Metal, copper alloy Condition: Poor

Object Dimensions

Length [mm]: 336

Width [mm]: 236

Width [mm]: 26

Photograph(s)

File Name(s)	Details	Photographer(s)
LMP_0733→ LMP_0741	Top, back	Robin Galloso, Catherine King

Illustration(s): Not Available

Custodian: Jackie

Catalogued By: Shekinah Landicho

Registration No.: 23.00025 Site Name: *Amazon*

Object Name: Copper Sheet Fragment #8 Site Type: Wreck

Local Government Authority: Heritage Victoria

Description: Small, fragmented piece of copper sheathing. Heavy corrosion; large patina visible on surface. Crumpled.

Material: Metal, copper alloy Condition: Poor

Object Dimensions

Length [mm]: 160

Width [mm]: 64

Thickness [mm]: 1

Photograph(s)

File Name(s)	Details	Photographer(s)
LMP_0737→ LMP_0741	Top, back	Robin Galloso, Catherine King

Illustration(s): Not Available

Custodian: Jackie

Catalogued By: Shekinah Landicho

Registration No.: 23.00026 Site Name: *Amazon*

Object Name: Copper Sheet Site Type: Wreck

Local Government Authority: Heritage Victoria

Description: Full metal copper sheet, bent and folded with multiple hole perforations. Perforations punctured within edging of sheet and on face. Corroded; patina present.

Material: Metal, copper alloy Condition: Poor

Object Dimensions

Length [mm]: 1173

Width [mm]: 365

Thickness [mm]: 2

Photograph(s)

File Name(s)	Details	Photographer(s)
LMP_0751→ LMP_0757	All sides	Robin Galloso, Catherine King

Illustration(s): Not Available

Custodian: Inverloch Historical Society

Catalogued By: Shekinah Landicho

Registration No.: 23.00027 Site Name: *Amazon*

Object Name: Copper Sheet Fragment #9 Site Type: Wreck

Local Government Authority: Heritage Victoria

Description: Bent metal copper fragmented section with hole perforations alongside interior edges and face. Heavily corroded; patina visible on surface.

Material: Metal, copper alloy Condition: Poor

Object Dimensions

Length [mm]: 860

Width [mm]: 351

Thickness [mm]: 2

Photograph(s)

File Name(s)	Details	Photographer(s)
LMP_0758→ LMP_0760	Top, back	Robin Galloso, Catherine King

Illustration(s) Not Available

Custodian: Inverloch Historical Society

Catalogued By: Shekinah Landicho

Appendix D

Timber identification results

KNOW YOUR WOOD
19 Benambra Street, South Oakleigh,
Victoria 3167, AUSTRALIA
Phone: 03 95127523
Mobile: 0499 300 208
Email:knowyourwood1@gmail.com
Provider of wood identification services.

6th December, 2018

WOOD IDENTIFICATION RESULTS

Dr Wendy van Duivenvoorde
Associate Professor in Maritime Archaeology
Flinders University
GPO Box 2100
Adelaide SA 5001

Dear Wendy,
Re: Identification of two wood samples from the Cervantes shipwreck; Your request – 10th August, 2018.
Following microscopic examination, in my opinion the structure of the wood specimens is consistent with[1]:

Sample Number & Location	Description	Scientific name	Commercial or Trade name + Remarks
T 12	Hull plank 4	*Pinus sylvestris*	BALTIC PINE
T 02	Site B	*Quercus ?*[2] *robur*	WHITE OAK GROUP
T 14	Frame timber	*Quercus ?*[2] *robur*	WHITE OAK GROUP
T15	Hull planking 2, Treenail	*Quercus ?*[2] *robur*	WHITE OAK GROUP
T 04	Site B	*Quercus ?*[2] *robur*	WHITE OAK GROUP
# 10 SW end	Hull plank	*Pinus sylvestris*	BALTIC PINE
T 06	Site B	*Quercus ?*[2] *robur*	WHITE OAK GROUP
T 01	Site B	*Pinus sylvestris*	BALTIC PINE
T 07	Site B	*Pinus sylvestris*	BALTIC PINE
T16	Hull plank 6, Inside	*Pinus sylvestris*	BALTIC PINE
T 17	Dead wood	*Quercus ?*[2] *robur*	WHITE OAK GROUP

I hope the information will help with your research and evaluation process.
Best regards,
Jugo Ilic
Jugo Ilic MSc, Dr(Forest)Sc, FIAWSc

---

[1] *Disclaimer*: The content of this letter is provided in good faith and whilst Dr Jugo Ilic has endeavoured to ensure that the information contained in it is correct and accurate at the time of preparation, he does not accept any liability arising from its use whether provided directly by the above-named client or indirectly from the client providing it to a third party in this or any other format.

[2] "?" indicates that there are other similar species which cannot be differentiated on the basis of wood structure.

Appendix E

Transcribed Newspaper Accounts

Geelong Advertiser (Victoria: 1859–1929)

Friday 1 Jan 1864, p.2.

The following account of the wreck of this barque is given by Captain Mathews (Lloyd's agent), who visited the scene of disaster, having gone and returned therefrom by. the- colonial steam-sloop Victoria.

