“That the whole may be a prettie streete”:

An Analysis of the 17th- Century Cobblestone Street at Ferryland, Newfoundland

by

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Abstract

The daily activities associated with the 17th-century cobblestone street at Ferryland, NL are analyzed here through an examination of architectural remains and material culture. Guided by built form and taskscape theories, this research will help interpret how the residents of Ferryland interacted with each other, and with the different industries set up around the street. Early modern streets were both public and private areas, and along with roadways were not uncommon in English colonies. But this paved street—13 feet (4 m) wide by 400 feet (121 m) long—is one of the oldest examples known in North America, and one of Ferryland's most distinctive features. Research reveals that the street was built within the first decade of the colony's founding in 1621 and was in use throughout the century and, to a lesser extent, even after the colony's destruction in 1696. Although the street functioned as the spine of the Ferryland colony, with most of the settlement closely adjacent to it, very little research has been conducted in regards to the street itself since it was uncovered in 1994. This project seeks to show how the idea of permanent settlement was reinforced by this large-scale construction, how the street adapted to changes within the colony and even survived it, and how the street shaped and was shaped by the day-to-day interactions of those who lived and worked in 17th-century Ferryland.

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Chapter 1: Introduction

Archaeological investigations in Ferryland began in the 1930s and continued intermittently until Memorial University initiated annual fieldwork starting in 1992, and have been ongoing since. This work has identified several hundred distinct cultural deposits (termed Events) that correspond with different time periods, features, middens and other structures (Gaulton and Tuck 2003). One particular avenue of research has focused on techniques used in the construction of the settlement's buildings. Researchers have looked at the use of the buildings, both domestic and work-related, and spaces that functioned in similar ways. The use of space and dedicated activity areas within these buildings has likewise been analyzed and discussed (Carter 1997; Gaulton 1997; 2006; Crompton 2001; Gaulton and Tuck 2003; Claunitzer 2011; Miller 2013; Ingram 2015). Previous archaeological work on the site has provided substantial understanding of early colonial life in British North America. One line of research that has not been touched upon is the importance of Ferryland's cobblestone street, including the role that such an extensive feature played in the community, its impact on residents, and the influence it exerted on the functioning and construction of the colony.

The presence of designed streets in colonial North America as a form of urban planning has been established across a multitude of settlements from the early 17th century (Winslow 1620 in Young 1846: 170; Reps 1965: 125). The archaeological remains of Ferryland's 400-ft. (121-m) main street stands out compared to other contemporaneous examples, as it is among the earliest evidence for a paved road in British North America. Likewise, the similarities seen in pavements in Devon demonstrate the importance of a

cobbling tradition among the settlers. Ferryland's cobblestone street was among the most frequented and utilized locations in the colony. Residents and visitors alike walked along this thoroughfare daily for over 80 years, and as they did so they inadvertently lost small objects and deliberately tossed their trash on it. One of the most interesting aspects of the street is its adjacency to domestic and work-related structures in the village. Artifacts from these buildings were discarded and eventually settled onto the cobbles, mixing together the entire history of the colony. In fact, every aspect of daily life in Ferryland is represented in this material assemblage.

By the early 17th century the cod fishery had made Newfoundland essential to Europe's Atlantic trade network, leading to the eventual English colonization of the island. Ferryland was initially founded in 1621 by George Calvert under the governorship of Captain Edward Wynne. Despite the colony's early start, Ferryland did not grow substantially until affluent wine merchant Sir David Kirke and his family took control of the settlement in 1638. As a successful merchant, Kirke understood economics and trade in ways Calvert did not, and had a different vision for the colony. He used his experience to increase the economic viability of Ferryland, and fostered further trade connections through the fishery. The Kirkes added substantial infrastructure to the colony, to help increase its economic output, and changed the layout and purpose of many of the buildings within the original fortified settlement.

New Kirke-era buildings would have been even more impacted than their predecessors by the pre-existing cobblestone street, an original Calvert-era construction. The new buildings had to be built in relationship to the street, limiting where they could be constructed. For example, buildings which required immediate access to a roadway to

transport heavy materials would have impacted the location of other buildings less dependent on the street. The Kirke-era constructions did not have the clean slate that Governor Wynne had for his constructions, where the buildings and street were made at the same time with consideration on how they would equally impact each other. The presence of the central street helped facilitate the movement of goods produced and distributed within the colony, impacted the placement of the original buildings, and later where new buildings would be situated.

Streets in the early modern period served a variety of functions that, previously, have not been extensively studied. Extant streets from the 17th century exist across many European and North American cities, but remain secondary to other archaeological investigation and interpretation. The early modern street was both a public and private space, existing strictly within communities. The street became an extension of adjacent buildings while simultaneously acting as a guide for movement in the community. Furthermore, streets are a fixed feature. Once a street is laid, it does not usually change. The result is a central fixture that permanently directs both the movement of traffic and the placement of buildings. This was particularly true in Devon, home to many of the original Ferryland settlers, where the tradition of cobbling was strong in the early modern period. Understanding the role of the street in Ferryland will provide a more holistic understanding of the role 17th-century streets played in other contexts, and will further enhance our understanding of the Ferryland settlement and the lives of its residents. This will be achieved through the analysis of the physical feature itself, the associated artifact assemblages, the spatial distribution of the artifacts along the street, and the social relevance placed on the feature.

This thesis has four distinct goals, which have been framed into research questions:

1) How did 17th-century concepts of city planning and transportation needs influence the construction and operation of the cobblestone street in Ferryland?

2) What can an examination of the street's artifacts, daily use and chronology tell us about its purposes, and how long it was utilized?

3) How did the taskscape of the street and the people of the community mutually influence each other, and how does that help inform us about what the settlers believed necessary for new migrants in a new landscape?

4) What are the similarities and differences between the cobblestone streets of Devon and the one in Ferryland, and why?

Chapter 2 provides a brief history of 17th-century Ferryland. It offers context to the colony's place within the Atlantic trade network, the early European migratory fishery and later English industry before it transitioned into a permanent settlement in 1621, when the land was acquired by Calvert. Following these developments, the changing layout of the colony under the direction of the Kirkes after 1638, and how this affected the cobblestone street's use within the settlement, will be addressed. Lastly, the destruction of the original Ferryland settlement in 1696 is considered in light of its impact on the analysis of the street and its artifact assemblage.

Chapter 3 looks at the importance of early modern streets in a variety of contexts in Europe and North America. This chapter focuses on the significance of streets within communities, defining the purpose of these structures and how they were built, designed and maintained. It discusses how streets were used, how the roles of streets change

depending on what type of community they exist in, how different factors can affect their design, and who is responsible for constructing and maintaining them. Ferryland's street is placed within the context of other streets, and the extent to which it conforms or diverges from the universal characteristics that define contemporaneous streets will be examined.

Chapter 4 discusses my theoretical approach and research questions. It also highlights the importance of this work within the broader research already conducted in Ferryland, and the methodologies that will be employed to answer my research questions.

Chapter 5 focuses on the fieldwork and surveys I conducted over the summer of 2019, providing an analysis of the architectural features and the planning of the street. The use of different raw materials will be discussed, as will theories of when and how the street was constructed, with some reference to the presence of specific artifacts and their significance.

Chapter 6 is the entirety of my artifact analysis. All artifacts excavated from the exposed portions of the cobblestone street were divided into separate categories: clay tobacco pipes, ceramics, glass, and metals. Several different methodologies and typological techniques used to analyze and identify the artifacts are discussed in detail. The artifacts will also be used to determine the use of space on the street, and provide a chronology from construction to eventual disuse, and the intervening eras of increased traffic.

Chapter 7 considers construction styles and placement of pavements in the communities of Exeter, Plymouth, Totnes, Dartmouth, Bideford, Barnstaple, and Clovelly in Devon, England. These varied pavements are then compared to Ferryland's street and its construction style, highlighting similarities and differences on both sides of the Atlantic. The discussion then moves to vernacular changes present in Ferryland, and how the

importance of cobbling in Devon was reflected by what the settlers in Ferryland evidently thought was necessary for their new colony.

Chapter 8 is a discussion of Ferryland's cobblestone street and its place within the 17th-century community. This chapter serves as a conclusion to the role the street played, and what it meant to the settlers and the different workers who visited the colony. The research of this thesis, based on both fieldwork and artifact analysis, is valuable in understanding the nature and roles of early paved streets in North American colonial contexts. Lastly, future research goals are discussed, and how these might change the conclusions drawn in this thesis.

Chapter 2: Historical Background

2.1 Settlement Origins and Calvert

Ferryland is a small outport community on the eastern coast of the Avalon Peninsula, located approximately 80 km south of St. John's (Figure 1). The town has played a significant role in the history of Newfoundland for the past 400 years, having been almost continuously occupied the entire period. From the 16th century on, migratory fishermen were frequent visitors to Newfoundland, including the Avalon Peninsula. Ferryland itself had been visited by fishing vessels from Spain, Portugal, Euskal, France, Normandy, Brittany and England since the onset of the northwestern Atlantic fishery (Tuck, Gaulton and Carter 1999; Tuck and Gaulton 2013). The name 'Ferryland', likely comes from the Portuguese word 'Farelhão", meaning steep cliff or headland (Pope 1986: 1). The name changed over time until it became the anglicized Ferryland of today. Before the advent of the European fishery, the history of the Ferryland area included the Beothuk; the land around Ferryland's inner harbour has yielded artifacts indicating a Beothuk presence from the early 16th century showing at least periodic contact with Europeans (Pope 1986: 3-4; Tuck et al. 1999; Tuck and Gaulton 2013: 41). The European cod fishery was seasonal, with ships arriving in the spring and remaining until the fall. Fishers constructed temporary cabins along the coasts along with temporary stages to land the fish and wooden flakes to dry them; these and the cookhouses were abandoned to the elements after each season. Surviving artifacts indicate the early presence of Bretons and Basques in the 16th century (Pope 2004: 22). The Newfoundland fishery has been described as a "vernacular industry,"

reliant on the seasonal cycle, with specific regional preferences for curing and selling the cod, and passing down the knowledge through informal apprenticeships (Pope 2004: 30).

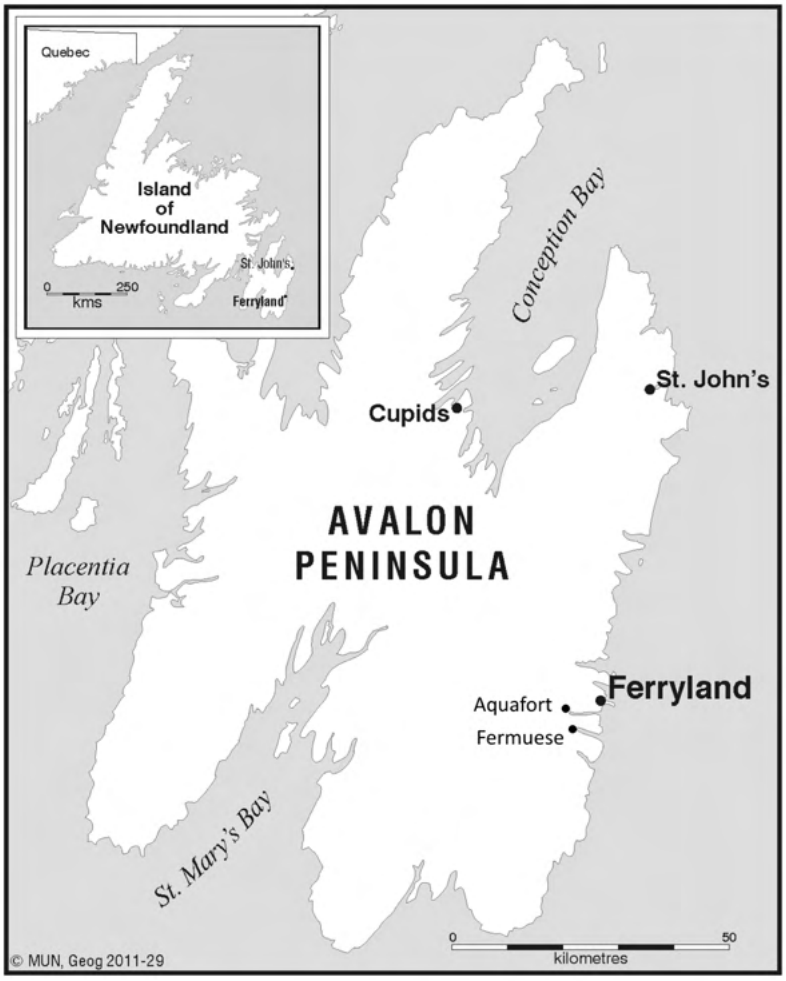

Figure 1: Map of the Avalon Peninsula with specific reference to Ferryland

The English were not heavily involved in the fishery in the early 16th century, and did not appear to have much interest in developing a national industry until the second half of the century (Cell 1969: 22; Lounsbury 1969: 21). The country was in effect a vassal state to Spain and the Hapsburg Empire, due to the marriage of Mary I to Philip II of Spain.

England had to manoeuvre its imperial expansion carefully between the political struggles of France and Spain. After the death of Mary I in 1558, Spain lost its control of Protestant England, even as it and Catholic France had reconciled during the Wars of Religion after the 1570s (Pope 2004: 16; Candow 2009: 417). Following this, Portuguese and Basque involvement in the North Atlantic fishery collapsed under the Spanish Crown. The English West Country, particularly Devon and Dorset, became serious challengers to France (Cell 1969: 24; Pope 2004: 16).

Newfoundland was not considered a peripheral industry, but essential to international trade networks, with the number of West Country ships involved increasing from 30 ships in the 1570s to 50 in the 1580s (Cell 1969: 22; Candow 2009: 417). The fish trade transformed the West Country, which became the centre of the Newfoundland fishery and central to its economy (Cell 1969: 22). Fishers from Exeter, Plymouth and Dartmouth in south Devon were most frequent in the northern Avalon area, between Cape Broyle and Harbour Grace. The north Devon towns of Bideford and Barnstaple fished from Cape Broyle to Trepassey, the southern shore of the Avalon (Matthews 1973: 231). English ships began to exceed the shrinking number of European vessels, due to the collapse of Portugal and Spain's armada in the late 1580s and internal problems in France (Matthews 1973: 60; Gaulton 1997: 9). Originally, merchants from the West Country worked rather independently and shipped the fish back to the west of England, and then to European markets directly (Pope 2004: 80).

Eventually the industry acted to secure a stronger foothold in Newfoundland with permanent settlements. The cod trade linked Newfoundland with the English West Country, London, the Mediterranean, the Netherlands, and other North American colonies (Pope

2004: 80). As important as the trade was for England, only a fraction of the monetary returns were directed to Newfoundland. The triangular trade between England, Southern Europe and Newfoundland was highly unequal (Cell 1969: 31; Pope 2004: 91). As demand increased in the late 16th century, wintering in Newfoundland became a more common practice. That ensured the security of claimed fishing grounds and constructed cabins, while encouraging the presence of planter families (Pope 2004: 41).

The beginning of the 17th century saw a resurgence of English enterprise and colonization in North America. Starting in 1610, England and France controlled the fishery between their two countries. By that point the Spanish and Portuguese fisheries were infrequent in the region (Lounsbury 1969: 30-31). This resulted in attempts at permanent English colonies established along the Avalon Peninsula in Cupids, Renews and Harbour Grace (Cell 1982; Tuck, Gaulton and Carter 1999; Gaulton and Tuck 2013). Between 1616 and 1621, five grants of land were made to individual proprietors who were looking for land, rather than trading ventures (Cell 1969: 81). Originally, Ferryland was in the possession of William Vaughan, a Welsh gentleman. By 1619 Vaughan became discouraged in his ventures to create a new Wales, and sold a portion of his land to Sir George Calvert, who had already obtained a tract of land on the Avalon Peninsula in 1620, just north of Vaughan's (Cell 1969: 92-93).

Calvert, the future First Lord Baltimore, was the Secretary of State under King James I, and had a longstanding interest in overseas ventures. In Newfoundland he hoped to make a base for the cod fishery and a refuge for his family and other Catholics (Cell 1969: 82, 92-93; Gaulton and Tuck 2003; Gaulton 2017). The land that he owned stretched north from Fermeuse and Aquaforte and reached Conception Bay (See Figure 1). From

1614 Calvert had invested in both the Virginia Company and the East India Company, and experimented with colonization in seized land near Baltimore, Ireland (Cell 1969: 92).

Due to his role as Secretary of State, Calvert was unable to travel to Newfoundland himself, and appointed Welsh Captain Edward Wynne to act as Governor (Miller et al. 2005: 170). On June 26th 1621, Calvert sent Wynne and 11 other settlers from Plymouth, Devon to Newfoundland to establish the colony of Avalon. Six weeks later (August 4th) they arrived at Ferryland and construction began immediately, centring around the sheltered inner harbour, the Pool (Figure 2) (Cell 1969: 92-93; Gaulton and Tuck 2003; Gaulton 2017). By the summer of 1622, Wynne reported back to Calvert on the prospects of the land and how by that time they had dug a well, erected defences, and had broken ground for a brewhouse (Wynne 1622a in Cell 1982: 198; Gaulton 2017). Along with that construction, what Wynne requested in his letters (labour and supplies) demonstrates that he had significant plans for adding to the settlement (Wynne 1622b in Cell 1982: 203; Gaulton and Tuck 2013: 43). The six masons requested indicated expansive construction plans in stone, including the cobblestone street (Cell 1982: 204; Gaulton and Tuck 2013: 44), the largest project of which turned into the Ferryland 'Mansion House', a 23 by 36 ft. hall, and several other linked buildings reminiscent of a late medieval English manor (Gaulton 2017: 164).

Figure 2: Aerial view of the site facing south, with reference to the inner harbour or Pool (Photo courtesy of Barry Gaulton)

The summer of 1622 also brought new settlers to Ferryland, increasing the total population to 32 residents (Wynne 1622b in Cell 1982: 204; Miller et al. 2011: 171; Gaulton 2017). These new settlers included more skilled tradesmen to help with the colony's construction. Among them Wynne listed a stone-layer, James Beuell. In addition to a stone-layer, Ferryland now had a surgeon, husbandman, two smiths, a quarry-man, three carpenters, a fisherman, a cooper, a tailor and three boat-masters (Wynne 1622b in Cell 1982: 204). Calvert left the running of the colony to Wynne, who remained as Governor until 1624. The following year, Calvert resigned as Secretary and professed himself a Roman Catholic, receiving the title of Lord Baltimore (Cell 1969: 93). By this time, the colony of Ferryland had a population of over 100 people (Cell 1982: 52).

Without an active governor, Calvert feared he would lose his investment in the colony and decided to visit Ferryland in the summer of 1627 (Cell 1969: 93; Miller et al. 2011: 172). The visit went exceedingly well as, the following year in 1628, he moved to Ferryland with his wife and family, and 40 additional Roman Catholic settlers (Cell 1969: 94; Gaulton 1997: 11; Miller et al. 2011: 172). The move was meant to be permanent, but Calvert was less the planter he hoped to be, and instead found himself in the role of protecting the English fishery from French military harassment. Ferryland failed to provide the peaceful retirement Calvert hoped for. Additionally, the winter of 1628/29 was severely cold, half the settlers were ill, and Calvert ultimately seemed disillusioned with his colony (Cell 1969: 94; Miller et al. 2011: 172, 174). Calvert and his family returned to England in 1629, but did not abandon Ferryland. The family maintained a governor and control over the settlement until 1638 (Cell 1969: 95; Miller et al. 2011: 169, 180).

2.2 Kirke Family and Changes

Sir David Kirke's arrival in Ferryland in 1638 signaled a change to Ferryland's operation and subsequent history. Due to Kirke's successes in 1627 and 1628, increasing English profits and capturing Quebec, he was rewarded in 1633 with a knighthood by Charles I, and in 1637 with a co-proprietor grant for the island of Newfoundland with three others (Gaulton 2013: 278-79). Kirke was appointed to directly supervise the business in Newfoundland, and in 1638 arrived in Ferryland with his wife Sara, their family and 100 additional settlers, a large number of whom were servants (Gaulton 2006: 26). The exact reason as to why Kirke chose Ferryland as his base of operations is unknown; it is possible

he was familiar with the settlement from his military expeditions around the Gulf of St. Lawrence and Quebec. The familiarity with the area and infrastructure, combined with the absence of the Calverts from the settlement, likely made Ferryland an optimal place to centralize his business (Gaulton 2006: 26). The arrival of the Kirkes also marked the establishment of prominent Devon planter families in Ferryland (Pope 2004: 59-60).