The Victoria left Hobson's Bay at an early hour on Monday last, arrived at Cape Patterson at daylight on the following day, and having embarked the crew, who were in good health, left again at 10a.m., and arrived in Hobson's Bay at half-past 9 on Tuesday night. On arrival at the wreck, which was found to be about one-mile south-west of Anderson's Inlet, and eight miles eastward of Cape Patterson, lying broadside on to the beach, with mizenmast and bowsprit standing, embedded about nine feet in the sand, the water inside her being level with the beams. At low water the ship is high and dry. About 60 feet of the keel, with portion of the fore foot, has been washed ashore on the beach, the decks are more or less started, the hull slightly hogged, the metal stripped off in several places, and the boats, two in number, lying on the beach stove. There were about 100 casks of provisions as cargo, all of which are submerged in the hold. The following account is condensed from the ship's log-book:

Left Hobson's Bay for Mauritius on the morning of the 12th of December. Cleared the Heads the same evening at 8 p.m.; the weather was dark, gloomy, and threatening; and the barometer began to fall so rapidly that sail was shortened to double-reefed topsails and reefed courses. On the 14 th (nautical time) the wind still continued to blow hard from south, with dirty, rainy weather. At 2 a.m. the wind suddenly shifted to S.W., Cape Otway at the time bearing W.N.W. 14 miles. At 4 a.m. the gale increased to a hurricane. Hove the ship to, with head to the southward and eastward, under a close-reefed maintopsail. At 6 a.m. the storm increased still more, and the sea was frightfully high; the maintopsail was then taken in, and the ship kept under the storm staysail, coming up to S.S.E. and falling off to E.S.E. At 3 a.m. on the following day the storm continued with unabated violence, if anything increasing, and the weather becoming very thick the ship was kept away for Port Phillip Heads, steering a N.N.E. course. At 10 am. There was no alteration in the weather. At noon obtained soundings,

and, finding only 15 fathoms, hauled the ship up to S.E. At this time the breakers were distinctly audible, but no land could be seen. The dangerous proximity to the land made requisite the reefed fore and main courses being set, even at the risk of losing the masts or yards. At noon it was found that the water had deepened to 25 fathoms, and at the same time a glimpse of the land was obtained, and it was supposed to be near Cape Patten. It was only a momentary clear up, as the weather immediately after became as thick as ever. All hopes of making Port Phillip Heads were then given up, and the ship was kept on the same tack, but she was by the force of the gale drifting fast to leeward. The lead was kept going, and the soundings then obtained were 30 fathoms. At 3 p.m. there was no change for the better, the barometer continuing to fall, the soundings being then 40 fathoms, but at midnight they had again decreased to 36, and shoaling very fast.

On the 15th there was no abatement in either wind or weather. At 4 a.m. a heavy squall struck the ship, and split the fore course and maintopmast-staysail. At this time the ship was wore round with her head to the north-west, but the water again shallowing to 25 fathoms, she was at 5 a.m. wore round again to the southeast, the shift drifting bodily to leeward and shoaling the water fast. At 6a.m. there was only 20 fathoms, and that fearful cry, 'Breakers on the port bow, and rocks visible right ahead." was given, and it was then seen by all that the vessel was embayed; the land at this juncture was also seen, but the weather was too thick for it to be recognised. Then the dreadfully perilous situation was seen by all— that the vessel could not be saved, and the lives of all were hanging on the will of Divine Providence. All the crew were then called aft, and a consultation held as to what could best be done for the preservation of their lives; and it was decided to wear the ship round again, and endeavour to stand out on the other tack. In attempting it the ship took so long to pay off that before she got entirely round, she took the ground, and the sea made clean breaches over her, washing and carrying everything off the decks. The canvas was, however, kept on to harden her well on to the beach; and when it was found that she could get no further, the fore and main masts were cut away to prevent her going to pieces.

The whole onboard had by this time been kept on deck in a constant state of suspense, and were so exhausted that although the ship grounded at 10 a.m. it was 3 p.m. before they all got safely ashore, and it was done at no small risk. On landing, it was soon ascertained that they were on an apparently barren coast, no habitation

being visible. On the l6th search was again made to seek a house or track, but none could be found. On the 21st they were rewarded by finding two uninhabited houses. This gave them some encouragement to persevere further, but without avail, as they were much afraid of being lost in the density of the scrub. On the 23rd the son of the Hon. Mr. Heales, a young man about 17 years of age, who is on a station near Cape Liptrap, saw what he supposed to be a ship's mast, and, as he was en route for Melbourne, went to ascertain what it could be; and having heard the particulars, persuaded Captain Ogier to accompany him, and, as he had a spare horse, placed it at his disposal. Great delay was caused on the journey, as sailors are not, generally speaking, good horsemen, but the old saying- “a good turn never loses its reward.” Captain Mathews has requested us to state that when he applied to the Government for assistance to fetch up the crew of the ill-fated vessel, it was immediately granted, for which, on the part of the underwriters and himself, he begs to return thanks. Captain Ogier also requests to tender his thanks

The South Australian Register (Adelaide SA: 1839–1900)

Wednesday 13 January 1864, p.2.

Wreck of the Barque *Amazon*—The Geelong Advertiser of the 1st instant publishes the following account of the wreck of this barque, which sailed from Port Adelaide for Melbourne on the 14th November last with part of her original cargo tor Mauritius. The particulars are supplied by Captain Mathews (Lloyd's agent), who visited the scene of disaster, having gone and returned therefrom by the colonial steam-sloop Victoria.

The Victoria left Hobson's Bay at an early hour on Monday last, arrived at Cape Patterson at daylight on the following day, and having embarked the crew, who were in good health, left again at 10a.m., and arrived in Hobson's Bay at half-past 9 on Tuesday night. On arrival at the wreck, which was found to be about one-mile south-west of Anderson's Inlet, and eight miles eastward of Cape Patterson, lying broadside on to the beach, with mizenmast and bowsprit standing, embedded about nine feet in the sand, the water inside her being level with the beams. At low water the ship is high and dry. About 60 feet of the keel, with portion of the fore foot, has been washed ashore on the beach, the decks are more or less started, the hull slightly hogged, the metal stripped off in several places, and the boats, two in number, lying on the beach stove. There were about 100 casks of provisions as cargo, all of which are submerged in the hold. The following account is condensed from the ship's log-book:

Left Hobson's Bay for Mauritius on the morning of the 12th of December. Cleared the Heads the same evening at 8 p.m.; the weather was dark, gloomy, and threatening; and the barometer began to fall so rapidly that sail was shortened to double-reefed topsails and reefed courses. On the 14 th (nautical time) the wind still continued to blow hard from south, with dirty, rainy weather. At 2 a.m. the wind suddenly shifted to S.W., Cape Otway at the time bearing W.N.W. 14 miles. At 4 a.m. the gale increased to a hurricane. Hove the ship to, with head to the southward and eastward, under a close-reefed maintopsail. At 6 a.m. the storm increased still more, and the sea was frightfully high; the maintopsail was then taken in, and the ship kept under the storm staysail, coming up to S.S.E. and falling off to E.S.E. At 3 a.m. on the following day the storm continued with unabated violence, if anything increasing, and the weather becoming very thick the ship was kept away for Port Phillip Heads, steering a N.N.E. course. At 10 am. There was no alteration in the weather. At noon obtained soundings,

and, finding only 15 fathoms, hauled the ship up to S.E. At this time the breakers were distinctly audible, but no land could be seen. The dangerous proximity to the land made requisite the reefed fore and main courses being set, even at the risk of losing the masts or yards. At noon it was found that the water had deepened to 25 fathoms, and at the same time a glimpse of the land. was obtained, and it was supposed to be near Cape Patten. It was only a momentary clear up, as the weather immediately after became as thick as ever. All hopes of making Port Phillip Heads were then given up, and the ship was kept on the same tack, but she was by the force of the gale drifting fast to leeward. The lead was kept going, and the soundings then obtained were 30 fathoms. At 3 p.m. there was no change for the better, the barometer continuing to fall, the soundings being then 40 fathoms, but at midnight they had again decreased to 36, and shoaling very fast.

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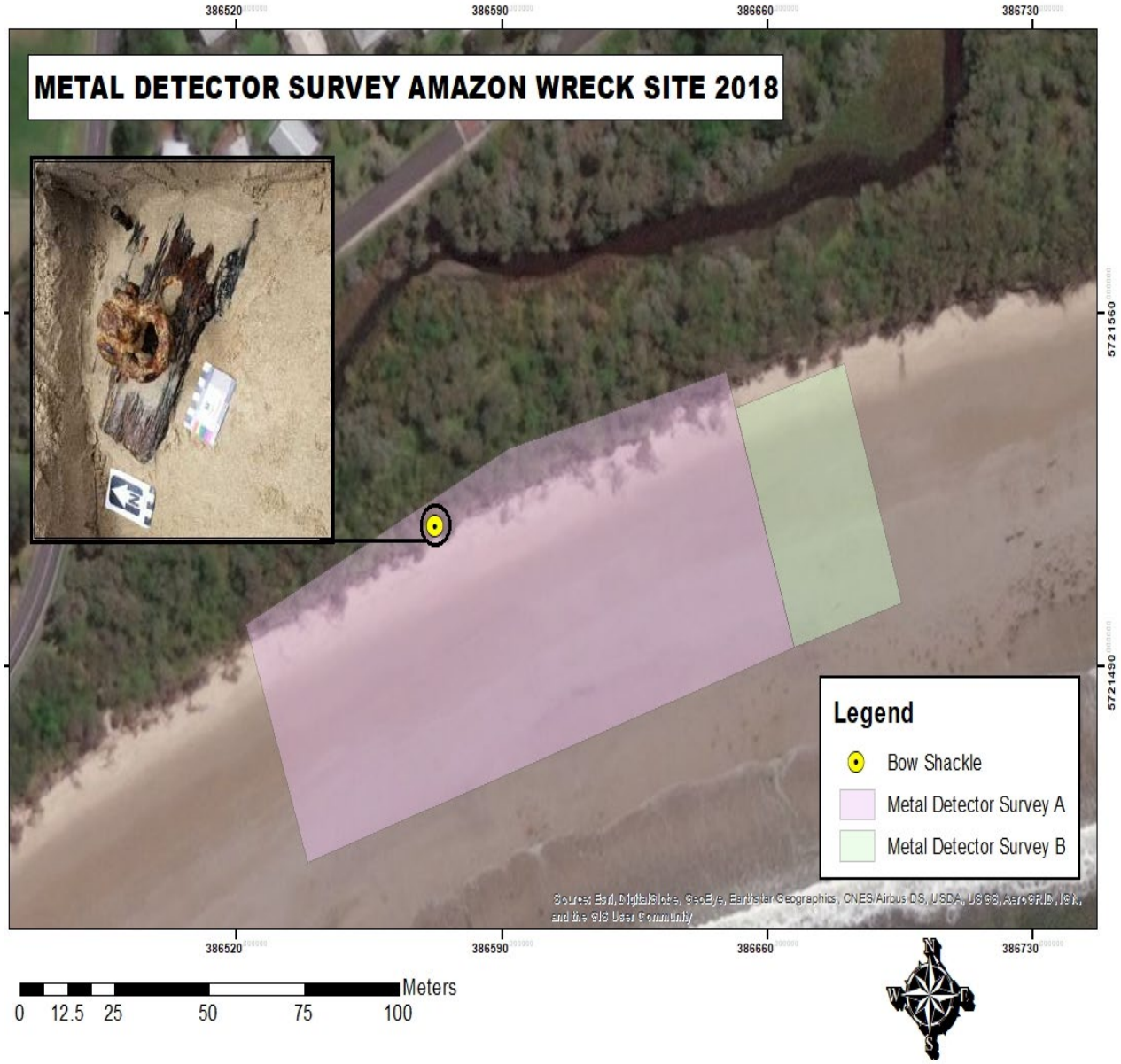
The whole onboard had by this time been kept on deck in a constant state of suspense, and were so exhausted that although the ship grounded at 10 a.m. it was 3 p.m. before they all got safely ashore, and it was done at no small risk. On landing, it was soon ascertained that they were on an apparently barren coast, no habitation