Changes began in Ferryland from the moment Kirke and his family arrived. Calvert had a governor overseeing his plantation, Captain William Hill. The Kirkes removed him and took up residence in the vacated Mansion House. The continued use of existing buildings did allow the Kirkes to quickly settle into their business ventures in the region. Kirke had a different model of operations than Calvert. Calvert's plantation was one of the earliest permanent European settlements within the northeast; however Ferryland and Cupids failed to make enough capital to satisfy shareholders back in England. Calvert seemed willing to help personally subsidize his colony. Based on the massive amount of construction that occurred during Wynne's tenure, the investment was substantial, estimated to be between £17,000 and £30,000, an equivalent of £5 to £8.0 million in 2020 (Pope 2004: 125; Miller et al. 2011: 177; Bank of England accessed 14/12/21). Contrary to this, Kirke set out immediately to generate a profit with his own trading network, rather than support a colony (Pope 2004: 54-55).

Kirke's priority in creating a profit led to the continued economic and structural growth of Ferryland under his family's tenure. The 1637 charter that granted Kirke's syndicate control of Newfoundland allowed him to levy a 5% tax on any foreign fishing vessel in Newfoundland waters. Additionally, Kirke charged rent for fishing rooms and licensing fees for operating taverns. The taxation allowed for a continued increase in

revenues from the colony. The monopoly ended when David Kirke died in 1654, but the Kirke family continued to make Ferryland a profitable endeavour throughout the 17th century (Pope: 1986: 24-25; Pope 2004; Gaulton 2013: 279).

More records exist from the Kirke operations in Ferryland, compared to those of Calvert, although they are not informative about everyday activities and Ferryland's continued development. During Kirke's tenure in Ferryland, Newfoundland became central to a multilateral trade system, where, following the Dutch example, they "could trade fish for wine," (Pope 2004: 91). This trade system required the primary English markets of the West Country, which would further trade with Southern Europe. Kirke continued to maintain the ties to the West Country that many of the original Calvert settlers and earlier fishers first established (Pope 2004: 90-93).

Kirke made use of the original Calvert structures when he arrived with his family. It was not long, however, before he began extensive infrastructure changes of his own. In part this was due to the differing nature of his vision of Ferryland as being a mercantile plantation trading spirits, wine, tobacco and provisions, compared to Calvert's dream of a small unified self-sufficient village (Gaulton 2013: 279-280). Kirke's trade plans meant that the current standing infrastructure was not sufficient. The socio-economic framework of Ferryland changed from the crowded settlement of tradesmen and craftsmen, to Kirke, his family, and their servants. Seasonal workers and planters were encouraged to live near the settlement but not actually within the village, where the business would be run (Gaulton 2013: 280).

New structures were built out of Kirke's own pocket, and were discussed in letters to his brother John Kirke. The archaeological record does indicate substantive and

significant change to Kirke's Pool Plantation in the 1640s and 1650s. The rebuilding was on par with that of Wynne and Calvert in the 1620s (Pope 2004: 137). One of the most important additions to the colony during this period was a cluster of semi-attached buildings, near the original Mansion House. The Mansion House did not appear adequate for the Kirke family's needs, resulting in the construction of a new dwelling and the renovation of the Calvert stables into an operating tavern attached to the Mansion House. This group of buildings served members of the Kirke family as housing and for other domestic purposes, as evidenced by the expensive artifacts recovered from these contexts, as well as monogramed pipes bearing the initials DK and a lead merchant's token bearing the same (Gaulton 2006; Gaulton 2013: 282; Ingram 2015). This cluster of Kirke buildings is noteworthy due to where they were constructed. They are situated just south of the eastern edge of the cobblestone street, which is the largest stretch of the street that has been excavated. Additionally, many of the artifacts associated with the Kirke buildings eventually settled on the cobblestones.

The exact undertakings in Ferryland are unknown after 1640, reminiscent of what occurred previously with Wynne and Calvert; however the fishers, planters, and Kirke were at odds (Cell 1969: 117; Pope 1986: 25). The onset of the English Civil War in 1642 and the subsequent political unrest would greatly affect the royalist David Kirke (Pope 1986: 26; Gaulton 1997: 12). Devon was a central battleground in the Civil War, with ports being possessed interchangeably by either side. Ships returning with goods to trade would find the port they left from in the spring would belong to the opposition come the fall. This would affect trade as the ports were not allowed to trade with the opposition (Cell 1969: 119; Pope 1986: 26-27).

Due to his royalist loyalties, Kirke was unwillingly drawn into the conflict. He was recalled to London in 1651 to answer legal questions pertaining both to his conduct with the West Country fishers and merchants, and their complaints that the Kirkes' interfered with the established success of the seasonal fishery. These legal issues led to the Calverts protesting Kirke's authority over the colony and their seizure of Calvert property (Cell 1969: 121; Gaulton 2006: 27). The result was David Kirke being imprisoned, with his property, including his lands and colony, forfeit to the Commonwealth (Gaulton 1997: 12-13; Pope 2004). Parliament wanted to ensure that the Newfoundland fishery and the residents were properly managed, and appointed John Treworgie as the sole commissioner between 1653-1660. Sir David Kirke remained imprisoned in London due to Lord Baltimore's suits against him until his death in 1654, the rest of his family remained in Ferryland and refused to give up their possession (Cell 1969: 123, Gaulton 2006: 28).

The Interregnum period was chaotic for the Newfoundland fishery, with merchants encouraging eventual government involvement with convoy requests, to protect English ships from piracy from the Dutch and Spanish. With the royalist restoration of Charles II in 1660, the Kirkes under the direction of Sir David's widow Lady Sara Kirke, regained control of Ferryland. Additionally, an interest and involvement of the English government in the Newfoundland fishery was established (Cell 1969: 124-125; Pope 1986: 28; Tuck et al. 1999). Lady Sara and her four adult sons did not hold the legal right to Ferryland, as the courts had ruled in favour of the Calverts, but the Kirkes refused to leave the plantation and managed to eventually carve a place for themselves (Pope 2004; Gaulton 2006: 28).

For the subsequent decade, business continued quietly in Ferryland under the control of Lady Sara and her sons. The population of the settlement continued to grow,

Lady Sara's sister Frances Hopkins and her household arrived in the early 1660s (Pope 2004: 59-60). Additionally, censuses conducted in 1677, 1682, and 1692 outline most of the permanent residents in the settlement and those that were employed, and their increase in numbers during the second half of the 17th century (Pope 1993; Gaulton 2013: 282). Lady Sara and her sister were successful female entrepreneurs, acting as independent heads of their individual planter households, something they would not necessarily have retained had they returned to England. Additionally, Lady Kirke has been called "British North America's first woman entrepreneur" due to the complete control she retained of her husband's business (Gaulton and Tuck 2003: 209; Pope 2004: 300-304).

The continued population growth of Ferryland meant a need for more infrastructure. By the mid-17th century, there was little space within the original four-acre Calvert colony. Archaeological evidence demonstrates that between 1660 and 1670 several domestic structures were erected in the Pool Area, one of which was built five metres from the dismantled forge; the north footing of this dwelling encroached onto the southern edge of the cobblestone street (Nixon 1999: 25). By the time of her death in the early 1680s, Lady Sara Kirke had been managing the Ferryland plantation for almost three decades, and her family continued to run the business after her passing (Gaulton 2006: 29).

2.3 Destruction

Ferryland appeared to not undergo further drastic change before the colony was attacked by four Dutch warships on September 4th, 1673. The destruction from this attack affected the entire colony; the original storehouse by the Pool was destroyed along with the

other fishery-related buildings. The settlers and non-mercantile infrastructure survived, but the financial strain on the community and the subsequent rebuilding efforts would have left it in dire straits. Nonetheless, the Pool Plantation quickly recuperated, with a census in 1675 indicating the continued prosperity of the plantation, and the Kirkes particularly (Gaulton and Tuck 2003: 210; Gaulton 2013: 283). Repairs after the Dutch raid included a two-roomed outbuilding, with one room cobbled with a drainage system and used as housing for livestock (Gaulton and Tuck 2003: 216-217).

While Ferryland managed to avoid complete ruin by the Dutch in 1673, the colony only survived until 1696, when it was completely razed to the ground at the hands of the French. The French attack was part of an extensive offensive campaign to throw the English fishery into disarray and expel the planters along the "English Shore" (Gaulton and Tuck 2003: 210; Gaulton 2006: 30). On the 21st of September, nine warships and 700 French soldiers sailed into Ferryland harbour and destroyed the entire colony. Most of Ferryland's residents were returned to Appledore, Devon, however a certain number were kept as prisoners in Placentia, the French capital of Newfoundland. Such prisoners included George, David (II) and Philip Kirke, who all died in captivity over the winter of 1696-97 (Clappe 1697 in Pope 1993: 151; Gaulton and Tuck 2003: 210-211; Pope 2004: 408).

Ferryland was abandoned for that winter. Many of the displaced colonists returned to the area in the following year, including David (II) Kirke's widow Mary. However, at this time the focus of the settlement moved away from the area surrounding the Pool, and instead relocated further inland along the coast to where the current community of Ferryland is situated (Gaulton and Tuck 2003: 211).

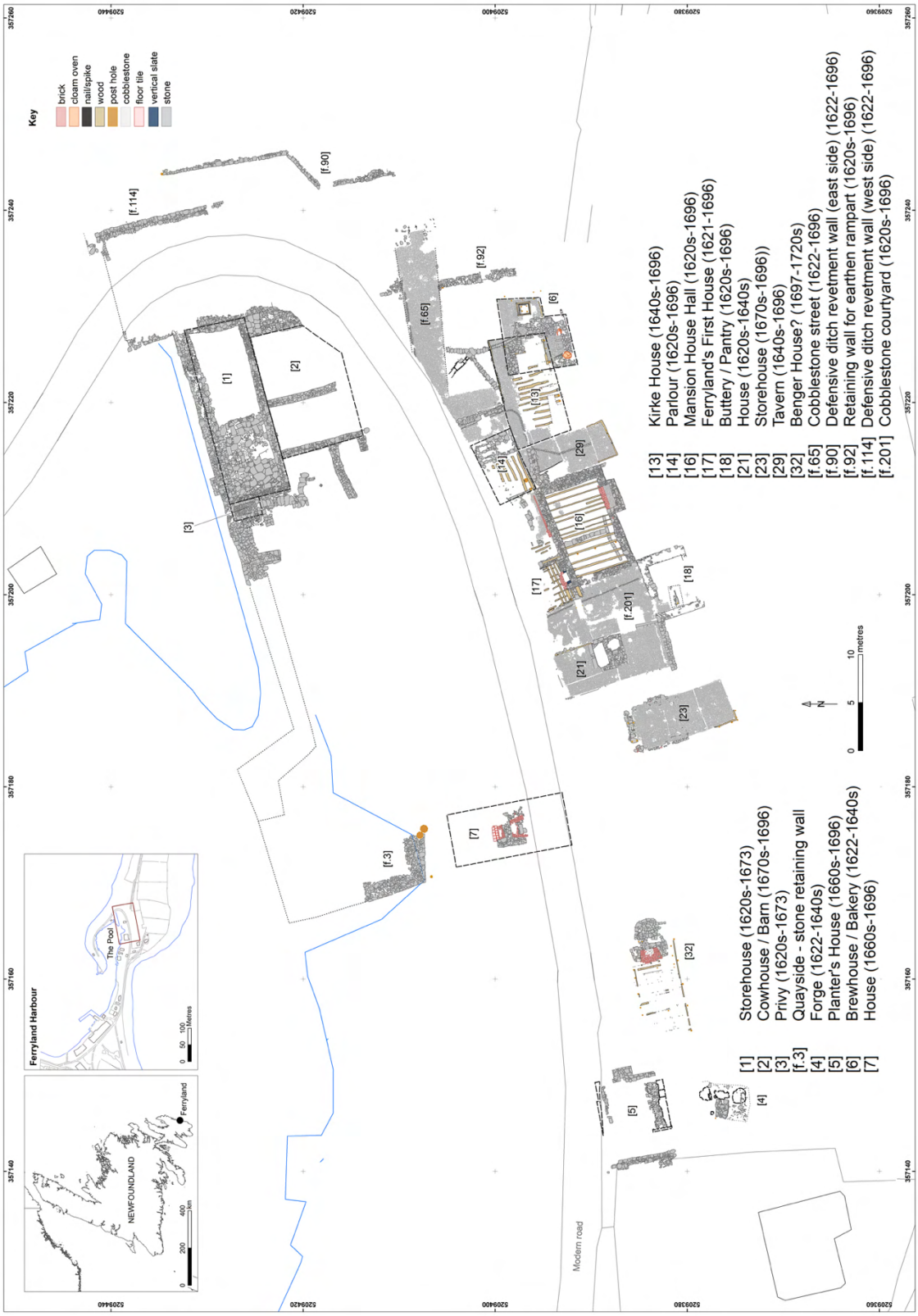

Figure 3: Site plan (courtesy of Bryn Tapper)

The history of the Ferryland colony is reflected in its infrastructure (Figure 3). Clear shifts between Calvert and the Kirkes are visible, and all demonstrate a commitment to the Newfoundland fishery, and Ferryland itself. There was a change from imposing stone and timber-framed buildings on stone footings and roofed in slate, to timber buildings set directly into the ground (Gaulton 2013: 283). The change in infrastructure reflected the change in population in the colony and the change in direction of the colony's purpose, from a small self-sufficient village of craftsmen and colonists to a mercantile trading centre (Gaulton 2013: 280, 284).

Chapter 3: 17th-Century Cobblestone Streets

3.1 A Street Defined

The significance of pathways and streets in the early modern period has not been extensively studied (Keystone Historic Buildings 2016: 1). Some recent archaeological work within the last decade has begun to see the importance of roadways and streetscapes. Research has been done in regards to roadways, at different points in time: a medieval roadway in Wales, the paved streets of Pompeii, and research into classifying roads as important archaeological features. Each of these projects have added to our understanding of the importance of streets and roads in the archaeological record. Streets have been regarded as a framework for social events, with little attention paid to the materiality of the street itself. Or they have been viewed as the result of urban settlement planning, without regard to those using the street (Kirkorian and Zeranski 1981: 6; Laitinen and Cohen 2009: 3). The early modern street is a multifaceted entity, encompassing a variety of factors that are generally forgotten. Extant streets from the 17th century exist across Europe and North America, but when archaeological reports are completed, they generally remain a footnote, with little to no details provided and no analysis conducted on their importance.

Streets in colonial North America, designed and built as a form of urban planning, have been established across a multitude of settlements from the early 17th century (Winslow 1620 in Young 1846: 170; Reps 1965: 125). Historical records from Plymouth, Massachusetts, for example, discuss "having two rows of houses and a fair street" (Winslow 1620 in Young 1846: 170). The 17th-century cobblestone street at Ferryland, Newfoundland, parallels that statement. In 1622 Captain Edward Wynne wrote to his

patron, George Calvert, that with permission he planned to add "for the comfort of the neighbour-hood, another row of building" that would "be so pitched, that the whole may be made a prettie streete" (Whitbourne 1620: 156; Wynne 1622a in Cell 1982: 198). The archaeological remains of Ferryland's main street stands out compared to other contemporaneous examples in the New World, as it is among the earliest evidence for a paved road in colonial North America.

Despite the physical presence of such features, however, the design and resources involved in their construction have tended to pass unnoticed, and there is widespread imprecision in the terminology applied to them. Some of the terms employed here in reference to the construction of Ferryland's 17th-century cobblestone street are no longer current in the 21st century, while others still in common usage have shifted in meaning, requiring clarity in their use in this thesis.

The term street originates from the classical Latin *sternere,* meaning literally to pave or to lay down, and thus deals directly with construction and the built environment (OED accessed 14/07/20). Streets and roads were originally fundamentally different. A road is designated as leading to a destination, normally between settlements. In contrast, a street exists within a city, town or village, and can lead to an alleyway, plaza, yard, passageway, gate, courtyard, stairwell, or dead end. Roads were meant to be wide enough for two-way traffic to pass, and could just be dirt paths. Streets tended to be narrower, lined by buildings and more likely paved (Laitinen and Cohen 2009: 1; OED accessed 14/07/20).

Cobblestones themselves are of equal importance to early modern streets, as they were the raw material used to pave Ferryland's street and its contemporaries elsewhere in North America (Ferguson 2005: 368). A cobble is a medium-sized stone that is usually

undressed, generally between 100-250 mm. The term is from Middle English and began to be used circa the 15th century (OED accessed 12/08/20). The natural shape and size of a cobble makes them different to "setts" which were stones "dressed"—shaped by tools—to be more regular in size and rectangular in shape (Keystone Historic Buildings 2016: 13). Cobbles might have an awkward bit chipped off to better fit in the paving, but generally the stones are collected from riverbanks and shores, where they have been naturally rounded, and used as they are found. Cobblestones have an advantage over dirt surfaces as they make the pathway useable for the entire year in any weather. Such pavements immediately drain water build up and do not develop ruts. Cobblestones, a naturally occurring stone, are common in Devon, England—the original home of most Ferryland colonists—and in North America, particularly near coastal settlements. North American colonial residents would take the stones from alluvial deposits, from shorelines, or even the ballasts from visiting ships (Ferguson 2005: 368).

An unusual term by standards today is "pitched." Originally of Middle English origin, similar to cobblestone, the word was chiefly a British term. There are multiple different meanings of the word, but a major definition during the 17th century dealt directly with paving. It meant, "to pave with stones or blocks set on end," specifically referring to cobbling with pebbles. The term is now rare and generally used in the passive voice (OED accessed 08/07/20). Pitching was used to describe stones predominantly driven into the ground or bedding, with only a small area of the stone above the bedding surface. The practice makes the street structure more stable and secure, as the stones are less likely to be knocked out of the street (Keystone Historic Buildings 2016: 15).

Flexible pavement is what is commonly used today with asphalt roadways, but was also used with cobblestones and uniform blocks. A flexible pavement distributes weight loads to the subgrade bedding by pushing the particles down and interlocking them through friction (Ferguson 2005: 83). Flexible pavement consists of three or four layers. Ferryland is a three-layer example of a surface course (the cobblestones), and a base course (the sand bedding), placed over the compacted natural subsoil (Ferguson 2005: 83; Mamlouk 2006: 214). Cobblestones on the surface would take the heaviest load and distribute it downward into the sand bedding and the subsoil. Subsequently, the weight of the load would further interlock the cobbles together and strengthen the overall street. That said, the cobblestone street at Ferryland is also an example of a porous pavement design. Permeable, or porous, paving is a simple method of controlling excess water runoff (Ferguson 2005). The water would flow between the cobblestones to the sand bedding below, or over the cobblestones into the drain to also control the runoff. Using both the drain and the sand bedding, erosion would be reduced, and less infrastructure would need to be fixed for damages.

Residents in urban centres were often required to maintain the area of the street in front of their buildings, either directly or indirectly. Archaeological work in Pompeii, for example, has uncovered eight distinct paving phases as the residents expanded their street network and patched previous work (Poehler and Crowther 2018: 587). Coventry and York in England have documentation outlining the use of professional "pavers." The towns recognized paver as an occupation, and its practitioners were required to lay a good quality pavement in return for their wages (Jorgensen 2008: 556). Professionalization and organization of the occupation indicates a demand for properly maintained and paved surfaces, and the willingness of individuals and local governments to pay for the service to

be carried out properly, for a guaranteed result (Jorgensen 2008: 557). The care that Calvert and Wynne were taking in constructing the Ferryland colony is indicated by Wynne's recruitment, as noted in a letter, of a professional paver. The very presence of James Buell, a stone layer (likely another term for paver) listed among the second group of settlers who arrived in Ferryland during the summer of 1622, shows the importance of a properly maintained and constructed street, and how much that mattered to the residents of Ferryland. Another 1622 arrival, described as a journeyman, may also have been involved in various construction activities involving stone, including the street (Wynne 1622b in Cell 1982: 204).