being visible. On the l6th search was again made to seek a house or track, but none could be found. On the 21st they were rewarded by finding two uninhabited houses. This gave them some encouragement to persevere further, but without avail, as they were much afraid of being lost in the density of the scrub. On the 23rd the son of the Hon. Mr. Heales, a young man about 17 years of age, who is on a station near Cape Liptrap, saw what he supposed to be a ship's mast, and, as he was en route for Melbourne, went to ascertain what it could be; and having heard the particulars, persuaded Captain Ogier to accompany him, and, as he had a spare horse, placed it at his disposal. Great delay was caused on the journey, as sailors are not, generally speaking, good horsemen, but the old saying- “a good turn never loses its reward.” Captain Mathews has requested us to state that when he applied to the Government for assistance to fetch up the crew of the ill-fated vessel, it was immediately granted, for which, on the part of the underwriters and himself, he begs to return thanks. Captain Ogier also requests to tender his thanks.

Appendix F

Pedestrian survey map (map by J. Leach and M.D. Khoiru)

Metal detector survey map (map by J. Leach and M.D. Khoiru)



Appendix G

Metallurgy analysis results

Dr Wendy van Duivenvoorde
Associate Professor
Maritime Archaeology Program
Flinders University
GPO Box 2100
Adelaide SA 5001
Tel: 08 8201 5195 (w)
0412 481 080 (m)
E-mail: wendy.vanduivenvoorde@flinders.edu.au
CRICOS Provider No. 00114A

1 June 2019

To: Peter Harvey
Senior Maritime Archaeologist
HERITAGE VICTORIA
Department of Environment, Land, Water and Planning
GPO Box 500
Melbourne VIC8002

REPORT ON THE RESULTS OF THE SEMI-QUANTITTATIVE CHEMICAL ANALYSIS OF THE *AMAZON* SHIPWRECK METAL SAMPLES

Introduction
Four fragments of copper-alloy sheathing, two sheathing tacks, and two bolts from the Amazon shipwreck were analysed to determine their elemental composition.

Sample number	Label on sample bag
C13	AMZ23, copper tack, hull plank 4, 30-11-18
C18	AMZ23.00004, Cu alloy sheathing, 2-12-18
C21	AMZ23.00012, Cu alloy sheathing, 2-12-18
C22	AMZ23.00012, copper tack, 2-12-18
C23	AMZ23.00014, Cu alloy sheathing, 2-12-18
C25	AMZ23.00017, Cu alloy sheathing, 2-12-18
C28	AMZ23.00007, bolt, 2-12-18
C29	AMZ23.00008, bolt, 2-12-18

Semi-Quantitative Chemical Analysis
The metal samples were analysed at Adelaide Microscopy, South Australia, using a FEI Quanta 450 FEG Environmental Scanning Electron Microscope (ESEM) (Fig. 1).[1] The FEI Quanta 450 is a High-Resolution Field Emission Scanning Electron and is used to image and analyse surface topography, collect backscattered electron images and characterise and determine a sample's elemental composition through x-ray detection with an SDD EDS detector.

Sample preparation for the sheathing and the tacks included embedding a small fragment of each sample in phenolic hot mounting resin for general use (brand: Struers MultiFast). The resin was added and set in a Struers CitoPress-10 hot mounting machine (Fig. 2). The mounted samples were then polished using a Struers TegraPol-11 diamond polisher to get clean, uncorroded surfaces for analyses (Figs 3 and 4).

The two bolts were drilled to extract a few mg of material from their heads—for each sample a brand-new titanium drill bit (1/16") was used to get an un-corroded metal sample to avoid any possible cross contamination. Sample preparation included adding the drilled material from each fastener on 12mm aluminium stub with carbon tape tabs.

[1] https://www.adelaide.edu.au/microscopy/instrumentation/quanta450.html

Results

The sheathing was made of a yellow metal quite similar to 'Muntz' with a composition of about 36–37% zinc and 62–64% copper with a little or no lead (Table 1). The bolts also had a composition of about 37–38% zinc and 60–61% copper with a little or no lead (Table 2).

The tacks that fastened the metal sheathing were manufactured using 81–91% copper, 4–13% zinc, and 1–4% iron, lead and tin. The concentration of copper is much higher than that in the sheathing (more than 80% percent); plus, there is much less zinc and a higher portion of other metals. Fasteners are required to be harder than the sheathing itself. This feature is apparent in the composition of the tacks, which have a higher percentage of tin

Appendix H

Inverloch community survey questionnaire

Participant 1

Questionnaire 1: background questions

1. How long have you resided in Inverloch?

Nine years, but holidayed intermittently for about 35 years.

2. How long have you known about the *Amazon* ship?

About 2 and a half to 3 years. When Parks Victoria put up signs at the beach entry near the site, I went home promptly and googled *Amazon* shipwreck.

3. What was your source of information about the shipwreck?

A Parks Victoria signage at the Inverloch beach access.

4. How significant is the shipwreck to you?

Very significant – it really concerns and saddens me that it appears to be breaking up and there is no real way of saving what is left. Also, that there is no appropriate place to store and display pieces of the wreck as they wash up. No visitors to our town can see a significant part of our history that should be on display.

5. What actions would you like to be taken concerning the shipwreck?

Raise, restore and display the wreck like they did in Fremantle with the Batavia. At the very least have a 'home' for the pieces that people have collected so they can be displayed for all to see.

6. Do you have any prior maritime or nautical knowledge?

I don't have much prior knowledge of boats or ships; however, I have looked up lot online since then trying to find out what the pieces are that I have seen on the beach and in the water.

7. Are you a collector? Do you have a collection?

Yes, I do consider myself a collector. I believe if the items are not collected they will break up or be washed away never to be seen again. I collect shells.

Questionnaire 2 – artefacts questions

8. When did you come by your first artefact, i.e. after or before the storms?

I found pieces of debris along the beach in the vicinity of the wreck and towards the town, I think after the storms, as I walked the dog along the beach. As the *Amazon* sank over 150 years ago I secretly hoped the pieces of debris I collected were from the wreck, however I really thought the items probably came from the shacks that had been demolished – the shacks were under the big cypress trees towards the RACV club so it made sense that is where the debris could have come from.

9. Did you find the artefacts accidentally or purposely?

Accidentally.

10. What caused you to lend the collected artefacts during fieldwork?

I didn't really believe what I had collected were pieces of the wreck as there were old shacks (down near the RACV club part of the beach) and they may have been pieces of rubbish/debris from them. I was curious to have them identified if possible, and to win a bet!

11. How have the artefacts impacted on your life?

They have opened my eyes to whole new world of maritime shipping/boats and history– I have googled the shipwreck and looked at old photos, the YouTube video. I have looked up info about old ships on the internet, and looked in books. I took photos of it exposed about 3 years ago on a very low tide, and in recent times snorkelled around it and took photos underwater with a GoPro, plus drone photos. I will hand the artefacts to the Historical Society when they have a home for them some time in the future. I have made the photos available to Maddy.

12. Did you report the artefacts?

No, I didn't know you could, or who to report them to initially. I heard the local Historical Society didn't want any pieces as they had some items (copper sheathing & a timber) and don't have the capacity to preserve, store or display them. After the Archaeological Dig I had a name, phone number and email contact and advised Maddy McAllister of several pieces that I found in recent times.

Questionnaire 3 – the Thought-Process questions

Section 1 – the 'Reason' or 'Why' questions

13. Did you know initially that it was an artefact you collected?

No, I didn't – I really didn't expect they would be so old. I thought they were pieces in excess of 50 years old not 150 years old!

14. If you knew that the objects were artefacts, why did you collect?

NOT APPLICABLE AS THE CANDIDATE WAS UNAWARE OF THE ARTEFACTS' NATURE.

15. If you did not know that the objects were artefacts, why did you still collect?

They were interesting and intriguing – they appeared old – not something we see or manufacture today. I liked the look of them.

Section 2 – the 'Method' or 'How' questions

16. Where did you find the artefacts, i.e. beach or underwater?

Off the beach during low tides.

17. How did you collect the artefacts?

I picked up the artefacts with my hands. No tools. I happened to see the items and collected them as they looked 'old and interesting.

Section 3 – the 'Purpose' or 'What' questions

18. What is your relationship with the artefacts?

- Custodian.

19. What purpose do the artefacts serve?

They are little pieces of something that we will never see again – little windows into the past – particularly a wooden ship. This type of ship is not being built now, we should preserve the remaining pieces for our future generations to see.

20. How do you view the artefacts?

I think they are fantastic as they are pieces from something that existed over 150 years ago. I believe every attempt should be made to store, preserve and ultimately

display these items in a public place so that locals and visitors to Inverloch can see them and enjoy that 'sense of history'. We need a display like *Batavia* in Fremantle.

21. What do you intend to do with the artefacts?

I would like to see a Maritime Museum opened up in Inverloch and I would donate the pieces to be put on display (if they were wanted). If not, I would continue to look after the items. I think we should all be able to look at the items and appreciate their sense of history and the fact that they come from 'another time'.

Participant 2

Questionnaire 1 – background questions

1. How long have you resided in Inverloch?

We have lived in Inverloch for 2 years.

2. How long have you known about the *Amazon* ship?

I saw the remnants of the wreck sticking out of the ocean 2 years ago when we moved to Inverloch and was at once captured by its history and took many photos.

3. What was your source of information about the shipwreck?

I saw some parts of the ship in the water.

4. How significant is the shipwreck to you?

The *Amazon* wreck is very significant to me, part of my Inverloch life really. I walk the beach almost every day and am always looking for items of interest. It might be a good idea to have a local catalogue of *Amazon* wreck items, so 'someone' knows where all these pieces of interest are located.

5. What actions would you like to be taken concerning the shipwreck?

It would be lovely to one day have them all on show in a museum. If there was a local catalogue of photos with perhaps the name and address of the 'guardian' it would stop aggravated and agitated people verbally attacking anyone found removing items.

6. Do you have any prior maritime or nautical knowledge?

No, but I do now, tall ships are amazing! Just returned from Sydney and a visit to the Maritime Museum and *James Craig*, which is a metal hulled boat of a similar vintage. We should be preserving any skerrick from *Amazon.* It is a treasure, so few wooden hulled boats from that era to tell their story.