3.2 The 17th-Century Street

The early modern street was both public and private. Streets are not the same as roads, and provide a fundamentally different function: they exist within communities, not as links between them. Private doorways open directly onto public streets and that immediate street area can act as an extension of residents' houses. A street functions as a thoroughfare for the movements of people, animals, and goods; it helps structure towns and settlements; and it serves as a meeting place for community members. Within this larger environment, streets act as fixed features. Once created, they set a pattern that will permanently direct movement within settlements (Kirkorian and Zeranski 1981: 1; Rapoport 1982: 88; Laitinen and Cohen 2009: 1). The street becomes a social and physical entity, a communal hub. There is no one use for a street: it offers passage; garbage and waste are tossed directly onto it; refuse can migrate onto a street from middens beside

buildings; it can serve as a meeting place. Streets and roadways can further show transportation and communication needs within and between communities (Kirkorian and Zeranski 1981: 1; Rapoport 1982: 15; Glassie 2000: 56).

The creation of a street can stem from a desire for order within urban living, but can also derive from residents' sense of how they should be living. A street can affect the relationships between people by bringing them together, and directing their movements throughout a town, acting as a guide (Rapoport 1982: 77). The meaning and purpose of a street is thereby ambiguous—a public space that leads to other public spaces, never entirely demarcated from each other, while linking private spaces (Laitinen and Cohen 2009: 1, 3: Gibson 2015: 418). Streets belong to everyone. Residents store property on them, while individuals and government both make efforts to maintain and even beautify them. Streets offer a joint identity to the community, because the state of the streets reflects the state of the community (Kirkorian and Zeranski 1981: 1; Rapoport 1982: 94). A street can connect the material with the immaterial.

The use of a street was constantly changing. Public and private distinctions are not characteristics of space, but rather of power relations within space. The space of the street would be determined by each individual as it was used. Workers, women, men, children, animals, officials, would each have their own roles and ways of defining the street. For that reason, in the making of a new settlement, creating a street based upon preconceived ideas derived from past settlements would inherently change the end result (Rapoport 1982: 77; Rykwert and Atkin 2005: 8; Laitinen and Cohen 2009: 3-5). Streets change in design and layout depending on cultural, political, economic, environmental, religious and familial factors; Islamic and Christian cities would have different urban designs, as did streets in

Asia and Africa compared to European streets. Islamic urban planning followed local topography as much as possible, while Rome imposed a grid pattern. Medieval European cities grew to surround a central fortification which was also common in China and Japan. In the 18th century, Portugal placed emphasis on both flow and grandeur in cities, while contemporary Swedish urban designers downplayed the former in favour of the latter (Laitinen and Cohen 2009: 9-10). Larger urban centres would be created and designed differently than smaller towns and villages. The organic growth of medieval cities to accommodate larger populations would be vastly different to newly created towns designed around a seasonal fishery. Consequently, European intrusion into North and South America and the creation of colonial towns would result in their own vernacular designs, based on the experiences and history of those constructing the streets and towns (Rapoport 1982: 78; Rykwert and Atkin 2005: 9; Laitinen and Cohen 2009: 4).

Streets are an extension of what residents believe their settlement should be, as much as what they actually were. This is demonstrated by maintenance regulations. The 17th-century town surveyors in Connecticut, for example, were required to maintain the highways and bridges in their area by supplying two full days of unpaid labour annually (Kirkorian and Zeranski 1981: 1). The needs of individual communities would be reflected in the state of their streetscapes; the greater the need, the more construction and improvements to the paths would be facilitated (Kirkorian and Zeranski 1981: 2; Jorgensen 2008: 554). Additionally, streets and roads would follow earlier, smaller pathways that would grow and be better maintained as traffic and other needs expanded (Ruiz 2016: 448). Increasing populations would facilitate additional economic activities, and expand the traffic within the urban environment. That in turn would increase the need for well-

maintained streets, which improved the image of a city or town as being a good place to live and work (Jorgensen 2008: 555; Lesger 2014: 106). The late 17th through the early 18th century was a period of economic changes and reforms in Europe and subsequently North America, which was reflected in the civil engineering. By the mid-18th century road and street construction began to be standardized (Ruiz 2016: 441).

In the Middle Ages, ancient paved Roman roadways continued in use, and eventually wooden planking became popular near wharfs, notably in Scandinavia. Gravel surfaces eventually replaced wood in many areas, including 13th-century Norwich, where they form the earliest surviving English pavement (Jorgensen 2008: 552). By the end of the medieval era, cobblestoned or otherwise, paved streets began appearing. Far more expensive than other paving, but also far more durable, cobbled and stone surfaces became a common urban sight from the 14th century on large or small streets. These surfaces required more maintenance but could take, and were designed specifically for, heavier traffic (Jorgensen 2008: 553) and for better sanitation.

From the Roman period there is evidence of paved streets in Pompeii that directly correlate to large scale urban development and the construction of aqueducts and subsequent drains (Poehler and Crowther 2018: 587). From late medieval times, towns had strategies in place, from refuse pits to latrines, to deal with waste. Authorities also constructed cobbled streets that sloped towards drains (Jorgensen 2008: 547). Such major town-centre streets, often paved with cobblestones sourced from nearby riverbeds and beaches, made the city cleaner as well as improving its ability to move goods: the new streets were aids to both health and commerce (Jorgensen 2008: 551-552; Furnée and Lesger 2014: 2). Those who lived adjacent to the streets were charged with helping to clean

the rubbish from them. With urban expansion in the late 17th century, some cities in Europe created sanitation departments and hired workers specifically to sweep the cobblestones and remove waste (Lesger 2014: 106; Ruiz 2016). Streets that were always passable, despite inclement and wet weather, were crucial in working life and paramount for any area of economic importance (Jorgensen 2008: 552). That made paving of importance in such areas, particularly those involved in early industry such as at Ferryland.

By the early modern period, observers viewed cities through the lens of their streetscapes, and how they impacted residents. "Here is no regular street," wrote Sir Joseph Banks of his 1766 visit to St. John's, Newfoundland, "the houses being built in rows immediately adjoining to the Flakes, Consequently no Pavement, offals of Fish of all Kinds are strewed about…" (Banks 1766: 147). The uncleaned streets of St. John's, dominated by a litter of fish guts to an extent unmatched by any fishing village Banks had seen in England, told him what type of town St. John's was, the business and work that took place there, and how people lived within the town.

Cobbled streets were designed to drain and keep their surrounding environment clean. Early streets had a single gutter to manage rainwater and waste runoff, generally in the centre of the pavement with stones angled in a V-shape. The ubiquity of drains and gutters indicates that by the time the first New World colonies were established, European town residents acknowledged the importance of streets in the overall care of their urban environment (Jorgensen 2008: 554; Furnée and Lesger 2014). That said, streets and their drainage only worked to the extent that residents kept the drain clear of waste. Cobbles are easier to sweep than gravel or mud, so sweeping the waste away from the area with the

drain or gutter would have been part of the communal care and maintenance of the pavement.

As public demand for roadways and streets continued over time, developments in technology and engineering changed how streets were built. Universal specifications were created in the 18th and 19th centuries, such as how steep a slope could be, the use of similarly sized and shaped ("dressed") stones in a roadbed, and the depth of the road bedding (Kirkorian and Zeranski 1981: 4; Ruiz 2016). But between the first medieval initiatives and 19th-century standardization came the early modern street, which partook of both.

Roadways in the Medieval period existed primarily to link settlements and important destinations, such as monasteries, and were considered important politically. It was a point of pride that local military commanders could both finance and protect the investment (Fleming 2009: 97). Beginning it the late 16th and early 17th centuries, a sign of European city planning was a desire for larger urban spaces, straight streets, and large uniform buildings. Depending on who was involved in the construction, and their purpose, streets could be designed for magnificence and presence, or to be purely utilitarian (Laitinen and Cohen 2009: 9). Amsterdam in the 17th century built an early foundation for public life that was not limited to daylight, by creating street lighting along delineated major streets that was relentlessly maintained and cared for, affecting and increasing the city as a retail centre (Lesger 2014: 106). In England, where municipal governments often lacked funds and authority to address paving and waste disposal needs affecting pre-existing streets (Lesger 2014: 105), specific urban planning strategies in already established towns became more common only in the later 17th century, when reforms and centralization led to greater investments in infrastructure (Ruiz 2016: 448). That was decades after such

strategies had been applied to newly-built settlements under centralized authority in Ireland, the West Indies and continental North America. The colonization of Ireland occurred in conjunction with North American settlements, and the Calverts—who were heavily involved with their Irish settlements—would have employed those same ideas in Ferryland (Reps 1972: 8; Miller et al. 2011: 169-172; Miller 2013: 196). Such settlements took into consideration future growth and urban development, along with defence and agriculture. Within North American contexts, a close urban settlement was important.

Ferryland was ultimately designed to be linear, with the main street acting as a guide for construction and eventual layout of the entire colony (Reps 1965: 126; Miller 2013: 199). The early construction of the street meant that it had a huge impact on how Ferryland as a whole would be laid out, including the placement of the buildings and defences. Wynne's reference to the street in 1622 was a mirror image of the Plymouth colony's goal of "having two rows of houses and a fair street" (Winslow 1620 in Young 1846: 170), with both aims being set at the beginning of each colony's initial construction effort. The archaeological remains of Ferryland's 400 ft. (121 m) main street stands out compared to other contemporaneous examples in the New World, as it is among the earliest evidence for a paved road in colonial North America and one of the best preserved. But the layout of the colony is similar to other communities in 17th-century North America and Britain.

North American examples with a linear layout include Salem, Massachusetts, and Providence, Rhode Island, which were settled at approximately the same time as Ferryland, in the 1620s and 1630s (Reps 1965: 126, 138). Jamestown, Virginia also had a building-lined street that bisected the colony within a decade after its founding in 1607 (Miller 2013: 199). It has been suggested that there is correlation with Jamestown and earlier town

constructions in Ulster, Northern Ireland (Reps 1972: 16; Miller 2013: 199). Ferryland would have required extensive planning, even as it incorporated a vernacular subconscious by workers and residents who arrived in 1621-1622. Calvert was deeply involved in his political career at the time of settlement, leaving little time for managing his colony of Avalon, which meant that he delegated the work to Governor Wynne, including large parts of the town layout and future plans for the colony. The surviving letters from Wynne to Calvert mention what had been occurring within the settlement and future plans, as well as reference to additional letters from Calvert back to Wynne, indicating that Calvert was attentive to the planning of his nascent colony (Whitbourne 1620; Wynne 1621 and 1622 in Cell 1982; Miller 2013: 201). This is referenced directly in regards to the [cobblestone] street as Wynne states "whereon (with your Honours leave and liking)," he would go forward with constructing the street. In his next letter Wynne states, "I have proceeded with a great deale of care and respect unto your Honours commandements," suggesting Calvert had a degree of control over what was occurring in Ferryland (Wynne 1622b in Cell 1982: 204).

The archaeological remnants of Ferryland's street encompasses the essence of a 17th-century street. The street serves as a multifaceted form of materiality, combining the street itself, the buildings and layout of the settlement, the landscape impacted by its construction, and the living humans and animals that moved along it (Laitinen and Cohen 2009: 9). Universally, streets and roadways have identifying features: refuse is tossed on them and collects in gutters; there is a structure to the surface and subsurface; and there is evidence of repair efforts (Kirkorian and Zeranski 1981: 6). Additionally, the preparation of Ferryland's street with similar sized cobbles to ensure a uniform surface—indicating a

great deal of planning and forethought—would have allowed for easier maintenance and cleaning. While settlements were made with specific reference to other towns and urbanization efforts, each street and subsequent settlement that grew around the street was unique. The study of Ferryland's street can therefore be used to infer information regarding social structures, the use of public space, policies and history (Rapoport 1982: 141).

Chapter 4: Theoretical Background and Research Questions

4.1 Theoretical Background and Approach

Historical archaeology is a subdiscipline of archaeology, itself a social science concerned with the study of the human past through material remains. This project is the examination and study of a large cobblestone street central to the Ferryland colony. The street is both its own artifact, and a structure containing artifacts.

My research is informed by two primary theoretical approaches: built environment theory and taskscape theory. These theories consider how ideas of infrastructure were impacted by the materials present but also how infrastructures impacted those who used the street over time, and the artifacts recovered from the street. Captain Wynne's "prettie streete" (Cell 1982:198) was a major early undertaking for the nascent village, more than was required in a practical sense and clearly a matter of symbolic importance for the colonists. What does the timing, materials, design and construction of the street say about the needs and wants—the expectations—of early settlers in Ferryland?

Built Environment Theory

The theory of the built environment deals with ways that built forms accommodate human behaviours and adapt to human needs. It is meant to show how construction expresses and represents aspects of culture: the environment we build acts on us as much as we act on it (Lawrence and Low 1990). This concept is central when considering the 17th-century street in Ferryland. The way new settlers, for the most part fishers and tradesmen from small seaside villages in Southwestern England or Wales (Cell 1969;

Gaulton and Tuck 2003; Gaulton 2017:155), viewed themselves and the settlement they were trying to create were crucial factors in the development of the entire village, and would have influenced the street's construction. The act of imposing oneself onto a new environment immediately allowed, even forced, settlers to adapt (Lawrence and Low 1990:454). The street was discussed very early in town planning (Wynne 1622 in Cell 1982:198), indicating it was considered a necessity by residents. Built environment theory provides a framework in which to explore various research questions.

The way the street was built, how flat and straight it is (Gaulton and Tuck 2003:205), is a spatial order that was imposed by and influenced by social forms that the settlers understood (Lawrence and Low 1990: 486; Rykwert and Atkin 2005). Built environment theory is broadly functionalist, but focuses on "an integration of ecological (construction materials and methods, climate), social (household and community), and symbolic (cosmology and meaning) factors" (Lawrence and Low 1990:458). In short, these built forms—dwellings, monuments, streets—are socio-cultural constructs, modified by responses to climate and the restrictions of materials and methods. In essence, built environment theory deals with vernacular architecture, and how what was normative in the settlers' original culture changed based on what building materials, skills and tools were available in a Newfoundland context. This is one of the major questions for my thesis: To what extent did cultural, environmental and economic conditions influence the construction of Ferryland's cobblestone street?

Taskscape Theory

The early modern street was both public and private (Laitinen and Cohen 2009:1). Time and history come together as activities and social life creating the taskscape. According to Ingold (1993) a taskscape is broadly explained as a human equivalent to the natural landscape: "Just as the landscape is an array of related features, so – by analogy – the taskscape is an array of related activities," (Ingold 1993: 158). A taskscape, then, is constructed socially around human activity. It exists as long as people are actively engaging with it, and occurs as an essential act of living in a place (Ingold 1993: 157). These tasks are not suspended in time, unchanging, but each task takes its meaning from other tasks within an ensemble of interrelated activities (Ingold 1993: 158). With particular reference to Ferryland's 17th-century cobblestone street, taskscape is a way to consider the actions and activities that occurred on the street over time as revealed by the artifact assemblage, as a means of understanding how the street was used. The most important part of the taskscape is its interactivity. By living in the world—by building the street—we do not merely act upon the world, we move with it (Ingold 1993: 166). Where the street was situated within the town reflected travel patterns, and cemented in place that habitual pattern of movement. The imprint of past actions continues to impact the present, as the orientation of the modern asphalt road follows very closely to that of the 17th-century cobblestone street. Taskscape theory informs a view of the cobblestone street as something not frozen in time, but rather as a passageway actively engaged with day-to-day life then and now. The present is not separated from the past, because the taskscape evolves as our interactions with the landscape evolve.

Along with these primary theories, historic documents, the basis of historical archaeology, have been used. What the documents do and do not reveal have influenced my research questions. Built environment and taskscape combine with symmetrical archaeology, a form of Actor-Network Theory (ANT). The latter two concepts arose from a concern that archaeologists are too dualistic in our approaches to interpretation (Murdoch 1997; Witmore 2007). ANT and symmetrical archaeology provide a good framework in which to look at the dichotomies of nature-society, landscape-taskscape, and action-structure (Ingold 1993; Murdoch 1998; Latour; 2005; Witmore 2007; Dolwick 2009). ANT analyzes how social and material processes are intertwined and part of a complex association (Murdoch 1998). ANT and symmetrical archaeology treat humans and the artifacts they create as equal actants with their own agency, and therefore capable of different active roles depending on their network to gain shape and function (Murdoch 1997:741; Latour 2005; Dolwick 2009).

ANT is fundamental to the notions of taskscape and temporality, as it relates how the world is built and stratified—"space is constructed within networks…times are also forged within network configurations" (Murdoch 1998: 359). Networks pull collections of materials with their own space-times into new relationships reflecting their own space, creating new actors (Murdoch 1998: 361). Space, while a physical manifestation, is relational. The street as a space is also a place, and is arranged to conduct certain activities (Murdoch 1998). Actor and network can be interchangeable. The street is a network of relationships (artifacts and building materials and buildings), but it is also an actor in a wider view of the entirety of Ferryland, and wider still in the English colonialization of North America (Dolwick 2009: 39).

Taskscape theory further builds upon built environment theory, informing us that a street acts on the people who use it over time as much as they act on it. Thus the street was created over multiple journeys, reflecting a collective "muscular consciousness" (Ingold 1993: 167), evoking the physical labour that went into the street's construction. Viewing the street through both lenses creates an actor-network, demonstrating that the street itself, the objects filling it, and the people and creatures that moved across its surface, are of equal importance (Laitinen and Cohen 2009: 9). Together, this creates the cultural history of the street, which continues to interact today with the modern road. This cultural history can be used to look at how other settlements in Newfoundland and abroad may have interreacted with their streetscapes, and how that may have influenced their historical trajectories.

4.2 Research Questions

While the western end of the cobblestone street was first uncovered in 1994, and then its eastern extent during the 1996-1998 field seasons, this preliminary work, with few other instances over the past several decades, has been the only research conducted on this extensive feature. Nor have the associated artifact assemblages been analyzed (Gaulton 1997; Gaulton and Tuck 2003; Miller 2013). This project aims to fully explore the impact of the cobblestone street on the community in Ferryland through a series of research questions:

1) How did 17th-century concepts of city planning and transportation needs influence the construction and operation of the cobblestone street in Ferryland?

Ferryland was constructed in a linear pattern, with its single street used as a backbone for the development of the settlement (Miller 2013: 196). This design layout is shared with other communities in British North America, suggesting a cultural scheme common with earlier and contemporary British patterns (Miller 2013: 199). My first research question will be answered in several parts through different fieldwork components. Two test pits were opened in Ferryland's cobblestone street to determine how it was constructed, and walking surveys were also conducted on various contemporaneous cobbled pavements across towns and cities in Devon, England.

2) What can an examination of the street's artifacts, daily use and chronology tell us about its purposes, and how long it was utilized?

The 17th-century cobblestone street is approximately 1 metre below the present asphalt road and runs roughly in the same orientation. The two ends of the original street have been uncovered, along with additional smaller sections in between. To the west, a portion of the paved street was first uncovered in Area B of the Ferryland excavation in 1994. Approximately 30 m have been exposed on the western edge, where the only reliable date so far is determined from a section of stone foundation built a foot above the street. The foundation was part of a timber-framed structure constructed in the mid-17th century, meaning it post-dates the construction of the street (Nixon 1999: 25). In 1996-98, Area F on the eastern portion of the fortified village was excavated, exposing more of the cobblestone street, measuring 4 m wide and continuing for 15 m before disappearing west

under the current roadway (Gaulton 1997: 24). The two sections are thought to be contemporaneous, but the overlying road currently in use means the sections have yet to be joined. Artifacts recovered between the cobblestones or directly on top of them suggest that the road was constructed within the first ten years of the colony's establishment (Gaulton 2006: 50).

South of the cobblestone street in Area F several 1620-1630s structures have been excavated, most notably the brewhouse/bakery. The brewhouse/bakery had a wealth of materials excavated from it, particularly a large assemblage of clay tobacco pipes that were smoked and discarded during those decades. Stratigraphic evidence shows that the brewhouse/bakery was constructed shortly after the cobblestone street since brewhouse/bakery refuse deposits had accumulated directly atop it (Gaulton 2006: 53-55). Further analysis of the artifacts excavated from the street will provide more dates for the duration of its use, and the type of material remains will show the range of activities and interactions that took place there. This detritus is a good indication of daily life in the colony.

While conducting the material culture analysis, the artifacts recovered directly on top of and between the cobblestones were quantified and dated where possible. Question 2 seeks to answer if the dates span the entirety of Ferryland's 17th-century history up to the 1696 French attack and beyond, and if there are date ranges that have a higher concentration of artifacts (Gaulton 1997; 2006: 62).

3) How did the taskscape of the street and the people of the community mutually influence each other, and how does that inform us about what the settlers believed necessary for new immigrants in a new landscape?