7. Are you a collector? Do you have a collection?

Yes, I am a collector, antiques, old china especially blue and white china, shells, old implements and tools, old linen and more.

Questionnaire 2 – artefacts questions

8. When did you come by your first artefact, i.e. after or before the storms?

It appears that mostly after storms and rough seas and big swells is when remnants are washed up on shore. Very sad, but a fact of the weather.

9. Did you find the artefacts accidentally or purposely?

Accidentally.

10. What caused you to lend the collected artefacts during fieldwork?

Happy to come forward with anything I find for maritime archaeologists to view, label, keep.

11. How have the artefacts impacted on your life?

I have started snorkelling (something I never thought I would be interested in doing) around the *Amazon*, observing what is visible and what becomes hidden as the tides come and go. I cannot believe that I am observing something that has been so well preserved in the ocean. I have learnt shipping and boat building terms and am amazed that we had boat builders in Hobart Town in the 1850s and that many boats came from England, Canada and far off countries over wild seas to this area. I had no idea that there were so many shipwrecks along the Gippsland coast. I find it fascinating.

12. Did you report the artefacts?

Yes. I have asked for information on preservation. I talked with the archaeologists when they were here researching on the beach in November 2018.

Questionnaire 3 – the Thought-Process questions

Section 1 – the 'Reason' or 'Why' questions

13. Did you know initially that it was an artefact you collected?

The few pieces I have found have excited me and I did believe that they were from *Amazon.*

14. If you knew that the objects were artefacts, why did you collect?

The *Amazon* ship has intrigued me since I first saw it poking out of the water about 2 years ago.

15. If you did not know that the objects were artefacts, why did you still collect/

NOT APPLICABLE AS THE CANDIDATE WAS AWARE OF THE ARTEFACTS' NATURE.

Section 2 – the 'Method' or 'How' questions

16. Where did you find the artefacts, i.e. beach or underwater?

Anything collected has been on the beach/ sand.

17. How did you collect the artefacts?

Hands were the only tools required to collect the artefacts on the beach.

Section 3 – the 'Purpose' or 'What' questions

18. What is your relationship with the artefacts?

Custodian.

19. What purpose do the artefacts serve?

They are a small piece of our remarkable history, something to be preserved not left to rot! Volunteers at the Sydney Maritime Museum were horrified that we have a wooden barque on our shoreline and were just encouraged to let it rot, bury it again...such an amazing specimen should be encouragement enough to try and have some of it preserved. Some of the wood, Baltic pine flooring look as good as it did when the boat was built, amazing really.

20. How do you view the artefacts?

Hopefully one day we can have a Museum to house all these wonderful bits and pieces and with photos and video of what is still located just off shore we can present it to the visiting public. These boats were amazing crafts, built by craftsmen with what can only be described as incredible sailors to know what to do with all those ropes attached to magnificent sails on huge masts. The rope system alone is bewildering.

21. What do you intend to do with the artefacts?

At this stage I plan to 'mind' any artefacts I come across, inform Heritage Victoria and always happy to hand over anything at any time if required.

Participant 3

Questionnaire 1 – background questions

1. How long have you resided in Inverloch?

I have lived in Inverloch for 20 years.

2. How long have you known about the *Amazon* ship?

I have known about the shipwreck for about 10 years from talking to various people on the beach, however I did not know it was called 'The *Amazon*' until I heard about your archaeological team coming to town (from which source I cannot recall).

3. What was your source of information about the shipwreck?

Word of mouth.

4. How significant is the shipwreck to you?

The shipwreck is very significant to me because it a part of Inverloch's history.

5. What actions would you like to be taken concerning the shipwreck?

I believe any artefacts from the shipwreck should be preserved, preferably in a museum.

6. Do you have any prior maritime or nautical knowledge?

Yes.

7. Are you a collector? Do you have a collection?

I collect, keep and preserve my many different findings from metal detecting in many different locations around Australia. My collections include coins, buttons, jewellery, goldfields memorabilia and rocks and minerals.

Questionnaire 2 – artefacts questions

8. When did you come by your first artefact, i.e. after or before the storms?

For the past 25 years, before and after storms.

9. Did you find the artefacts accidentally or purposely?

I found them accidentally when I was metal detecting on the beach.

10. What caused you to lend the collected artefacts during fieldwork?

Because I had found a lot of material on the beach over 20 years and kept the interesting pieces. I brought it forward during the fieldwork to confirm whether or not those were artefacts from the shipwreck**.**

11. How have the artefacts impacted on your life?

It is fulfilling to finally discover what some of your findings actually are i.e. to realise their origins. It fills in the missing pieces of a mystery.

12. Did you report the artefacts?

When I learned about the archaeological dig, I took the artefacts for verification.

Questionnaire 3 – the Thought-Process questions

Section 1 – the 'Reason' or 'Why' questions

13. Did you know initially that it was an artefact you collected?

I was confident that the copper sheeting was an old-style technique used in boat building - so I thought it may be an artefact from the shipwreck. If not an artefact, I also collect scrap metal so I would have kept it any way to either keep it as part of my collection or sell as scrap metal.

14. If you knew that the objects were artefacts, why did you collect?

I have had a passion for metal detecting for more than 20 years. I am also interested in ships and boats. I am curious about everything I find, and enthusiastic to learn whatever I can about its origins. I have a huge collection of artefacts from many different locations.

15. If you did not know that the objects were artefacts, why did you still collect?

NOT APPLICABLE AS THE CANDIDATE WAS AWARE OF THE ARTEFACTS' NATURE.

Section 2 – the 'Method' or 'How' questions

16. Where did you find the artefacts, i.e. beach or underwater?

I found them on the beach.

17. How did you collect the artefacts?

Sand scoop.

Section 3 – the ‘Purpose’ or ‘What’ questions

18. What is your relationship with the artefacts?

Custodian.

19. What purpose do the artefacts serve?

Historical.

20. How do you view the artefacts?

I feel very close to the artefacts. I have a close connection to all my collections.

21. What do you intend to do with the artefacts?

I hope they end up in a museum in Inverloch.

Participant 4

Questionnaire 1 – background questions

1. How long have you resided in Inverloch?

I have lived in Inverloch my whole life (42 years) with stints in Melbourne and overseas.

2. How long have you known about the *Amazon* ship?

There was always a vague knowledge of the shipwreck but when I was a child it seemed more like a myth or an old tale. It has only been in the last 10 or so years that I realised the site still existed and was on occasion visible (uncovered).

3. What was your source of information about the shipwreck?

I think just the childhood tales.

4. How significant is the shipwreck to you?

The wreck is very important to me. It connects us to the past and to acknowledging where we have come from, physically and technologically. It is romantic and inspiring for younger generations.

5. What actions would you like to be taken concerning the shipwreck?

I would like as much as possible of the wreck to be preserved. The wreck is not in a physical position where that can be done on site. I believe that key parts should be collected from the site, preserved and locally displayed for visitors and locals to be able to appreciate.

6. Do you have any prior maritime or nautical knowledge?

No, I do not.

7. Are you a collector? Do you have a collection?

Yes. I am mainly interested in collecting beach things, for e.g., shells, drift wood out of which I make some decorative hangings for my house, whale tooth etc.

Questionnaire 2 – artefacts questions

8. When did you come by your first artefact, i.e. after or before the storms?

I do not remember.

9. Did you find the artefacts accidentally or purposely?

Accidentally.

10. What caused you to lend the collected artefacts during fieldwork?

I believe preservation of our local history is incredibly important. I wanted the artefacts to be protected to preserve the history. We have had much bad development in Inverloch for decades with disrespect to the environment and history and it had left our town devoid of character.

11. How have the artefacts impacted on your life?

They have actually educated me about the local area and history even more. I have a bit of historical knowledge now. I have also gotten into the habit of enlightening other people with the artefacts, share it with other people and encourage them to learn and embrace our history, enlightening other people with it, gaining historical knowledge.

12. Did you report the artefacts?

Yes, to Heritage Victoria. I photographed the pieces, took GPS points and sent it to Heritage Victoria.

Questionnaire 3 – the Thought-Process questions

Section 1 – the 'Reason' or 'Why' questions

13. Did you know initially that it was an artefact you collected?

No, I did not know that the first metal piece I collected was an artefact, even though I knew there was a shipwreck around. I had no way of knowing because I am not trained.

14. If you knew that the objects were artefacts, why did you collect?

NOT APPLICABLE AS THE CANDIDATE WAS UNAWARE OF THE ARTEFACTS' NATURE

15. If you did not know that the objects were artefacts, why did you still collect?

Because I found it interesting as an artist. I knew it was old because it looked it. So I wanted to know what skills went behind it to make that piece, the thought process and all.

Section 2 – the 'Method' or 'How' questions

16. Where did you find the artefacts, i.e. beach or underwater?

I found everything on the beach.

17. How did you collect the artefacts?

Just with my hands. I picked them up from the sand dunes.

Section 3 – the 'Purpose' or 'What' questions

18. What is your relationship with the artefacts?

Custodian.

19. What purpose do the artefacts serve?

Historical.

20. How do you view the artefacts?

I feel very protective about them. I think they are absolutely beautiful and they are a part of my town's history. Being an artist, I can see that they're beautiful, the skill is endearing that went into the making and the thought process that went into the artistic making.

21. What do you intend to do with the artefacts?

Preserve them and return them until I see a public place to display them for someone who will appreciate it. So maybe in a museum at Inverloch. I absolutely love them, care for them. I cherish them. They have become very personal to me. I want the whole site and not just the artefacts to be preserved.

Participant 5

Questionnaire 1 – background questions

1 How long have you resided in Inverloch?

Actually, I don't live in Inverloch. I live in Wonthaggi which is about 8 kms NW. I have lived here since April 2017, so 2 years.

2 How long have you known about the *Amazon* ship?

I think I first heard of the wreck maybe back in the early 2000s not long after I started diving. I recall it was in one of Jack Loney's books but it was only in passing. I became more aware of it sometime after when I did a photo-essay for a magazine on the "Speke" at Kitty Miller Bay, Phillip Island. It was in 2015 when I looked at moving here I really got wind of it. But it wasn't until I had moved here that I really took an interest in it along with the "Artisan."

3 What was your source of information about the shipwreck?

I had developed an interest in maritime archaeology when I first started diving 20 years ago. My first wreck dive was on the "George Roper" in the Heads of Port Phillip Bay and it was an awe-inspiring dive, one I will never forget. I had always had an interest in history and this was a natural extension of both that interest and diving. I had visited Wonthaggi and Inverloch when holidaying at Cape Paterson some 5 years ago and it was during that visit the name of the "*Amazon*" had come up with visits to Tourist Information Centres and the Marine Museum in Inverloch. I would have inquired about diving in the area. I didn't think any more of it after that until I moved to Wonthaggi in 2017. It was then I looked more into the wreck through personally owned books such as "Wrecks Along the Gippsland Coast" by Jack Loney but only as a passing interest. I never knew exactly where the wreck was until the dig in Nov/Dec last year. I had chased other wrecks in the meantime ("Speke" on Phillip Island and "Artisan" at Harmers Haven). I was looking for something local to survey to complete my Part 2 NAS/AIMA amateur archaeology course.