Taskscape primarily deals with the social passage of time on the landscape, meaning what activities took place on the street and how these activities changed over time (Ingold 1993). This question is more intangible than the others. It will be answered using the artifact analyses to inform how residents in Ferryland used the street, how space was divided, where trash was tossed, and the possible original contexts of the artifacts. The aim is to understand how the street reflected the needs of residents. The question will be answered using an analysis of the spatial distribution of the artifacts. Do the artifacts cluster in any way, what types and numbers of artifacts are present and what does this tell us about how the street was used by the residents?

4) What are the essential similarities and differences between the cobblestone streets of Devon and the one in Ferryland, and what are their causes?

The cobblestone street is one aspect of Ferryland that shows the advanced planning that went into the design of the colony. One of Wynne's 1622 letters to George Calvert mentions his plans for a "prettie streete" as well as other construction goals (Wynne 1622 in Cell 1982:198). This planning for additional buildings and functional spaces shows that Wynne's settlers intended to stay for the long term. The construction of enclosed spaces as protection from the elements on the exposed Avalon Peninsula was a necessity, but the

specialty buildings of a brewhouse, a dwelling with an attached kitchen, a forge, a hen house, a well, a wharf and other tenements (Gaulton 2017:158-159; Cell 1982; Miller 2013), suggest a recreation of the life settlers knew from Britain. Although the Ferryland street actually predates many of the extant cobbled pavements in Devon, which were not laid until after the Civil War, there can be no doubt that paved surfaces were a significant urban amenity there and thus in the minds of Ferryland's original residents. The available materials and labour force were not the same, however, nor did Ferryland face the same building restrictions as a medieval English town. Even so, the similarities between the pavements in Devon and in Ferryland are readily apparent.

By answering and exploring these four questions, my research will expand on our knowledge of Ferryland as a whole. A more detailed understanding of the cobblestone street, the spine that supported the physical colony, will facilitate a better understanding of how individual buildings were linked to one another in the colony's overall taskscape (Miller 2013:199). Most of the settlement is adjacent to the 121m long street (Gaulton and Tuck 2003:205), but very little research has been done in regards to the street itself. Artifacts have been recovered, and it has been mapped, but it has yet to be analysed since it was uncovered in 1994 and 1996-98.

An analysis of the spatial distribution of the street and the artifacts recovered has the potential to add to the discussion of life in Ferryland. The street is an outdoor space, used by every member of the community in some capacity. The way it was used and viewed by the community will be revealing of the community's sense of self. Additionally, the layout of the street will aid in the discussion of early colonial town planning.

Chapter 5: The Ferryland Street Construction

5.1 Historical Documentation

While Ferryland's cobblestone street is an extensive feature, spanning the entirety of the original fortified settlement erected under the direction of Governor Wynne in the 1620s, it has minimal historical documentation. The only mention of the street was in an aside from Captain Wynne in one of his few surviving letters to George Calvert in 1622. The July 28, 1622, letter to Calvert was meant to be a report by Wynne of the work that had already been accomplished over the previous winter and the prospects of the land. It included news of the forge and several domestic structures being completed, a garden established, a well dug, a wharf and defences erected, and how the colonists had broken ground for a brewhouse and other tenements (Wynne 1622a in Cell 1982: 196-198). Despite all this information on what had been accomplished since their last correspondence, Wynne's mention of the street was nowhere near as informative, noting only that a street had been started or would soon be started. In this instance, Wynne phrased it such that, with Calvert's permission, he hoped to create more buildings so as to not waste ground within the settlement: "…for the comfort of the neighbour-hood, another row of building may be so pitched, that the whole may be made a prettie streete," (Wynne 1622a in Cell 1982: 198).

This mention of the street itself was incidental to detailing plans for more infrastructure facing the previously built structures. With such wording, the creation of a street between two rows of buildings could be interpreted as a by-product of the growing infrastructure, rather than a direct reference to the deliberate and time-consuming endeavour the feature would have required. Indeed, with only that single mention by

Wynne, the street would have been assumed to be short, only existing where there was a cluster of buildings lining it, and not particularly well made. Despite promises of the street being "prettie," that quality could have come from the well-constructed buildings along it. Conversely, however, as discussed in Chapter 3, Wynne's wording—"another row of building may be so pitched" —might have another meaning (Wynne 1622a in Cell 1982: 198). During the 17th century, pitching could refer to how stones are laid to form a pavement (OED 08/07/20). In modern English the connection of "pitch" to the angle of a set stone is obscure, allowing modern interpretations of Wynne's letter to miss this possible explanation, which is further buttressed by Wynne's use in his letter of the singular in "building." It may be that "building" is a verb and not a noun, meaning "constructing" not "construction," and that Wynne planned another length ("row") of paved road, a literal "prettie streete" made pretty not by the buildings lining it but by the pitch of its cobbles and the care taken in the construction of the street. Reading back over Wynne's four surviving letters from 1621 and 1622 to determine how Wynne previously used the term" building" has led this to be a viable alternative reading of the only mention of Ferryland's street (Wynne in Cell 1982).

Ultimately, the initial meaning of Wynne's "prettie streete," and his plans for its construction are unknown. The end result though, is one of the most significant features of the colony, a street so central to its functioning that it never required a distinguishing name. It runs the entire length of the original fortified settlement, some 400 ft. (121 m) long by 13 ft. (4 m) wide (Gaulton and Tuck 2003: 190; Gaulton 2006: 33; Miller 2013) and containing an estimated 75,000 stones (Figure 4) (Gaulton 2006: 51).

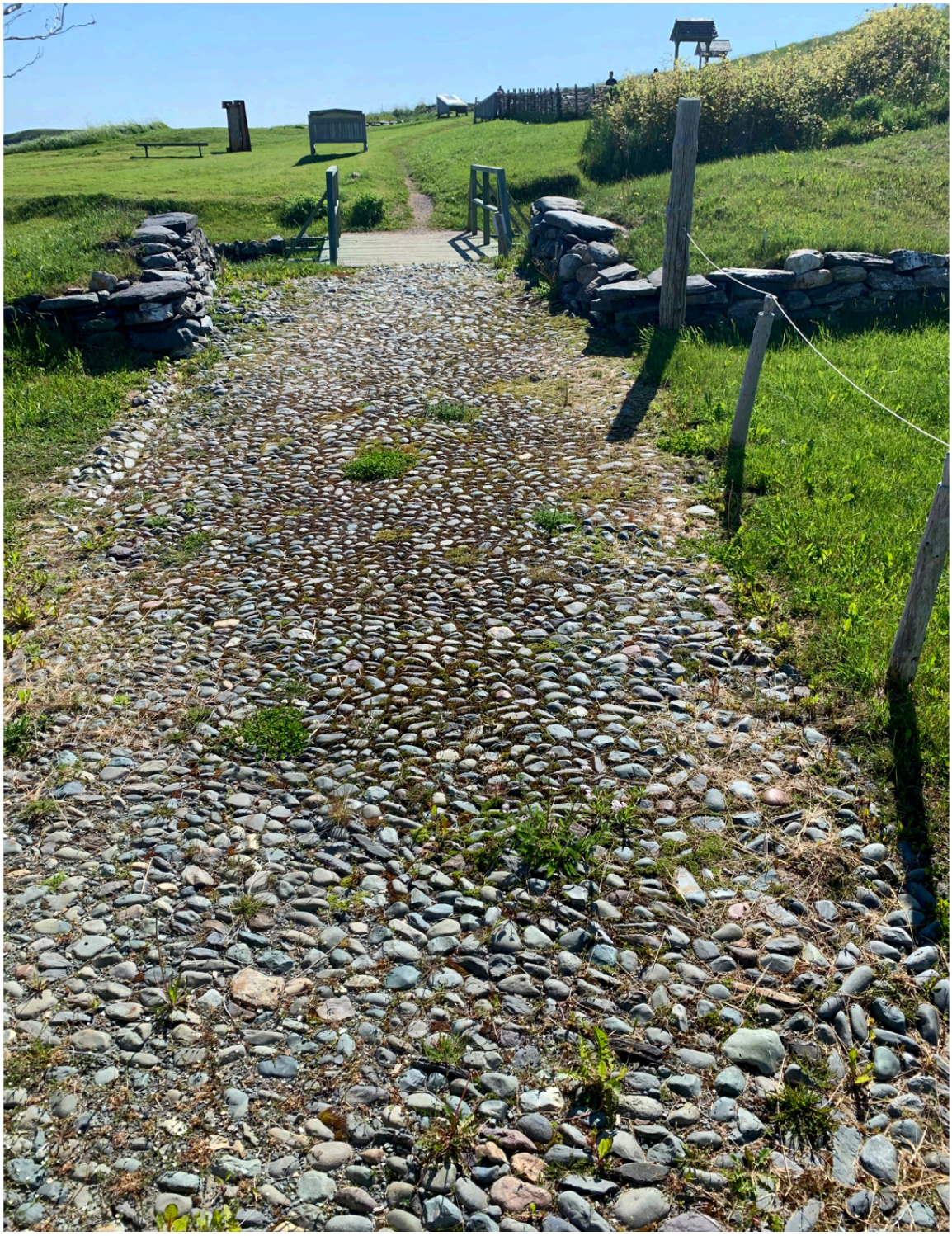

Figure 4: The 17th-century cobblestone street today

More information on the construction process, materials, timeline, and craftsmanship of the street can be interpreted from additional information in Wynne's letters, and what would be considered necessary for 17th-century craftsmen to construct such a feature. Along with the above-mentioned construction, what Wynne requested in his letters (labour and supplies) demonstrates that he had significant plans for the settlement (Wynne 1622b in Cell 1982: 203; Gaulton and Tuck 2013: 43). The request for more masons and other craftsmen are indicative of Wynne's plans to further construct stone structures, and expand the colony (Cell 1982: 204; Gaulton and Tuck 2013: 44). The largest structure became the Ferryland Mansion House, composed of several linked buildings reminiscent of a late medieval English manor, and would have been planned to house Calvert when he arrived. The Mansion House construction would have been occurring at the same time as portions of the street, as Wynne and his succeeding governors prepared for the arrival of Lord Baltimore in 1627-28 (Cell 1969: 93-94). The Mansion House was later used by the Kirkes when they arrived and began the Pool Plantation (Gaulton and Tuck 2013).

The 32 residents who resided in the colony in 1622 were mostly skilled tradesmen, tasked with furthering the colony's construction efforts. Among them Wynne listed a stone-layer, James Beuell (Wynne 1622b in Cell 1982: 204). Stone-laying was a profession which involved the laying of stones in a building (OED accessed 08/09/19). That said, it is similar to another 17th-century profession, discussed in Chapter 3, namely paver. It is unknown if the terms were synonymous but it is likely that due to his skillset, Beuell played an important role in constructing the cobblestone street. A journeyman who was also mentioned in the 1622 letter could refer to any occupation, but may have possibly been

involved in the cobblestone street construction. Additionally, Buell and other possible workers were likely involved since the first mention of the street by Wynne is found in the same letter that also details the arrival of new residents in Ferryland. There is no more surviving correspondence between Wynne and Calvert following this second letter from 1622, meaning there is no documentation or other evidence of who was involved in the street's construction, or when it began (Wynne 1622b in Cell 1982: 204; Gaulton and Tuck 2003: 190; Gaulton 2006: 33; Miller 2013).

5.2 History of the Street's Excavation

Most of the fieldwork pertaining to the cobblestone street prior to my research was conducted in the 1994 and the 1996-98 field seasons, uncovering two separate sections of the street, Feature 56a+b (Figures 5-7) (Gaulton and Tuck 2003: 192). Additional sections of the street were exposed while doing targeted excavations on the settlement in 2014. The feature was excavated per standard Canadian archaeological field techniques: one metre by one metre units were excavated separately, and followed the stratigraphy of natural and cultural layers. The different layers were recorded, photographed and mapped, with each excavated unit documented in field notes and site reports (Tuck 1993; Gaulton *pers. comm.* 2019). The entire site of Ferryland has been mapped at a scale of 1:10 on vellum, and large parts of the street have likewise been mapped and digitized. As individual features were excavated they were photographed. Excavated soil was dry sifted through a ¼ in. mesh and, where deemed necessary, certain cultural layers were further wet sifted using 1 mm screens.

Figure 5: Image of Feature 56a excavation, 1998, immediately beneath Event 267 (Photo courtesy of Barry Gaulton)

The cobblestone street has not been completely excavated, as most of it remains firmly beneath an existing asphalt road (the Pool Road). Sections have been excavated over the past three decades, but based upon previous interpretation, the street is presumed to be a single continuous feature that bisects the whole of the colony. The street consists of the cobbles, sand bedding, and wooden curb in the form of a layer of organic staining, that make up the entirety of its construction. During past excavations, digging stopped at the cobble layer, and the stones were not removed to establish whether there were earlier cultural deposits beneath them. Likewise, the wooden curb encasing the cobbles remained an organic stain that was mostly left untouched. One of the goals of the 2019 fieldwork was to remove cobbles on either end of the street to further establish, along with the artifact

analysis, a *terminus post quem* for the street's construction. The rest of the cobbles remained in situ.

Figure 6: Image of Feature 56b excavation, 1995, immediately beneath Event 225 (Photo courtesy of Barry Gaulton)

Figure 7: Image of Feature 56b excavation, 2014, immediately beneath Event 243 (Photo courtesy of Barry Gaulton)

5.3 2019 Fieldwork

A large portion of my work centred on a laboratory analysis of the material remains that were excavated from the different sections of the street. Following the completion of that work, my research moved onto a reconnaissance survey of the shorelines and beaches within proximity of the Pool, searching for suitable raw material sources (sand and cobblestones) used in the construction of the street. In conjunction with the survey, I excavated a single 50 cm by 50 cm test pit on each end of Ferryland's cobblestone street. The purpose of these test pits was to determine: 1) how the street was constructed, including the thickness and grain size of the underlying sand bedding and how the cobblestones were set into this bedding; 2) if there are any differences between the construction methods and materials used on either end of this 400-ft. (121 m) paved feature. In addition to my independent fieldwork, excavation of a mid to late 17th-century midden during the same field season exposed an additional 3 m of the southern curb of the street towards the western end of the colony.

5.3.1 Surveys and Sourcing Materials

The reconnaissance surveys were centered on the two shorelines to the east and west of the 1621 colony. The distance from the end of each edge of the street to the nearest beach was measured, to determine how far materials had to be moved when the street was being constructed. Both beaches were analyzed for the type of stones present, and if similar cobbles were used to construct the 17th-century street. A final goal of the surveys was to determine the available types of sand that could have been used for the bedding, whether

the sand came from a low or high tide, and from which beach it could have originated. It is impossible to know whether the current beach compositions are consistent with those in place when the colony was first being built in the 1620s, especially given that it has been estimated on the Avalon Peninsula that sea levels have risen approximately 1 m since the 17th century (Batterson and Liverman 2010: 135). However, with such a caveat, the current analysis is derived from the information provided by the modern beaches.

The east beach, nearest the east end of the street (Feature 56a), is located 59 ft. (18 m) away from the settlement. The cobbles from this beach are angular, with surfaces rounded from weathering but exhibiting flat sides, which would have been suitable for walking upon. The cobbles are fairly uniform in size and square/rectangular in shape, with sizes being consistent at 10-15 cm long. Some cobbles are thinner and elongated, which would have served as ideal material for drainage and curb pieces. Presently, the east beach does not have visible or easily accessible sand, regardless of low or high tide (Figure 8).

The west beach, nearest the west end of the street (Feature 56b), is located 41 ft. (12.5 m) away from the edge of the settlement, significantly closer for carrying heavy raw materials. The cobbles originating from this beach vary in size from small (5 cm) to large (25-30 cm). The larger stones were located further north and west from the settlement, meaning a greater distance to travel to move the construction material. The cobbles from the west beach are considerably rounded, compared to those from the east beach. These stones do not have a significant flat edge to walk on, and would have been harder to tightly pack during street construction (Figure 9). The west beach has the sandy area nearest the settlement. The high tide sand was fine, but not homogenous, containing large grains,

gravel and small pebbles. In contrast, the sand at low tide was very fine, with few inclusions.

Figure 8: The East beach

Figure 9: The West beach

Based upon the reconnaissance surveys, the east beach is posited to have supplied construction materials in the form of cobblestones only for the east end of the street. The

west beach likely supplied the cobblestones for the west end of the street, but also all of the sand for the sand bedding. This will be further discussed below, but the different sources of construction material are evident.

5.3.2 Test Pitting

Before test pitting could begin, a previously exposed section of the western edge of the street needed to be cleared of weeds, photographed and plan drawings completed. In the process of cleaning and preparing the street for further documentation, the section of street that contained additional artifacts was given the designation Event 996, representing artifacts that emerged from between the cobblestones as a result of root growth and the freeze/thaw cycle. Numerous pieces of iron slag ranging in size from small pebbles to 10-cm in width were found just to the south of the curbstones. Iron nails from beneath and beside the cobbles were excavated as were small fragments of ceramic, and clay tobacco pipe stems.

Two 50 cm by 50 cm test pits were dug, one at the east end of the street, and one at the west end. A total station was used to georeference the outline of the test pits. The stones were removed systematically in both pits and frequent photographs were taken to ensure that the stones could be returned in the correct sequence once testing was completed. The purpose of the testing was to assess several theories for the construction sequence of the eastern and western portions of the street. Based upon initial analysis and the results of the reconnaissance survey, Features 56a and 56b were constructed with a noticeable difference. Visually, Feature 56a was built with tightly-packed cobbles from the eastern beach, with

little variation in size or shape. Conversely, Feature 56b had cobbles further spaced apart with the cobbles noticeably shifting as they are walked on, with a diversity of sizes and shapes from the western beach, and the cobbles were not as firmly implanted within the sand bedding.

Such disparities in the construction on either end of the street, combined with the laboratory artifact analysis (discussed in Chapter 6), led to an initial theory that the eastern end of the street was paved first as it was the centre of domestic activity, while some time later work continued westward towards the other end of the settlement where the forge (and possibly other structures) were located. This theory helped explain the lack of datable artifacts from the first half of the 17th century in Events 243 and 225, deposits which lay directly above the cobblestones on the western end of the street. This theory was discounted after the test pitting due to further evidence recovered, as detailed below.

The test pit in Feature 56a was chosen in an area away from the frequent foot traffic seen during the summer tourist season. The stones were carefully removed and the sand bedding was taken out, recorded as Event 997. Small pieces of tin glazed earthenware, pipes stems and iron nails were found in the bedding, a natural result of a flexible, porous pavement system and freezing and thawing. This is also indicative that the eastern end was constructed early in Ferryland's history as demonstrated by the artifacts on top of the cobbles (Event 267), and lack of artifacts beneath the cobbles. Both suggest that there was no substantial build-up of cultural material before it was paved. The sand bedding was consistently 7 in. (17.8 cm) deep. Twelve cobbles were extracted, all of which were pitched so that most of their surface was within the bedding, allowing only a small flat face above the bedding as exposed surface area to walk on. Small pebbles were found between the

stones' sub-surface, likely an incidental part of the sand bedding or foot traffic. Below the sand bedding was not sterile soil, but a mixed fill designated Event 998. A few nails and some cobbles had corroded iron stuck to them. The mixed fill was 10 in. (25.4 cm) thick, making the entire pit 17 in. (43.2 cm) deep.

Figure 10: Test pit below Feature 56a, Area F

The sand bedding is comprised of very fine, dry sand, greyish brown in colour. The mixed fill was muddy, dark and wet. The area could have originally contained something

naturally occurring or organic that was covered, or a possible posthole once present before subsequently being paved over. When excavation of the test pit was concluded, it was refilled with new sand and the cobbles were placed back exactly as they were found (Figure 10).

Figure 11: Test pit below Feature 56b, Area F+B

The second test pit location in Feature 56b was chosen for being as close as possible to the forge without compromising the integrity of the street, or the adjacent Beothuk beach

occupation that had previously been excavated beside the forge in past seasons. This area was chosen to determine if there was an underlying cultural layer from the early years of the Ferryland settlement before the street was paved, indicating a later construction compared to Feature 56a. This test pit extended 5 cm beyond the curb of the street, so that curb construction could also be analysed. The curbstones were large, and mostly pitched within the sand, in a way similar to how stones were placed in Feature 56a, but the other cobbles within the test pit were not as deeply embedded, with the stone 1-2 in. (2.5-5 cm) above the bedding and not actually pitched. Few artifact fragments were recovered from the test pitting. This section of road had greater distance between the cobbles, and the stones were so placed that there was a greater surface area on which to walk, a method that sacrificed the integrity and stability provided by having most of the stones' surfaces beneath the sand bedding.

Excavation of this test pit stopped at a dark, sticky organic layer with beach cobbles, previously identified as a pre-colonial European fishery occupation. The sand bedding remained 7 in. (17.8 cm) deep, consistent with the test pit in Feature 56a. The sand itself was also a fine, dry sand, greyish brown in colour. Similar to Feature 56a, no significant artifacts were found beneath the cobbles, only several nails and small pieces of ceramic. This indicates that either the entire area was cleared before the sand bedding and cobblestones were placed down, or there was not enough time for refuse to build up before the paving began. The latter seems more probable, indicating that both ends of the street were constructed in tandem.

Once the test pit was photographed and recorded, it was refilled with new sand and the cobbles were placed back. However, this section of the street had several broken cobbles

shattered from past disturbances, so new cobbles were found to replace them. These were recorded for posterity and future work (Figure 11).

5.3.3 Wooden Curb

The presence of a wooden curb lining either side of the street was not immediately evident when the street was first excavated. As excavations continued however, a strip of organic matter and wood was found in 2014 running along the southern edge of unit N8 E11 in Area B, beside Feature 56b (Figure 12). The deteriorated wooden strip was measured as being 8 in. (20 cm) long and 2 in. (5 cm) wide, and noted to likely continue into other units westward along the street's edge. The 2014 site notes recorded this as being similar to the preserved wood found along the edge of the street in the 1990s when Feature 56a was being excavated near the bridge and defensive ditch of the colony. These strips were recorded and mapped, however, they were not continuous as a single example. Further excavations in 2015 revealed the presence of two post molds just south of the cobblestone street in units N7 E8-10. The post molds were noted to be approximately 4 in. (10 cm) in diameter and 6 ft. (1.83 m) apart, running parallel with the street's orientation. The purpose of these former posts was not evident, and might not directly relate to the street itself. The postholes for these posts were sizeable, with a minimum diameter of 16 in. (40 cm), and were dug into forge refuse as well as pre-colonial deposits. The cut-through and subsequent mixing of early deposits suggests that the posts were set around the time of the street's creation in the late 1620s.

Figure 12: Wooden curb excavation, Feature 56b (Photo courtesy of Barry Gaulton)

In addition to the independent fieldwork conducted in conjunction with the reconnaissance surveys and test pitting, the annual fieldwork conducted in Ferryland during the 2019 field season also revealed an additional segment of the cobblestone street. Excavations of a mid to late 17th-century midden in Area B near Feature 56b exposed 3 m of the southern edge of the street. The southern edge of the pavement clearly showed evidence of a continuous wooden curb that was set so as to encase and contain the sand bedding (and subsequent cobblestones). The curb itself was supported by a series of posts, 3 in. (8 cm) in diameter, set 4 ft. (1.2 m) apart, as revealed by several preserved post molds. The curb was continuous through the three units excavated, N7 E15-17, continuing

eastward towards portions of the street still unexcavated, as well as into unit N7 E14 which had been previously excavated. The wooden curb was 2 in. (5 cm) wide, the same as that uncovered in 2014.

5.4 Similar Paving Examples in Ferryland

The cobblestone street is not the only example of a paved surface within the settlement. The process is labour-intensive and time-consuming, and the other instances are not as large or intricate as the street, although in many cases they seem to link up with it. The Mansion House constructed for Lord Baltimore in the 1620s has a cobbled courtyard, cobbled pathways connecting the separate buildings together, a cobbled stable with a drain, and the floor of the western house in the complex was entirely cobbled. The first house and surrounding buildings constructed in Ferryland between 1621-22 have an archival record. Wynne's correspondence to Calvert outlines the construction of a habitable house, a kitchen and a cellar (Wynne 1622a in Cell 1982: 196-197; Tuck and Gaulton 2013: 43). The Mansion House complex in its entirety is an early construction, meant to be finished in time for Calvert's arrival in 1627. This would place the construction of the Mansion House complex, along with the influx of skilled tradesmen sometime after 1622, and thereby occurring within the same time frame as the street's construction, a chronology established using the artifact analysis discussed in Chapter 6.

Pathways around the Mansion House that link the separate buildings have not been the focus of any particular dedicated research (Tuck and Gaulton 2013). However, these pathways were likely walked frequently by the domestic servants, similar to the heavy use

of the courtyard. Cobblestones would be ideal for any area of high traffic and frequent use as they are easily cleaned, and remove much of the mud that would appear in a wet climate, with the additional bonus of not rotting, or inversely being flammable (Gaulton 2006: 96). When these pathways were constructed is unknown. In terms of priority, the laying of cobbles in smaller areas would seem less important, so it would be logical to assume that the smaller pathways were constructed after the courtyard and street.

The cobblestone courtyard measures 20.5 ft. by 15 ft. (6.25 m by 4.57 m), and leads down to the cobblestone street directly to the north of it (Tuck and Gaulton 2013: 49). It seems probable that the courtyard links up with the southern edge of the cobblestone street. Both this section of the street, and the end of the courtyard, have not been excavated as they are beneath the asphalt road. The street is almost certainly a single continuous feature, but there are at minimum two separate construction styles that have been noted between Feature 56a and 56b, and where these patterns begin and end can only be speculated on. Likely, the cobblestone street would have required several slight changes in direction to link up Features 56a and 56b (Figure 13). This would link both sections of the street into one continuous feature, as re-confirmed by the 2019 test pitting, and would make the Mansion House complex central to the settlement as the street passes directly north of the courtyard. Connecting with the courtyard would additionally have allowed heavy traffic on the street to be unimpeded by muddy ground at any time, and for the easy movement of goods between the waterfront storehouse, the wharf, and the Mansion House and other buildings.

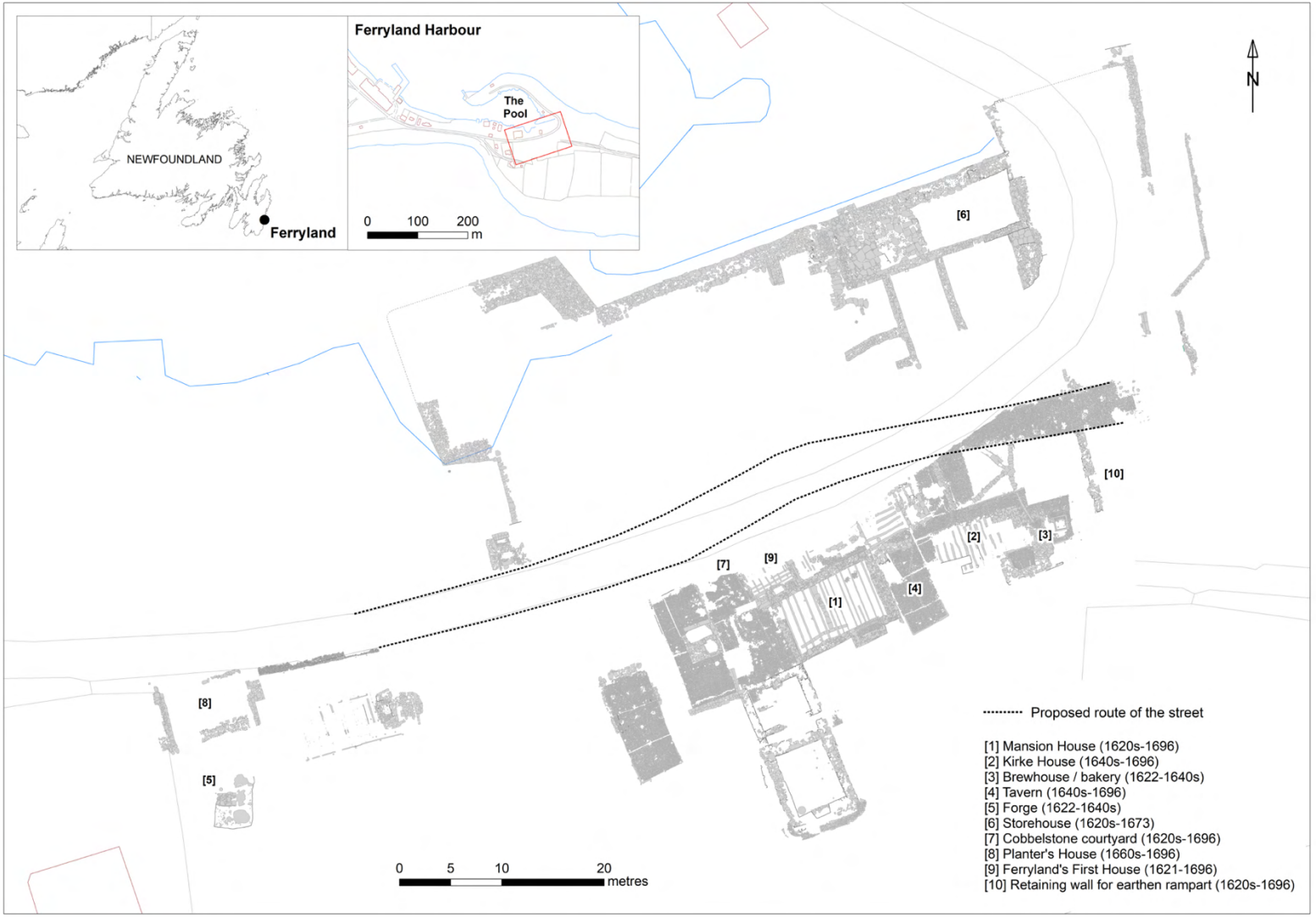

Figure 13: Map indicating the possible curve of the street (courtesy of Bryn Tapper)

5.5 Sequence of Construction and Discussion

Based on the above evidence, the test pit excavations, and the previous excavations of the cobblestone street in the 1990s, a sequence of construction for the street can be suggested. The placement of wooden curbs 13 ft. (4 m) apart occurred first, outlining the length, width, and depth of the planned street. Whether the entire street was delineated at once is unknown, but each end of the street was likely done at the same time, with portions of the middle being added as construction continued. Following the completion of the curbs, 7 in. (17.8 cm) of sand bedding was added between the curbs along the entire length of the street. Based upon the evidence from the test pits, it can be inferred that the sand bedding was consistent throughout, meaning an approximate total of 3,016 $ft.^3$ or 86.15 m^3 of sand was used for the entire construction. More or less sand could have been applied to fill in holes or even out bumps along the planned route. Furthermore, from the surveys conducted, the sand all appears to have originated from the western beach, at low tide. This meant that it would have taken considerable time and effort to transport the heavy sand all the way to the eastern edge of the street, and to continually collect the fine grains when the tides were out.

From there, a possible two or more stone layers worked to pave the street using stones acquired from the shorelines in closest proximity to each end of the street, thus explaining the difference in construction style and raw material identified at the eastern and western portions of the street. Based on the artifact analysis and the test pitting, Feature 56a and 56b were constructed concurrently. There were no early colonial occupation layers beneath the cobbles at either end, one of several indications that the construction was early

in the colony's history, and were undertaken simultaneously. Stone layer James Buell was most likely involved in the street's construction, probably on the eastern end, which exhibits the most skilled labour. That said, based on the differences in workmanship, the eastern end would have taken longer to complete. Feature 56a was constructed with the majority of the stone firmly pitched within the sand, and the stones closely packed together. This form of flexible, porous paving would have pushed the stones closer together as more traffic moved across it, making the street stronger and less likely to shift. Moreover, because the entire width of the street has been excavated, the northern curb edge can be seen in Feature 56a. Along with the wooden curbs encasing the sand bedding and the stones, proper (larger and longer) curbstones were placed to further prevent the stones from shifting, and a sloping drain along the northern curb was added for water and rain runoff. The drain was constructed similarly to that found in the Mansion House courtyard, with elongated stones placed in a V-shaped indentation and sloped so that the collected water would lead away from the buildings and activity areas, likely in the direction of the inner harbour (the Pool). The street was slanted slightly downward to the north to allow the drain to work properly.

Those responsible for constructing the eastern edge of the street had a good idea of what they were doing. The stone layer did inadvertently create a pattern in his laying of the cobbles, as the stones would spread outward in extending half circles from where he knelt. The result is a tightly-packed portion of road that has not shifted in almost 400 years, with surviving curbstones and a functioning drain, constructed with smaller, more square stones from the nearest beach to the east. How far this construction pattern continues is unknown, since after 15 m the street disappears under the modern road. As previously inferred, it

likely connects in some way to the Mansion House courtyard, but that cannot be stated for certain. Furthermore, the tight construction pattern could continue to the exact halfway mark between the east and west end of the street. Or, if care was no longer taken with the construction and instead speed was considered more important, perhaps that pattern was only laid in the section of the street found at the heart of the Ferryland settlement, centred around the Mansion House, its attached buildings and the waterfront storehouse. The remainder of the street may have been constructed in the same manner as the western end.

The western end of the street differs from the eastern to the extent that initial theories proposed that it was constructed significantly later than the eastern end. Test pitting did establish that the ends were built concurrently, as no evidence of early colonial era deposits were found beneath the cobbles. Those responsible for paving the western end were not the same stone layers as those employed in the east. The exact pattern of the stones laid cannot be established, as only one metre at most extends past the modern road to the south, but inferences can be made. The stones in this area are larger and rounder than those in the east, and come from the nearby western beach. These stones were laid so that a larger surface area could be walked on, but with the subsequent result that less of the stone was embedded within the sand, and with more space between the stones on the surface.

This end of the street did have the wooden curbs encasing the cobblestones, and proper curbstones were used as well. Each curbstone was elongated and firmly implanted within the sand bedding, preventing too much shifting of the stones over time. That said, due to the spaces between the cobbles, their larger surface areas on the overall road surface and the shallow implantation of the stones, the street in the west would shift more often, making its surface harder to walk on and more slippery in wet weather. It is unknown if

there is a drain along the northern curb, or if this section of the street slants northward to collect water runoff. Based on the presence of the southern curbstones, a drain of some kind does seem likely. The west end of the street is not as well constructed as the east, but it would have been completed faster. The stone layer had demonstrated a degree of skill and experience, as evidenced by the well placed curbstones, but was not as invested in this section of the street, either because of his skill level or, more likely, due to the few buildings that were initially found in this part of the settlement. His knowledge of the necessary requirements for a proper street, combined with his lower skill level, raises the likely possibility that the worker responsible for constructing the western part of the street was an apprentice stone layer to James Buell.

Approximately 80-85% of the cobblestone street remains unexcavated, which affects the conclusions that can be drawn from the fieldwork conducted. The location of where the street curves, and where the shift in the use of cobblestones from each beach occurs are currently unknown. Based on my own fieldwork and inferences, the east beach stones were used to construct the eastern end of the street, the courtyard, the stable (later the tavern), and the surrounding pathways around the Mansion House. Most of this construction was happening concurrently to the construction of the western end of the street, but more time and effort was directed at the eastern end. The full scope of the cobblestone street construction cannot yet be determined. Future work could further reveal how the street was constructed, if the modern road is ever moved. This will not be for some time, as the Pool roadway has been used in some capacity for 400 years, demonstrating a continuity in travel to and from the inner harbour. The modern asphalt, while hindering the excavation of the cobblestone street, does serve to highlight the importance of a large

pathway, able to support frequent and heavy traffic, from the mainland to the Pool. The importance placed on using the same path, to continually re-pave and build new roads on top of the original street, are of equal significance in knowing the care, effort, and dedication involved in constructing the street originally.

Chapter 6: Material Culture of the Street

Streets and thoroughfares in the early modern period have not been extensively studied. A quantitative analysis of the different artifacts associated with this central feature to the Calvert colony and later Pool Plantation will allow for a greater understanding of 17th-century Ferryland. It will also allow for potential comparisons with contemporaneous streets in England, particularly Devon, and other British North American colonies.

My second research question specifically seeks to answer what an examination of the material culture excavated from the cobblestone street can inform us about Ferryland and its colonists, as well as how long the street was in use. This required a focus on the artifacts drawn from multiple events across the length of the cobblestone street. In some cases there was no easily defined boundary separating deposits exclusively associated with the street, and those that belonged to individual structures. However, excavations of the cobblestone street identified the most relevant cultural events pertaining to Feature 56a+b. They are as follows:

Event 267 included the occupation/midden layer directly above and between the cobblestones in Area F, the eastern edge of the street. This event had the most artifacts associated with it—over 13,000—and was the largest section of the street uncovered, approximately 15 m by 4 m (50 ft. by 13 ft.). Additionally, this area of the site was a hub of activity for the Pool Plantation, bordered by the waterfront storehouse to the north, and the bakery/brewhouse and Kirke house to the south. Where this part of the street disappears under the current roadway, it would have been bordered by the Kirke-era tavern and the Mansion House as well (Figure 14).

Figure 14: Map indicating the primary cultural events of the street (courtesy of Bryn Tapper)

Event 243 comprised the soil and artifacts excavated from the western end of the street in Area B. This event was at most a metre wide and contained approximately 350 artifacts. Event 225 was a 4-5 cm thick layer of gravel and organics at the west end of the pavement and contained 200 artifacts.

Event 340 was a dark organic layer found next to the street in Area F, containing 20 artifacts—predominantly coarse earthenware and nails. Lastly, Event 356 was another dark organic sticky clay layer in Area F north of the street. It contained few artifacts and has been considered as a possible pre-1621 layer, the result of migratory fisher occupations from the West Country (Gaulton *pers. comm.* May/June 2019).

I have considered only artifacts that were directly related to the street, so as to avoid the confusion of mixing events that are associated with other features. That said, the street was a central space where different events mixed to a large extent. The various buildings of Ferryland all lined the street and, as will be discussed below, several different middens extended across the cobbles.

The Artifact Collection

While 80-85% of the cobblestone street remains firmly under the current asphalt road, what has been excavated does allow for a meaningful analysis. Nails were not included in this analysis, and all artifacts were previously cleaned, labeled and catalogued following excavations in the mid-1990s. More than 13,500 artifacts were examined systematically by material type, form and function. The four main artifact types in the assemblage are clay tobacco pipes, ceramics, glass and metals. Each required a specific method of analysis, as they inform different activities.

The clay tobacco pipe assemblage was analyzed by dividing diagnostic fragments from the many pipe stems. This step included a tabulation of the minimum number of pipes (MNP) based on the presence of more than 50% of the pipe heel (the bowl/stem junction), and then included a conservative count of decorated pipe stems that did not coincide with any of the existing pipe makers' marks. Additionally, pipe bowls with enough of a profile were analyzed via detailed typologies to determine a date range, country of origin and, where applicable, the pipe maker. This was based on past studies of Ferryland and other sites to identify these makers' marks and bowl styles (Atkinson and Oswald 1969; Oswald 1975; Gaulton 1997, 1999, 2006; Mills 2000).

The ceramic assemblage was analyzed by first separating the earthenare and stoneware by ware type, and then establishing a minimum number of vessels (MNV) for each ware, based on diagnostic pieces (rim, handle and base). The ware type was established by analyzing the fabric and inclusions, the glaze, and the decorations present on the ceramic sherds, and then categorizing each based on established standards. The MNV was further established by getting the most conservative count possible, created by matching up rims and bases based upon similar fabric and glaze styles. Thus, separate fragments which were potentially part of the same vessel were counted as such. This method would ultimately underestimate the number of vessels present in the artifact assemblage, but it would be consistent with previous analyses conducted at Ferryland. Furthermore, it is an estimate of the minimum number, recognizing that there very well could be many more vessels present.

Once the MNV was established, the Potomac Typological System (POTS) was applied as per previous Ferryland analyses. In the case of North Devon wares, other pottery

analyses of particular regional styles were also incorporated to identify specific forms and functions of the ceramics (Watkins 1960; Beaudry et. al, 1983; Grant 1983; Pope 1986; Stoddart 2000; Gaulton 2006). The POTS system was created as a way to standardize the analysis of vessel forms found on historic sites, and the established Devon pottery forms also work to create a similar standard, as more than 80% of the ceramic collection consists of Devon wares.

Previous studies of glass bottles and other containers were used to identify the glass artifacts, and where applicable to date the vessel. The functions of the artifacts were likewise determined (Noel Hume 1969; Wicks 1998, 1999). Metal artifacts consisted of iron tools, copper and lead. Various sources and past Ferryland excavations were used to identify and classify these artifacts. Finally, there are small miscellaneous artifacts as well.