4 How significant is the shipwreck to you?

Quite significant. It is a part of local history and the local community. For me personally, it represents an opportunity to continue an amateur level course I began some time ago, to learn new skills and hone skills I only touched on some time ago. It

will continue to interest me in terms of archaeological survey, as I have time to invest, when weather and seas allow to map the wreck, and each time improving on each survey.

5 What actions would you like to be taken concerning the shipwreck?

The wreck has "survived" for over 150 years in its present position. It lies in a mild surf zone which is a bit of a double-edged sword in that it takes a pounding every time the tide ebbs and flows but at the same time it is away from public access, saving it from pillage and damage. The bow section is all but hidden beneath the sand and effectively unknown. In an ideal world, the wreck would be recovered, preserved and reassembled as best as possible in a local museum and as appealing as this would be, it is simply not possible. The best one could hope for is that it is fully surveyed in time and shielded (perhaps as per the "*William Salthouse*") from both the elements and public

6 Do you have any prior maritime or nautical knowledge?

Yes.

7 Are you a collector? Do you have a collection?

I do collect other things. I collect old bottles by Thos. Trood and Co, (Vic); G.H. Elliot and Co, and Merchants lemonade (only because they are the first three intact early 20th/late 19th century bottles I found whilst diving). However, having said that, I do not consider myself a serious collector. I was a professional photographer for many years and have over time gathered a few old cameras as well as retaining the magnificent Nikon F3 I used in the studio. I haven't considered that a collection per se, just an interest. I also make plastic scale models of spacecraft and that I guess, could be considered a collection.

Questionnaire 2 – artefacts questions

8 When did you come by your first artefact, i.e. after or before the storms?

Only two artefacts were found some time ago, both being small pieces of copper sheathing. They were located on 07 October 2017. I do not remember the weather but it would have been dry and rain free, suitable for metal detecting. A recent find, a

bronze alloy fastener was located in the sand on the north side of the wreck while carrying out survey work on 26th March 2019.

9 Did you find the artefacts accidentally or purposely?

No, I found them accidentally while I was metal-detecting.

10 What caused you to lend the collected artefacts during fieldwork?

Because that's where they belonged. The piece was returned to me after cataloguing and recording.

11 How have the artefacts impacted on your life?

I can't say that they really have, other than that first gasp of excitement when first discovered. "Wow! Ships relics!". I kept them for safe keeping and they were put away in a drawer in the office part of the house. I did look at them at times and think that once, somebody, now long gone, also held this, furnished it, put it on the ship - similar feelings as one has when diving on a shipwreck.

12 Did you report the artefacts?

I sent an email off to Heritage Victoria but received no reply. I believe the email did not arrive as I later found out, the person I directed it to was no longer working there.

Questionnaire 3 – the Thought-Process questions

Section 1 – the 'Reason' or 'Why' questions

13 Did you know initially that it was an artefact that you collected?

When I first got a signal from the detector, I thought it might be a bottle cap (similar sounds and numbers) but was too large. When I saw it, I knew it was non-ferrous and the square holes were indicative of square shanked nails which gave the impression of it being ships sheathing. I knew that by sight and the fact that a wreck lay nearby but I didn't know exactly where at the time. Although unproven, I had a very strong opinion that it was from the wreck.

14 If you knew that the objects were artefacts, why did you collect?

I felt strongly that it was from the wreck hence it would be an artefact and wanted to protect them.

15 If you did not know that the objects were artefacts, why did you still collect?

NOT APPLICABLE AS THE CANDIDATE WAS AWARE OF THE ARTEFACTS' NATURE.

Section 2 – the 'Method' or 'How' questions

16 Where did you find the artefacts, i.e. beach or underwater?

Approximately 200 metres east of the wreck site up the beach near the scrub. It was under dry sand about 10cm deep.

17 How did you collect the artefacts?

The signal given off by the metal detector would have indicated something similar to a bottle cap or champagne cork retainer so I would have used a small fold up military shovel to excavate the area**.** They were not very deep. One doesn't usually consider finding artefacts, only rubbish. The use of bare hands is not advised due to broken glass etc. A bronze fixing was visible in the sand and retrieved by hand.

Section 3 – the 'Purpose' or 'What' questions

18 What is your relationship with the artefacts?

Custodian.

19 What purpose do the artefacts serve?

To me personally, very little, other than the excitement and awe to touch something, see something that someone else touched and saw over a hundred years ago. Who made this? Who installed it? How did it get to where I found it? To museums and the like, they serve to present the opportunity to learn and confirm material uses, building practices, industrial life and skills long since lost. They are relics of times gone by, remnants of the past.

20 How do you view the artefacts?

They are a piece of history. A piece of something that played an important part in the establishment of Australia as a world trader. It is a part of something that played a significant role in the lives of other people and places. With them, the ship still lives.

21 What do you intend to do with the artefacts?

They have now been fully reported, recorded and catalogued by Heritage Victoria (with the exception of the ship's fastener, that is in process) and I have been allocated as their custodian. They have been returned to their assigned place in the office drawer. The fastener however, has been washed and once fully recorded, will be placed in a frame and put on the wall along with a few framed photos of other shipwrecks in the area ("Speke"; "Artisan") and an aerial photo of the "*Amazon*".