Once all the artifacts were identified, a spatial analysis was conducted, with the artifacts plotted on a series of GIS-generated cobblestone street maps. The distribution of the artifacts will show if the artifacts cluster in particular areas, if activities were localized, and ultimately how this built landscape was used by the residents of Ferryland.

6.1 Clay Smoking Pipes

Clay tobacco pipes are amongst the most common artifacts found on 17th-century sites, and the main thoroughfare of Ferryland reflects this. Clay tobacco pipes can also be sourced accurately in many cases, due to well-defined regional styles. Furthermore, some pipe makers during the 17th century marked their pipes, allowing bowl styles to be even more closely dated, and also informing archaeologists of the origins of the pipes. These

factors together make pipes ideal relative dating tools (Oswald 1975: 1; Harrington 1978: 63; McMillan 2016: 18).

Pipe bowl styles in Ferryland have been extensively studied over the past three decades (Gaulton 1997, 2006; Clausnitzer 2011; Miller 2013; Ingram 2015). They have been compared to well established bowl typologies that were created by studying and recording variations in pipe style and manufacturing across England and the Netherlands (Atkinson and Oswald 1972; Oswald 1975; Higgins 1995; Bradley 2000). To increase the accuracy of dating the clay pipes associated with my research, the different bowl typologies were compared against available makers' marks. These marks were also well documented from past work at Ferryland.

Changes in pipe stem bore diameter have been used on other 17th- and 18th-century sites to determine an average date range for a site occupation. Pipe stem dating methods, while well established, were not used in this analysis due to a variety of issues outlined by previous researchers. Archaeologists are largely dissatisfied with stem bore analyses and the accuracy of the dates it yields due to the acknowledged issues (Noel Hume 1969; Oswald 1975; Duco 1981; Higgins 1995; Gaulton 2006).

6.1.1 Pipe MNP

Event 267 had a minimum number of pipes (MNP) of 333, derived from 3,947 fragments. This count includes 90 complete or nearly complete pipe bowls with a heel, one decorated Chesapeake pipe stem, one red clay Chesapeake pipe stem, 227 unmarked heels, and 14 marked heels. The 14 marked heels are a combination of different pipe makers, as

will be discussed below; however, only two of the marks are associated with a surviving bowl. With the addition of 6 bowls that were not included in the MNP count because they lacked a heel, a total of 96 pipe bowls were intact enough to be dated using Oswald's (1975) typology, alongside previous studies of the common pipe forms found in Ferryland (Oswald 1975; Gaulton 1997; 2006).

Events 243 and 225 had a significantly reduced MNP compared to Event 267. Event 243 had a total of 10, and Event 225 had eight. Both events did have two pipe bowls included in the MNP, while the rest of the count consists of unmarked heels. No pipe makers' marks were found in events on the western end of the street.

Figure 15: Image of a range of pipe bowls associated with Event 267

The size and shape of the pipe bowls are informative about the range of site occupation, country and region of manufacture, and how space within structures was defined. The pipe bowl forms from Ferryland's main street ranged in date from 1620 to 1720, representing the entire history of the colony, and beyond the French attack of 1696 (Appendix A) (Oswald 1975; Gaulton 1997, 1999, 2006; Clausnizter 2011; Ingram 2015). The pipe bowl typologies were used to indicate the periods of heavy occupation and use of the street, likely representing increases in the population (seasonal and year round) of Ferryland, and consequently increased traffic on the street (Figure 15).

The manufacturing dates derived from the date ranges are a rough guide based on shape and size. By assembling these dates, a graph was created, to help ascertain the use of the street, when it was built, periods of heavy use, and general occupation. A complementary analysis was then conducted based on pipe makers' marks. Lastly all the pipe fragments were plotted to determine if there was a pattern of smoking activity visible on the road.

6.1.2 Pipe Bowl Typologies

The 96 pipes bowls from Event 267 range in dates, with large numbers in the 1620-1650 range which overlaps with the 1630-1660 range and later 1660-1680, 1660-1690 and 1670-1700 ranges, which also overlap (see Figure 16). The earlier dates correspond to the David Kirke era and the later dates with his widow Sara (Oswald 1975; Gaulton 1997; 2006). The 1630-1660 date range had the most pipe bowls with 21 pipes in that specific

category. There were multiple pipe bowls around the 1630 date as well. These date ranges do make sense, in regards to the history of the colony.

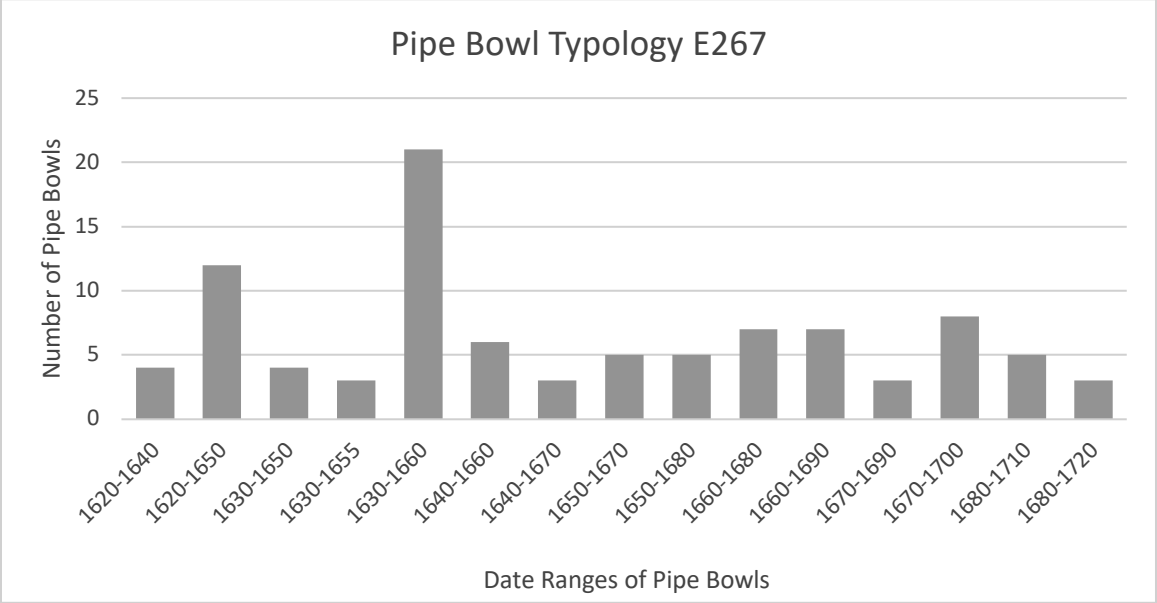

Figure 16: The Pipe Bowl typology of Event 267

There are no bowls dated earlier than 1620 from the street assemblage, and the dates complement previous archaeological work done in Ferryland. Based on the date ranges of the bowl typologies, the street below Event 267 (Feature 56a), was likely built in tandem with the construction of the Mansion House for the arrival of George Calvert in 1627. The increase in bowls starting around 1630 reflects the growing population of the colony since 1622, which continued after the Kirkes arrived (Gaulton 2013). The bowl styles of 1630 were a mix of general English pipe styles, London pipe styles, and small West Country styles (Appendix A).

After the David Kirke era of Ferryland, which ended with his imprisonment and subsequent death in 1654, his wife Sara took over management of parts of the plantation until her death c. 1681 (Gaulton 2013: 282). Changes to the way the settlement was organized during the Kirke period impacted the material assemblage, altering the number of pipes present by date range. Some areas had higher frequencies dating to the 1640s onwards and other areas less.

A large variety of bowls from Event 267 also date to the time of Sara Kirke's leadership at Ferryland. The forms are similar to those produced in southern and western England, and contain a larger variety of general English forms, Dutch bowls, belly bowls, chinned bowls, heelless export pipes, and straight-sided (Figures 17a-f). Significantly, bowl styles are present that range into the early 18th century. As pipe typology dates range over 20-30 year intervals, the exact date of the pipes being smoked and discarded are unknown, however the later examples signify that the street was in use up to the 1696 French attack that destroyed the plantation, and likely beyond.

Figure 17a: A general English pipe bowl form, spur pipe 3.
(see Appendix A: Part I)
(Photo courtesy of Barry Gaulton)

Figure 17b: A Dutch pipe bowl form, Dutch pipe 10.
(see Appendix A: Part I)
(Photo courtesy of Barry Gaulton)

Figure 17c: A general English pipe bowl form, small belly bowl G.
(see Appendix A: Part I)
(Photo courtesy of Barry Gaulton)

Figure 17d: A general English pipe bowl form, chinned bowl 8.
(see Appendix A: Part I)
(Photo courtesy of Barry Gaulton)

Figure 17e: A general English pipe bowl form, straight-sided form 2.
(see Appendix A: Part I)
(Photo courtesy of Barry Gaulton)

Figure 17f: A heelless export pipe.
(see Appendix A: Part I)
(Photo courtesy of Barry Gaulton)

Dutch and English pipes can be hard to distinguish when unmarked. However, the Dutch examples in the pipe assemblage from Event 267 are predominantly seen in three distinct decorated fleur-de-lys pipe stem patterns, and two different rose pipe marks found on heels. Relief rose marks on pipe heels were common on 17th-century Dutch pipes, and are often associated with stem decoration in the form of a series of single stamped fleur-de-lys (Duco 1981; Faulkner and Faulkner 1987; Gaulton 2006).

Events 243 and 225 had two complete bowls each, all dated post 1660. Event 243 had bowls that were manufactured in London or the West Country, with one bowl being tentatively dated between 1680-1720, due to an incomplete profile. The other bowl is dated 1660-1690. Bowls of these dates were found on the opposite end of the street in Event 267.

The two bowls from Event 225 are both late 17th-century West Country bowls c. 1680-1720. These four bowls are significant because they corroborate the later dates from the east end of the street, but they also extend this date range into the early 18th century. This indicates that the entire length of the street continued to be used, in some capacity, after the colony was destroyed in 1696, a fact which will be illustrated in the discussion of glass artifacts.

Unfortunately, the portion of the street exposed in Events 243 and 225 is a metre wide at most, and only along its southern curb. Most of the street cannot be exposed due to the current asphalt road above it. This impacts the types and numbers of artifacts found in these events. It is likely that Events 243 and 225 had bowls dating earlier that have not been excavated, but at this point nothing conclusive can be said.

6.1.3 Decorated Stems

Event 267 was the only event with decorated stems in the assemblage. There were 23 different decorated stems in six different styles (Appendix A: Part III). The most common stem decoration was the fleur-de-lys in three distinct patterns. The series of single fleur-de-lys typically consists of five or six stamps on the stem, close together. There are two different styles of the single stamps found in Ferryland, and both occur in Event 267. The first single series of fleur-de-lys has each fleur-de-lys enclosed within a diamond border, and stamped clearly. The other style used a cruder stamp. In past studies the latter stem decoration has been found with a Dutch bowl of Gouda manufacture, dated between 1670-90 (Gaulton 2006: 130, 344-345). Based on the length of the stems that were

excavated, both the crude and general styles, each stem appears to belong to a different pipe. There are seven examples of the crude fleur-de-lys stamped stems, 11 examples of general fleur-de-lys stamps, and two general fleur-de-lys stems that also have a small band of rouletting.

A Baroque-style fleur-de-lys decorated stem was the only such example from the assemblage. The pipe stem fragment is small and worn, and the pattern is hard to distinguish now, but the pipe was highly and finely decorated. The Baroque style has the fleur-de-lys moulded on the stem in relief, loosely spaced apart (Faulkner and Faulkner 1987: 177). Other such fragments have been found in Ferryland and the French sites of Placentia on the Avalon Peninsula and Fort Saint-Sébastien in France, with a crowned IC, but no bowl fragments have been attributed to this ornamentation (Gaulton 2018: 441-443). Due to the inclusions of red hematite and mica in the stem, as well as the off-white ochre staining of the clay, which is similar to other French-made pipes, the Ferryland piece was identified as likely being of French manufacture (Gaulton 2018: 439, 443). The potential pipe makers are thought to have been working in Rouen, Normandy, which was a major centre of pipe manufacture in France during the latter half of the 17th century. IC could be the initials of four separate tradesmen in the city: Jean Crenecher, Jean and Jacques Courchay, or Jean Cottereau (Gaulton 2018: 443). This places the stem as being a late 17th-century artifact, further supported by examples of the pipe decoration being present in Fort Saint-Sébastien, occupied c. 1669-1671, and located 176 km south of Rouen (Gaulton 2018: 443-444).

The last decorated pipe stem was a four-on-diamond fleur-de-lys relief stamp. The pattern is so named by Faulkner and Faulkner (1987) due to the four fleur-de-lys arranged in a diamond-shaped border. The example from Event 267 was a single complete four-on-

diamond, with just a portion of another stamp on the stem. The stamp appears shallowly impressed onto the top of the pipe stem, and rather crude (Miller 1991: 80). An example from Gouda with two four-on-diamond fleur-de-lys separated by rouletting has been dated to the inception of the Gouda pipemaker guild c. 1660-1670 (Duco 1981: 246, 455; Faulkner and Faulkner 1987: 176). The single fragment from Event 267 has no evidence of rouletting between the stamps, which are not close together, but rather spaced far apart. Similar fragments to those found in Event 267 were found in New York state, dated c. 1630-1650, and Pentagoet dated c. 1635-1654 (Faulkner and Faulkner 1987: 176; Miller 1991: 80-81). While it is impossible to narrow down the manufacturing centre and the date of this pipe fragment, it is an early to mid-17th-century Dutch product that was common on colonial sites and in Holland (Atkinson and Oswald 1972; Duco 1981: Faulkner and Faulkner 1987: 176; Gaulton 1997; 2006).

There was a single example of a pipe stem with elaborate relief rouletting in the form of (at minimum) five bands of triangular rouletting around the circumference of the stem. A partial pipe heel survived, but no bowl fragments or maker's mark. A similar example is illustrated in Duco (1981), who states it was manufactured in western Holland c. 1700 in a style that continued into the 18th century, indicating that this fragment, which has not been discussed in previous Ferryland studies, was not intrusive (Duco 1981: 250, 459).

The last decorated pipe stem from Event 267 was manufactured in the Chesapeake Bay region, of North America. The stem is reddish, unlike other English and Dutch decorated pipes, which were made from white ball clay. Thus, the decoration is highly diagnostic, and while the bowl that belongs to the stem is not part of the [E 267]

assemblage, who the pipe belonged to and where it was manufactured can be identified. The stem itself has four bands of rouletting, with small eight-pointed stars or spoke wheels stamped in relief on either side of the rouletting. This stem was once connected to an initialled DK pipe bowl found in several Ferryland events. The pipe itself would have been heelless and made between 1640 and 1660, in Charles City, Virginia. The bowl likely belonged to Sir David Kirke or members of his extended household, who lived in Ferryland between 1638 and 1651 (Gaulton 1999: 33, Gaulton 2006: 332).

6.1.4 Pipe Makers' Marks

The pipe makers' marks reinforce the date ranges presented by the bowl typology and decorated stems. The marks were predominantly English, and in some instances there were multiple different makers who could have been responsible. In most cases, all that remained was the stamped heel, with no bowl. The marks were cross-referenced with common marks found throughout Ferryland, and all marks had been found in previous studies (Oswald 1975; Walker 1977; Duco 1981; Pope 1988; Carter 1997; Gaulton 1999; 2006). Where no bowl was available in this assemblage, use is made of previous studies that have discussed which bowl forms are associated with a particular maker's mark. The only makers' marks came from Event 267. There were 14 makers' marks on the pipe bowls and stems, and the decorated Chesapeake stem was diagnostic enough to count as another example. The marks include three "RC", two "AR", one "IS", one "IH", one "PE", one "RB", two spoke wheels, and two rose marks (Table 1).

Table 1: Makers' marks on 17th-century tobacco pipes from Event 267

Mark (name)	*MNP*	*Origin*	*Date Range*	*Bowl Date Range*
"IH" (John Hunt)	1	Bristol	1651-1653	N/A
"IS" (John Smith) (John Stevens) (James Stephens)	1	London	1634 1644 1663	1635-1660
8-spoke Wheel	2	West Country (Exeter/Barnstaple)	1650-1680	N/A
"EF" Unknown	1	West Country	1650-1680	N/A
"RC" (Richard Cole) (Roger Clare) (Richard Coxe)	3	Barnstaple	1651-1659 1631 1634-1638	1640-1670
"PE" (Philip Edwards I) (Philip Edwards II)	1	Bristol	1649-1690 1680-1696	N/A
Rose marks	2	Dutch	1670-1690	N/A
"AR" (Anthony Roulstone) (Abraham Roberts)	2	Barnstaple London	1630-1670 c. 1665	Large bowls 1660-1680 Small bowls 1630-1670
"RB" Roger Browne	1	Southampton	1753-1775	N/A
"DK" Terra Cotta (David Kirke)	1	Chesapeake Bay, U.S.A	1638-1651	1640-1660

Seven of the makers' marks are recognized as being associated with southwest England. The two spoke wheel marks were stamped in relief on the heels, and have been found on West Country bowl forms in other Ferryland studies. Both bowls and marks have been attributed to Exeter, in central Devon 1650-1680. The bowls are also similar to pipes

from Barnstaple in northern Devon dating 1660-1720 (Mills 2000: 21, 25-26; Gaulton 2006: 340).

The "PE" mark is attributed to one of two pipe makers who worked in Bristol, either Philip Edwards I (1649/50-1668/69) or II (1680/81-1696) (Walker 1977: 1125, 1420; Gaulton 1999: 36; Mills 2000: 21, 25; Gaulton 2006: 337). The two "AR" marks are attributed either to Anthony Roulstone, a Barnstaple pipe maker who worked from the 1630s-1670, or to London pipe maker Abraham Roberts, who was working c. 1665, (Oswald 1975: 143; Gaulton 1999: 39; Gaulton 2006: 340). The "IH", attributed to John Hunt of Bristol, is dated 1651-1653. No bowl survived in Event 267, but a complete bowl and mark were recovered from the forge occupation near Events 243 and 225, and from near the storehouse by Event 267 (Walker 1977: 1448; Pope 1988: 18-19; Carter 1997: 55, 223; Gaulton 1999: 37; Gaulton 2006: 338). The last West Country mark is uncertain. In past work done in Ferryland, the bowl has been noted to have characteristics resembling other West Country bowl forms from 1650-1680 (Duco 1981: 308; Gaulton 1999: 38; Gaulton 2006: 338; Ingram 2015: 84). That said, there was no bowl in Event 267 to compare it to. The mark could belong to an unidentified pipe maker from the region, as there are no documented "EF" pipe makers during this period in the West Country of England.

Four of the makers' marks belong to London pipe makers. The three "RC" marks stamped on the heels in relief belong to one of three different pipe makers. One example had an incomplete bowl profile, but could be dated from 1640-1670. The marks could belong to Richard Cole (1615-1659), Roger Clare (c. 1631), or Richard Coxe (1634-1638). Each mark could belong to a different maker, but all fit within the range demonstrated by the bowl form (Oswald 1975: 134, 151; Pope 1988: 19; Carter 1997: 54, 227; Gaulton 1999:

34; Gaulton 2006: 335-336). The "IS" mark was stamped in relief, on the heel of one bowl. This mark was mostly gone, but the stylized tobacco plant between the letters is diagnostic of other such marks excavated from Ferryland. The bowl is a London form dated 1635-1660. The "IS" mark also likely belongs to one of three potential pipe makers: John Smith (c. 1634), John Stevens (c. 1644), or James Stephens (c. 1663) (Oswald 1975: 37; Walker 1977: 1529; Carter 1997: 56, 228; Gaulton 1999: 33; Gaulton 2006: 335).

Relief rose marks on pipe heels were a common Dutch mark in the 17th century (Duco 1981: 376). Two rose marks were part of the pipe assemblage in Event 267. Neither rose was crowned, or had initials, but both match other examples from previous Ferryland work. One rose mark still had a complete bowl, which was dated 1670-1690, and manufactured in Gouda. The mark and attached bowl were identical to an example from the planter's house in Renews, which was dated between 1640-1680. This mark had more details than the second rose mark (Duco 1981: 258; Gaulton 1999: 41; 2006: 343; Mills 2000: 21, 158), yet both marks were simple, with little embellishment.

Additionally there was one marked heel, with the initials RB moulded on either side of the heel, rather than on the bottom, which has been identified as Roger Browne of Southampton, who was active between 1753 and 1775 (Oswald 1975: 171; Gaulton 1999: 52). The stem of the pipe was not excavated from Event 267, but would have had "BRO/WNE" stamped on it in relief (Gaulton 1999: 52). This mark does not appear to be intrusive, but rather supports the latter pipe bowl typology dates which indicate that the street continued to be used by the residents of Ferryland even after the 1696 French attack destroyed the original settlement. Afterwards many displaced residents returned and rebuilt, with some moving away from the Pool to the mainland where Ferryland is situated

in the present day (Tuck, Gaulton and Carter 1999; Pope 2004: 407-409; Gaulton 2013: 283).

Neither Event 243 nor 225 had makers' marks to compare to the bowl typology dates. Until now, it was assumed that the cobblestone street fell into disuse after 1696. The complete pipe analysis demonstrates the continued use of the street – though in a reduced capacity – as late as the third quarter of the 18th century.

6.1.5 Analysis and Distribution

Based on the dates of the bowl typologies and the pipe makers' marks, the cobblestone street was constructed early in the colony's history. It was started soon after Wynne first mentioned his plans to build a "prettie streete" in 1622. The decorated pipe stems, where possible, support the ages given by the makers' marks and bowl typology dates. The dates range across the entirety of the settlement's history, indicating that the street, once built, was used continuously into the 18th century.

The assemblage shows strong connections with the English West Country and London, in regards to tobacco trade. Of the 96 pipe bowls analyzed only 5.2% of the identified pipes were Dutch, while the other 94.8% are of English origin. The pipe bowl typologies do not include the single instance of a French pipe in the MNP, represented by a pipe stem. Of the English pipes, 42.7 % (41 pipe bowls) can be attributed to either the West Country or London, 19.8% (19 pipe bowls) can be attributed to just London, and 31.3% (30 bowls) are just from the West Country. The remaining bowls are general English pipe forms. The fact that 31.3% of known bowls, and up to a total of 74% of the identified

pipes, were of possible West Country manufacture signifies the strong trade connections between that region of England and Ferryland. Events 243 and 225 have only West Country bowls, with one possible London example (Appendix A: Part I).

As stated previously, pipes were often discarded due to being inexpensive and rather fragile, rather than being reused. This makes pipe fragments abundant in the artifact assemblage, as reflected in the spatial distribution of the street's events (Figure 18).

The areas of pipe concentration are clearly apparent. The southern curb of the street, which has the highest concentration, is connected to another high concentration area, against the retaining wall of the earthen rampart to the east. A portion of the northern curb, particularly the drain area, also has a high concentration. The southern curb is near the entrances of buildings, so it is possible for someone to have stepped outside or loitered near the entrance for a smoke or together as a group to talk before the pipe inevitably broke and was discarded. The buildings surrounding the street, particularly the tavern, also had indications of smoking inside, so these pipe fragments could have also been swept out the door. A similar pattern could be seen in the tavern assemblage where one of the heaviest concentrations of pipe fragments was found outside the tavern door (Ingram 2015: 91). However, equally as likely, the concentration of pipes to the sides of the street could be attributed to a periodic cleaning of the feature, when all refuse was pushed to the sides to allow a clear path down the centre of the street for traffic. Pipe stems and fragments would have been extremely small, allowing for traffic to mostly walk unimpeded across the fragments that were not swept aside. Additionally, while the northern curb with the drain does have a high concentration of pipes in some areas, it mostly remains a low

concentration area, meaning that the drain was usually kept clear in order for it to function properly, which suggests that the street as a whole was cleared fairly regularly of refuse.

The high frequency of discarded pipes points to smoking being a common occurrence in Ferryland, both inside buildings and along the street. This in turn suggests that the street was a central fixture and an extension of the surrounding buildings. Furthermore, the discard pattern suggests the pavement was frequently cleaned.

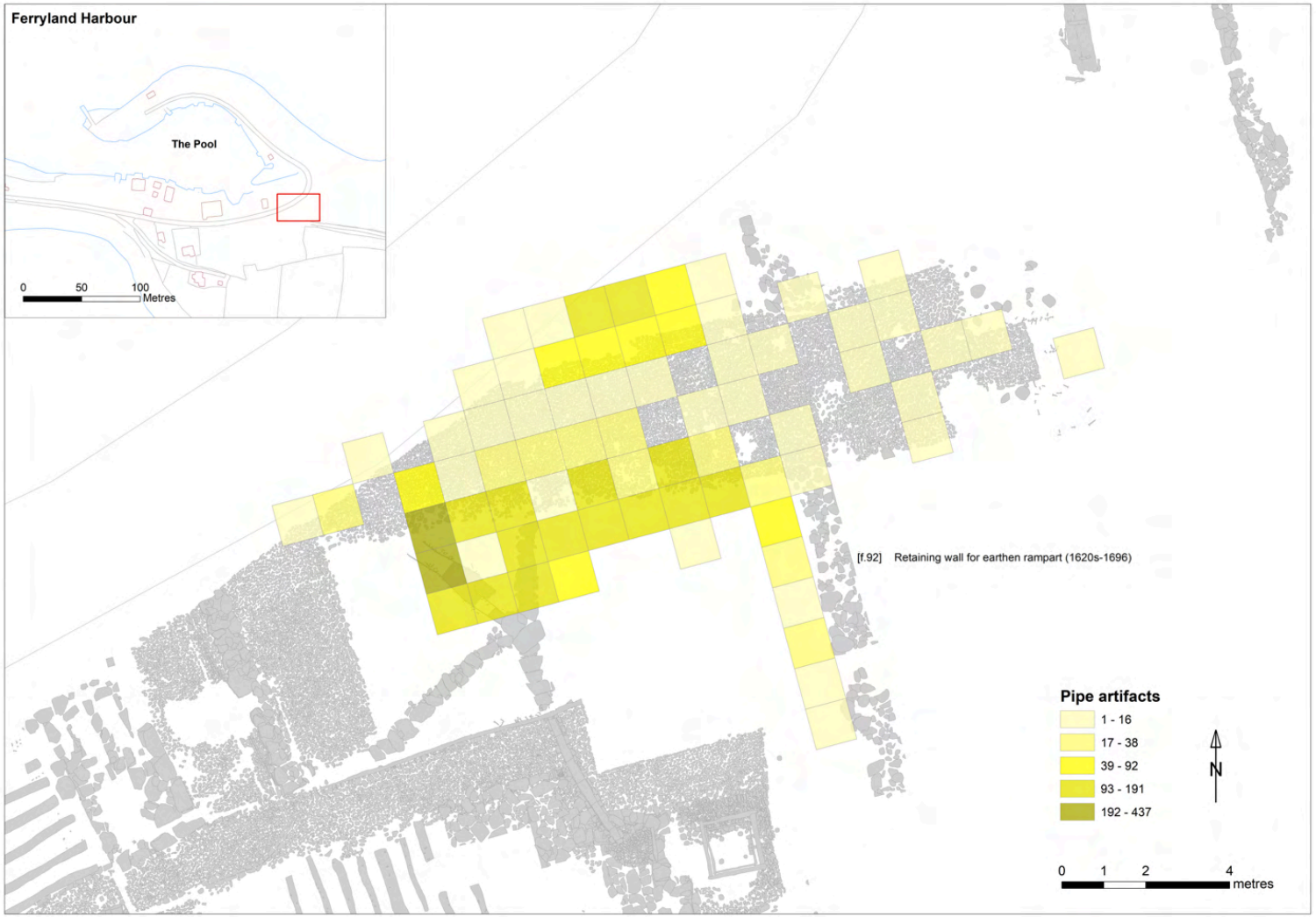

Figure 18 : Pipe distribution and frequency map of Event 267 (courtesy of Bryn Tapper)

6.2 Ceramics

Ceramics are one of the most frequently found artifacts on historic sites, along with clay tobacco pipes. Despite how careful people are, ceramics tend to be fragile, and inevitably break. The commonality and variability in type, form and function of ceramic vessels can inform about who used the vessels, trade routes, socioeconomic status, and how spaces were utilized. Due to the multitude of ware types and decorative techniques, ceramics can be categorized through a recognition of these differences, providing for an immense quantity of information.

Unsurprisingly, Event 267 has the largest variety of ceramic types and vessel forms. It contains 3,874 ceramic fragments, from which 306 diagnostic base, rim, handle and body fragments were separated for additional analysis. Initially, this group was separated into coarse earthenware and stoneware. The coarse earthenware and stoneware were further broken down into specific ware types. A minimum number of vessels (MNV) was sought for each ware type, to better understand the frequency of use of each ceramic type in Ferryland (Table 2). Where it was appropriate, un-joined fragments were coalesced and considered a single vessel. This was done by considering the fabric, inclusions, glaze, size, shape and vessel type, and evaluating them as similar enough to have been one vessel.

Table 2: MNV of ceramic vessels across all events and percentage of total assemblage[1]

Ceramic Type	Ware Type	MNV	Percentage of Total (%)
Borderware	CEW	1	0.5
Bristol Staffordshire Slipware	CEW	3	1.5
Dutch Redware	CEW	1	0.5
English Redware	CEW	3	1.5
English White Salt Glaze	CSW	3	1.5
Exeter Coarse Sandy	CEW	1	0.5
Fine Portuguese Redware	CEW	2	1.0
Normandy	CSW	1	0.5
North Devon Gravel	CEW	35	19.0
North Devon Smooth	CEW	49	26.5
North Devon Sgraffito	CEW	6	3.0
Northern Italian Marbled Slipware	CEW	3	1.5
Portuguese Redware	CEW	12	6.5
Rhenish	CSW	9	5.0
Saintonge	CEW	8	4.5
South Somerset	CEW	18	9.5
Spanish Heavy	CEW	5	2.5
Tin Glaze	CEW	17	9.0
Totnes	CEW	4	2.0
Westerwald	CSW	2	1.0
Unknown Earthenware	CEW	1	0.5
Unknown Stoneware	CSW	2	1.0
Total		**186**	**99**

[1] While included in Appendix B, the North Devon oven fragment and the brick from Event 267 are considered architectural earthenwares, and are not included in these counts. The oven fragment is discussed with other North Devon Gravel wares

Ceramics can act as dating tools, as kiln sites and manufacturing centres along with decorative techniques are well documented. However, ceramic forms and manufacturing centres do not have the brief change-over rate that clay tobacco pipes exhibit, and forms can exist for centuries. Additionally, the use life of a ceramic vessel can be upwards of several decades, making ceramics problematic for dating (Adams 2003). They can, however, be a useful indicator of wealth and status, based on the relative value of the ware and vessel form, and how specialized the vessel is (Gaulton 2006: 206). In terms of Ferryland's street, concentrations of ware type could indicate activities that took place along the street, rather than midden deposits from buildings lining it. Below is a breakdown of ware types from the street assemblage, and the types of vessel forms.

6.2.1 Earthenware

North Devon

North Devon wares, manufactured around Bideford, Barnstaple and Great Torrington, were extensively exported to Ireland and British North American colonies from Newfoundland to the Chesapeake Bay area. They occur in two types: smooth (Figure 19) and gravel-tempered (Figure 20) (Watkins 1960; Grant 1983: 101, 114, Pope 1986: 99). Both gravel-tempered and smooth wares have colours ranging from deep orange to a dull pinkish red on the exterior, with a stratified grey colour on the interior.

Figure 19: North Devon smooth tall pot

North Devon gravel-tempered wares are easily identified by the large pieces of grit or gravel in the fabric. The vessels are rough and utilitarian, and decoration is uncommon. Glazes tend to be brown or dark green, and only on the interior (Grant 1960; Pope 1986: 100). Vessels from the street assemblage include a clay oven, milk pans, storage and cooking vessels, flatware, a pipkin, and a chafing dish (Appendix B). Twenty-eight North Devon gravel ware vessels were found in Event 267, five vessels in Event 243, one in Event 340 and one vessel in Event 356, for a total MNV of 35. North Devon gravel vessels comprise 19% of the entire street assemblage.

Figure 20: North Devon gravel milkpan rim and base

North Devon smooth has a similar colour to the gravel-tempered vessels, but the fabric is smooth and relatively soft. These vessels tend to have a lighter green and brown interior glaze and sometimes an exterior glaze, with a light slip. Similar to North Devon gravel, the vessels are roughly wheel-thrown. These vessels tend to have more decoration and variation than gravel-tempered vessels (Grant 1960; Pope 1986: 101). Vessels from the street assemblage are storage and cooking vessels, tall pots, pitchers, hollowware, and large flatware (Appendix B). Forty-one North Devon smooth ware vessels were found in Event 267, six vessels in Event 243, and one vessel each in Events 225 and 340. The total MNV of North Devon smooth vessels is 49 or 26.5% of the entire assemblage.

Sgraffito decorated wares are technically North Devon smooth, but need to be addressed separately due to their distinct and easily identifiable decorative technique, as well as the variety of vessel forms. Designs, most commonly geometric, were cut into a coat of lighter slip to show differently coloured clay beneath (Grant 1983: 1-2; Pope 1986: 102). The street assemblage has a MNV of five sgraffito vessels in Event 267 and one in Event 243. Two vessels from Event 267 could be determined to be flatware, and another hollowware was identified, with two vessels unidentified. One of the unidentified vessels is noted as possibly a sgraffito ware, or an Exeter coarse sandy ware (See Appendix B). The uncertain ware has been counted as sgraffito in the MNV, making the total number of sgraffito vessels 6 in the street assemblage, which is 3% of the total assemblage.

Totnes

Totnes vessels are a Devon manufacture from Bridgetown Pomeroy in South Devon, and are considered separate and distinct from North Devon wares. Archaeological evidence indicates the ware type was not highly circulated and traded, unlike North Devon wares (Allan and Pope 1990: 51, 53). Totnes wares have a coarse red and grey, sandy fabric, with black mica, white limestone and iron ore inclusions. These vessels have a dark green to brown lead glaze, with heavy iron bleeding, giving a mottled appearance, and are undecorated. The vessels are utilitarian, meant to be cooking or storage pots (Allan and Pope 1990: 53; Poole 1995: 8-9; Clausnitzer 2011: 68).

Two unknown Totnes vessels have been identified from the street assemblage in Event 267, one from Event 243, and one from Event 225. The vessels from Event 267 have been divided due to the presence of interior and exterior brown glaze on one vessel, and

the other being completely unglazed. The total MNV for Totnes is 4 vessels or 2% of the total assemblage.

Tin-Glazed Earthenware

Tin-glazed earthenwares are low-fired like other coarse earthenwares, and covered in an opaque white lead glaze mixed with tin oxide (Poole 1995: 9; Stoddart 2000: 23). A variety of colours have been used for decoration, but they are commonly decorated in a monochrome blue with some vessels having manganese as well (Figure 21). Tin-glazed wares were valued for the pure whiteness of the glaze, and easily recognized by the thick glaze, and soft and chalky coloured fabric (Stoddart 2000: 23-24).

Eleanor Stoddart (2000) examined a large portion of Ferryland's tin-glazed ceramic collection and created a MNV that encompassed fragments from the cobblestone street. As the street was largely excavated prior to her work, this left only a few fragments from later excavations and those that were not examined by her. Based on her methodology, and that Stoddart only viewed fragments that corresponded with Event 267, and not Events 225 or 243, her counts have been adjusted. Initially, Stoddart provided a MNV of 15, while my own analysis, based upon fabric and decoration of such small body fragments, reduced the MNV to 10 in Event 267, with a MNV of five unknown vessels in Event 243, one unknown vessel in Event 225, and one unknown vessel labeled as belonging to Feature 56, with no catalogue number or associated event number. The total MNV for tin-glazed vessels is 17, which is 9% of the total assemblage.

Figure 21: Tin-glazed earthenware plate, crossmend between [E 267] and [E 287] (the Kirke house midden)

The ceramic dating Stoddart employed has not been used here, but the countries of manufacture were analyzed and acknowledged. I have further grouped her vessels where the fabric and decoration seem similar enough. I have additionally noted significant Events that are not related to the street, but indicate from where the vessels could have originated (see Appendix B).

The Kirke house midden had a large collection of tin-glazed vessels that were highly decorated and expensive. Only the gentry could afford tin-glazed vessels in such amounts, although other households could afford a few (Tuck and Gaulton 2003: 219-220). The origin of the vessels from the cobblestone street is likely the Kirke house, which is also deduced from the amount of possible cross-mends from Stoddart's analyses of grouped events, which often included Event 287, the Kirke house midden. Tin-glazed vessels from the street include plates (Figure 21), bowls, a puzzle jug, and several unknown vessels.

Portuguese Redware

Portuguese redware is identified by its distinctive reddish-orange and sandy micaceous fabric and grey core. The ware type is often found unglazed and burnished, but examples from Ferryland, and the street assemblage particularly, show that incised, painted, interior green glaze, and exterior white or brick-red slip vessels were also produced (Figure 22) (Pope 1986: 110; Newstead: 2013). Frequent trade between Portugal, England, and Newfoundland meant that the existence of the vessels in the artifact assemblage is not surprising (Newstead 2008: 48).

Sarah Newstead (2013) has looked extensively at the occurrence of Portuguese redwares within Newfoundland, and the manufacturing origins of particular ware types and

fabrics. Due to the nature of my own research, this information is not included, as regional manufacturing centres could not be ascertained due to the fragmentary evidence excavated from the street. The MNV was taken from at times extremely small rim sherds that were compared by shape and decoration, but not particularly informative about the vessel forms. The MNV of vessels found within the street assemblage is ten in Event 267, one in Event 243 and one shattered vessel in Event 225. Vessel forms from Events 243 and 225 are unknown, as the counts comprised only body fragments without other distinguishing features. Vessel forms from Event 267 include an olive jar, a bowl, pots, flatware, and several unknown vessels. The MNV across all events is 12, making Portuguese redware 6.5% of the ceramic assemblage.

Figure 22: Portuguese redware rims

Fine Portuguese redware (also referred to as Portuguese Terra Sigillata) is a thin and hard-bodied redware originating from Portugal. Like the coarser redware, the fabric had small inclusions of mica and quartz. These vessels are unglazed, and decoration is a burnished technique to produce a matte surface. Fine Portuguese redware was expensive and rare, produced in Portugal for the upper classes, and rarely seen outside of the country. The presence outside of Portugal in Ferryland indicates not only the strong trade connections but also the wealth of a planter within the colony, likely one of the Kirkes. The ceramic was fragile, with the decorations intricate enough to indicate the vessels were for display, not utilitarian uses (Tuck and Gaulton 2003; Gaulton 2006).

Event 267 was the only area with fine Portuguese redware within the artifact assemblage, with a MNV of 2, comprising 1% of the total assemblage. The fragments include one small rim fragment with bright orange fabric and no decoration. The other vessel is unknown, comprised of multiple small fragments, reddish orange with an incised design. It is likely these vessels originated from the Kirke house just south of the street.

Northern Italian Marbled Slipware

This ware type is a more refined earthenware and was produced in several distinct styles during the early 17th century (Pope 1986: 110). The vessels have a bright red smooth chalky fabric (Pope 1986: 111). The MNV from the street assemblage consists of two unknown vessels from Event 267, identified from small body fragments with different designs, and one unidentified vessel in Event 225. With a total MNV of three, Northern Italian marbled slipware vessels are 1.5% of the ceramic collection.

South Somerset

South Somerset wares originated around the Donyatt kiln in Somerset, England, and have a light pink to buff fabric, and are relatively delicate compared to the North Devon wares produced at the same time (Pope 1986: 104; Temple 2004: 11; Clausnitzer 2011: 68). The fabric is hard and sandy, with small quartz inclusions and larger red-brown oxide inclusions. Often the wares were slipped internally in an amber or yellow glaze (Figure 23) (Crompton 2001: 82). The identification of this ware type in Ferryland has been slightly problematic as it has been used as an encompassing term for pink-orange ceramics that do not fit other ware types (Temple 2004: 1) The vessels tend to be slipped in the interior, but some forms do have an exterior slip as well. The lead glaze is yellow to amber, but green examples also exist. The ware type has a MNV of 18, which is 9.5% of the ceramic collection, predominantly found in Event 267, with a MNV of 17 and one vessel from Event 243. Vessel forms include bowls, a pitcher or jug, possible storage and cooking vessels, and unknown vessels. This count contains two unknown vessels which could be of South Somerset manufacture, or are English Redware, which will be discussed below (See Appendix B).

Figure 23: South Somerset jug

Borderware

Borderware is a catch-all term for pottery originating from the border region between northeast Hampshire and western Surrey in England during the 16th and 17th centuries (Crompton 2001: 89; Hawkins 2016: 1). Not all borderware are glazed, those that are use a thick and glossy lead glaze, or it could be sparse and thin, with colours ranging from yellow, yellow-green, olive, green and brown (Hawkins 2016: 14). A small body fragment of buff Borderware was part of the street collection in Event 267 (see Appendix B) and given its size, the vessel form is unknown.

Saintonge

Saintonge wares originate from the Saintonge region in the southwest of France. This ware type has an off-white to orange fabric with mica and hematite inclusions. The lead glaze is yellow and green, with an occasional brown or white slip (Figure 24) (Hurst et al. 1986: 76-99).

Past research has indicated that common forms of this type of ware include chafing dishes, milk pans, and costrels. The street assemblage had a MNV of eight Saintonge vessels, all from Event 267, and consisting of 4.5% of the ceramic assemblage. This is comprised of two identified chafing dishes, and other unknown vessels (see Appendix B).

Figure 24: Saintonge chafing dish fragments

Bristol Staffordshire Slipware

Bristol Staffordshire wares are made from light-coloured clay found near the coal seams of Bristol and Staffordshire (Pope 1986: 106). The fabric is fine and a chalky yellow, though sometimes with red inclusions that bleed into it. The exterior has a distinct decoration of a brown slip combed into a white base slip, although the opposite has been seen as well (Figure 25) (Pope 1986: 107). A MNV of three unidentified vessels has been identified for this ware type, including two vessels from Event 267 and one from Event 225 (see Appendix B).

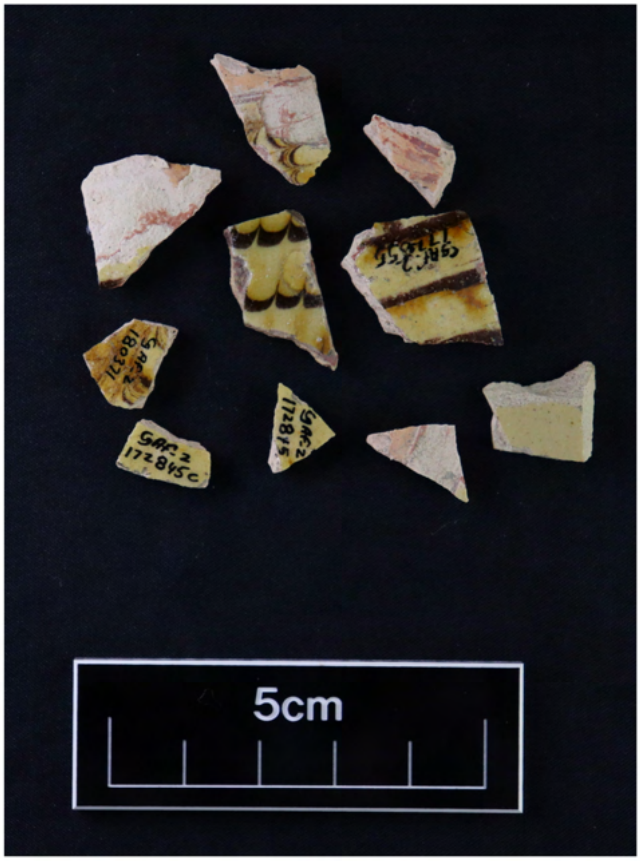

Figure 25: Bristol-Staffordshire slipware fragments

English Redware

English redwares is a catch-all category that encompasses the coarse redwares in the assemblage that could not be identified as originating in a particular place or region in England. They can have either a coarse fabric with medium-sized quartz inclusions or a fine fabric with small quartz inclusions. The glaze on these vessels is thick and clear; it can sometimes be an olive green or brown (Figure 26) (Thompson et al. 1984: 36; Crompton 2001: 91). The examples from the street assemblage occur only in Event 267 with a MNV of three, and include two storage vessels and a milkpan. While they have been considered to be English redware, this is not certain.

Figure 26: English redware storage vessel fragment

Exeter Coarse Sandy

This ware type was produced in Exeter in central Devon throughout the 16th century before declining after 1650. The fabric is distinguishable from other Devon wares by the coarse red to dark brick-red fabric with numerous quartz inclusions and a grey core. The only decoration of the vessels was the dark green or brown interior glaze (Figure 27) (Pope 1986: 106; Crompton 2001: 85).

Figure 27: Exeter coarse sandy milkpan

Similar to the limited distribution of Totnes wares outside the production centre, this ware type was not common outside the Exeter area, so the presence of any vessels in Ferryland could signify a direct link between Exeter and the settlement (Crompton 2001: 85-88). The street assemblage had one vessel from Event 267, a large milk pan. Another

possible unknown vessel was identified as either a sgraffito ware, or an Exeter coarse sandy ware (see Appendix B).

Spanish Heavy

Spanish heavy earthenware, also referred to as Iberian coarse earthenware, was manufactured along the Mediterranean coast since the Roman period (Pope 1986: 109). The ware type is heavy-bodied and durable, often being reused (Figure 28). The fabric is pinkish to white, with a grey core and buff slip and green interior lead glaze. The most frequent vessels attributed to this ware type are globular olive jars, though they could have contained wine, beer or even soap (Pope 1986: 108). Due to being reused frequently, merchants could have reshipped contents in the vessels, so their presence does not necessarily indicate trade between Spain and Newfoundland, or even indicate that what they contained was olives or olive oil (Pope 1986: 108; Clausnitzer 2011: 67). The street assemblage contained five separate olive jars from Event 267.

Figure 28: Spanish heavy ware olive jar rim

Dutch Redware

Dutch redware was typically comprised of utilitarian vessels, and produced across the Netherlands, with Bergen-op-Zoom as a major production centre (Janowitz 1993: 17; Crompton 2001: 104). The example in the street assemblage is a single pipkin, a utilitarian cooking vessel. That said, the vessel could also be an example of a South Somerset pipkin

with a dark brown interior glaze. Ferryland has been noted to have a strong Dutch connection through trade, so either manufacturing origin is possible and has been noted (Appendix B).

6.2.2 Stoneware

Rhenish Brown Stoneware

Rhenish brown stoneware has also been called Frechen, Bartmann bottles, or the distinctive Bellarmine bottles. This ware type was manufactured in Frechen in northwest Germany from the early 14th century (Crompton 2001: 119), and almost all the vessel forms were bottles. Rhenish brown vessels were distinct in their brown, mottled glaze and grey, non-porous fabric. Rhenish brown vessels (Figure 29), had a bulbous body, characterized by an applied face stamp of a bearded man on the neck opposite to the handle, and with applied medallions on the belly of the bottle (Pope 1986: 119; Crompton 2001: 120; Brandon 2006: 75; Ingram 2015: 67). Previous studies in Ferryland and documentary evidence indicate that the presence of Rhenish wares in the settlement does not mean a direct trade link to Germany, but was instead the result of Rhenish export to London, from there to the West Country and then onward to North America (Brandon 2006). Direct exportation to the West Country began after 1650 (Pope 1986: 117; Crompton 2001: 123).

The MNV of Rhenish brown ware from the cobblestone street is nine: eight of those vessels are from Event 267, and the last from Event 340. The vessel forms were predominantly Bellarmine bottles, with three unknown vessels. The 9 vessels make up 5% of the total ceramic assemblage.

Figure 29: Bellarmine bottle neck with applied stamp of bearded man

Westerwald

Westerwald wares are another common ware type in 17th-century contexts and within Ferryland. Produced from the beginning of the 1600s onwards, like Rhenish brown wares, Westerwald wares were manufactured in northern Germany (Pope 1986: 120; Brandon 2006: 28). These ceramics have a grey fabric and a blue-grey body, with incised or traced blue designs, and salt glazed. Vessels of this ware type had common decorative motifs: impressed flowers, incised lines, and stamped heraldic designs. Later vessels after

c. 1690, had the Latin initials of British monarchs applied as medallions onto the vessels, for export (Pope 1986: 120; Gaimster 1997; Crompton 2001: 125; Brandon 2006: 78).

Figure 30: Westerwald mug with applied AR medallion

One Westerwald mug was excavated from Event 267, a rim with an applied "AR" medallion for Queen Anne (1702-1714) and a handle (Figure 30) (Gaimster 1997). One small body fragment was excavated in event 243. A stoneware drinking vessel would have been useful in a tavern context, however the dates for the reign of Queen Anne indicate that this vessel did not arrive in Ferryland until after the colony's destruction in 1696.

Normandy Brown

Normandy Brown stoneware was produced in Lower Normandy in northern France, and is found at historical sites across eastern North America in 17th- and 18th-century contexts. The ware type is hard and smooth, with the fabric colour ranging from a dark purple/almost black to a lighter reddish brown. Vessel forms are typically unglazed and undecorated hollowware for storage (Pope 1986:121; Crompton 2001: 128). The street assemblage has a single fragment of an unidentifiable Normandy Brown vessel.

English White Salt-Glazed Stoneware

English white salt-glazed stoneware was produced around Bristol and Staffordshire beginning in the early 18th century (Brandon 2006: 39). Three separate English white salt-glazed wares were found in the street assemblage. One unknown vessel was from Event 243, and two vessels were from Event 267, including one bowl. It is possible that these vessels are intrusive, as they would push the use of the street into the 1720-1740s. However, this is not the only artifactual evidence of early to mid-18th century use of the feature, as the previously discussed Roger Browne pipe also dates to that time range. As such, the English white salt-glaze vessels have been included in the MNV and analysis of the cobblestone street assemblage.

6.2.3 Analysis and Distribution

The ceramic MNV for the cobblestone street assemblage is 151 vessels in Event 267, 23 vessels in Event 243, 7 vessels in Event 225, 3 vessels in Event 340, 1 vessel from Event 356, and 1 vessel labeled just Feature 56; totalling 186 separate vessels. The MNV is based upon lumping vessel fragments by similar fabric, glaze and decoration in combination with the minimum counts of diagnostic rims, bases and handles (Appendix B). Vessels were then further analyzed based on form and function. The Potomac Typological System (POTS) is a typological index that divides vessel forms into five distinct categories associated with particular functions (Beaudry et. al, 1983; Grant 1983; Pope 1986). The categories encompass Food Processing (cooking and dairy), Food and Drink Storage, Beverage Consumption (individual, communal, or serving), Food Consumption (liquid and solid) and Health and Hygiene. The POTS analysis for Event 267 is shown in Figure 31. Pope further modified POTS to be Ferryland-specific (1986: 127). Of the total MNV for all events, over 100 vessel forms are unknown. This is mainly due to diagnostic fragments often being quite small, so the vessel form could not be ascertained. The large MNV is due to several different middens from separate occupations and buildings encroaching onto the street surface.

POTS Analysis

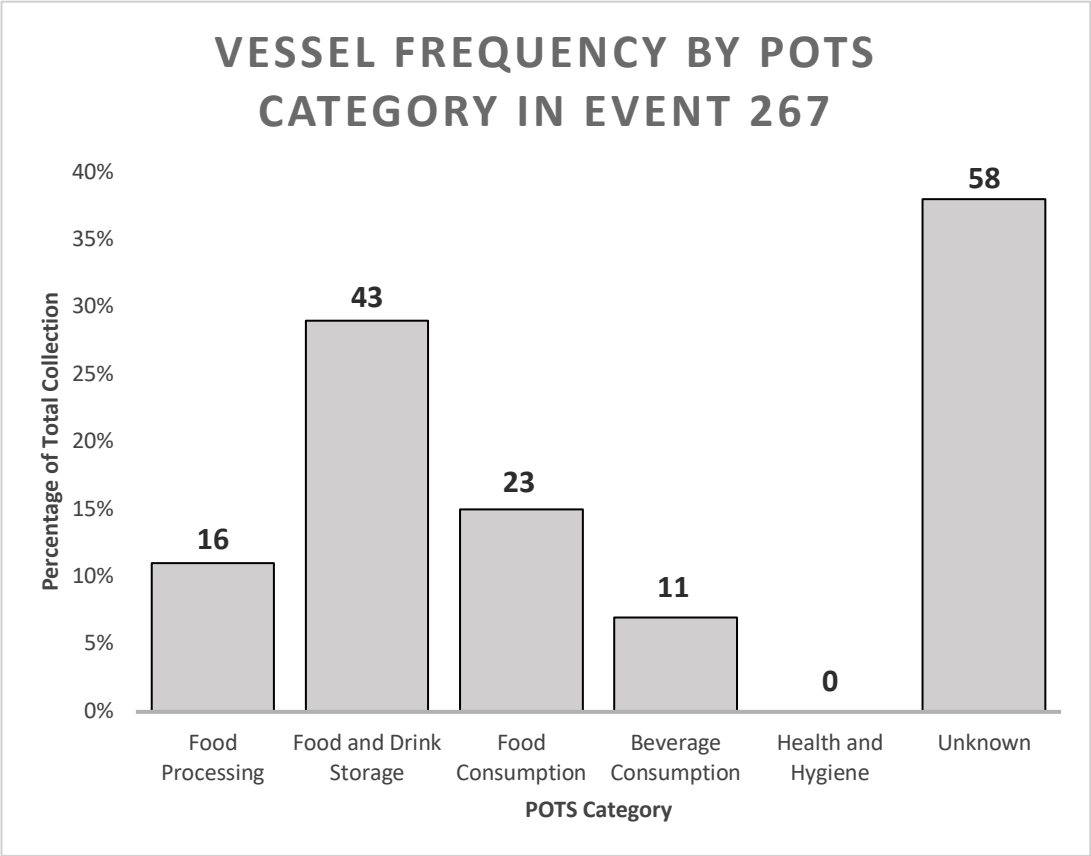

Figure 31: Vessel frequency by POTS category in Event 267[2]

Food Processing

As the name implies, these vessels were commonly used for food preparation, such as cooking, mixing, and dairying. Such vessels include pipkins, pans, large bowls and pots. Pots would be used to prepare foods, while pans and bowls would collect milk, or act as mixing and cooking vessels along with pipkins. Food processing vessels were made

[2] While included in Appendix B, the North Devon oven fragment and the brick from Event 267 are considered architectural earthenwares, and are not included in these counts.

nearly completely of coarse earthenwares, as they were meant entirely for utilitarian purposes (Beaudry et al. 1983: 29; Pope 1986; Crompton 2001: 145). The counts for these vessels were based on certain vessel forms, and in regards to utilitarian pots, when the purpose (cooking or storage) was uncertain, they were placed in the unknown category. Bowls were counted if they were larger and made from utilitarian earthenwares, not for food consumption. Event 267 had 16 vessels within this category: two pipkins, three cooking pots, and 11 milkpans. This represents 11% of the assemblage from Event 267. All other Events did not have any definitively identified vessels within the food processing category, making food processing vessels 9% of the total ceramic collection across all Events (see Table 3).

The numbers represent vessels that originated from multiple contexts. Food processing would have occurred in the tavern, the brewhouse/bakery, the Kirke house, the Mansion House, and other areas (Pope 1986; Crompton 2001; Gaulton 2006; Clausnitzer 2011; Ingram 2015). The small number of identifiable vessels likely stems from the street being a secondary midden, and seeing heavy foot traffic, which would have resulted in the trampling of the ceramics. The exact origins and the original contexts of the vessels are unknown, as the ceramics would have been tossed outside the buildings, likely not directly onto the street originally, before eventually ending up on the street.

Food and Drink Storage

Vessels within this category include ceramics not designated for cooking, including jars, storage pots, tall pots and bottles. Each vessel is used to store food and drinks in liquid or solid states (Beaudry et al. 1983: 29; Pope 1986). Jars and bottles would

frequently be used as storage for alcohol. To properly store products, these vessels forms would be in utilitarian styles of earthenware and stoneware and typically glazed. Some vessels, such as the Bellarmine bottles, could be used for serving as well, such as in the tavern (Beaudry et al. 1983: 29; Pope 1986; Ingram 2015). Seven Bellarmine bottles, six olive jars, six tall pots, five storage vessels, 11 storage pots and eight uncertain cooking or storage pots have been included in this count. Event 267 had 43 vessels, representing 28% of the assemblage for that event. Event 340 had a large number of fragments of a North Devon storage pot, bringing the total count of food and drink storage vessels to 44, representing 24% of the total ceramic collection (see Table 3).

Table 3: POTS counts across all events

POTS Index	Number of Vessels	Percentage of Total (%)
Food Processing	16	9
Food and Drink Storage	44	24
Food Consumption	23	12
Beverage Consumption	12	6
Health and Hygiene	0	0
Unknown	91	49
Total	**186**	**100**

Domestic buildings in Ferryland had a significant percentage of their collections dedicated to storage vessels. This is to be expected from a colony that had a tavern with

patrons, and was reliant on the fishing industry and trade. As a result, food production not tied to the fishery was a secondary activity, forcing residents to rely on imported foods, which explains the large number of storage containers across the settlement (Pope 2004: 59, 80). As noted, it is possible that many of the ceramic vessels labelled as storage were actually used for consumption or processing instead. This would normally be established based on rim diameter and whether the vessel showed indication of cooking. However, while the street assemblage provided fragments of rims large enough to determine as separate vessels, the fragments were mostly small and indeterminate as to their ultimate use. Many of them had large rim diameters, which would have made consumption impractical; therefore, I included them in my storage counts.

Food and Beverage Consumption

Food and beverage consumption vessels come in a variety of forms and are made from both earthenware and stoneware. Vessels include large and individual serving containers: porringers, bowls, basins, plates, dishes, saucers, chafing dishes, and salts (Beaudry et al. 1983: 26; Pope 1986: 132). Beverage consumption vessels include cups, mugs, jugs, and pitchers, again for either individual or communal use depending on the size.

Event 267 has nine bowls with three additional likely bowls, two chafing dishes, four small dishes/flatwares with two additional likely small flatwares, and three plates. One vessel was either a jug or a chafing dish, but because of the uncertainty has been included in the beverage consumption count as a jug. This equates to 23 food consumption vessels, representing 15% of the assemblage in Event 267. Other events associated with the

cobblestone street lack certain vessel forms in this category, resulting in food consumption vessels comprising 12% of the total ceramic collection. In terms of beverage consumption, Event 267 had one Bellarmine jug, which was identified by the presence of a handle and a wide neck (Beaudry et al. 1983: 30-31), one sgraffito hollowware with one uncertain hollowware, six pitchers/jugs, and two mugs. This equates to 11 beverage consumption vessels, which represents 7% of the artifact assemblage from Event 267. Event 340 had a large Bellarmine bottle fragment, making the total beverage consumption count 12 across all the street's events, representing 6% of the total collection (Table 3).

During the 17th century, many vessels were for communal rather than individual use (Beaudry et al. 1983: 29; Pope 1986: 132). There are 35 ceramic consumption vessels (20%) associated with Ferryland's street. This count is a bit lower than what has been found in buildings across the settlement, but makes sense for a non-domestic exterior feature that also contains the tail end of several midden deposits from nearby structures (Gaulton 2006; Clausnitzer 2011; Ingram 2015). It should also be noted that some serving vessels were not made from ceramic, but from such materials as wood, leather, or pewter. Wooden vessels, rather than ceramic, were often used by poorer residents, while wealthier residents would use pewter or other metals (Pope 1986: 194, 198; Crompton 2001: 138). Additionally, the entirety of the street has not been excavated, so the percentages are likely to change pending further work.

Health and Hygiene

Vessels in this category include chamber pots, galley pots, basins, and jars related to medicinal and ointment storage (Beaudry et al. 1983: 29; Pope 1986).

The Ferryland street assemblage currently has no ceramic vessels linked with health and hygiene. This is a little unusual as a broken galley or chamber pot almost certainly made its way onto the street at some point. That said, it could be so fragmented that any potential vessels are listed under the "unknown" ceramic vessels in the collection, or are part of the artifact assemblage of the unexcavated street.

Unknown

There are 58 unknown vessels in Event 267, representing 38% of the collection from that single event. When combined with all other events the count is raised to 91 vessels (49%). These vessels could not be clearly identified using the POTS index, and as a result they were not included within the analysis. The unknown vessels were made from multiple different ware types, often identified from small rim sherds. The rims were different enough to conclude that they were separate vessels, based on ware type, fabric colour, thickness, glaze, inclusions, decorations, and other stylistic differences.

Distribution and Provenance

By mapping the ceramic assemblage in the same way as the pipe fragments, the below distribution map shows the similarities of the ceramic distribution. The areas of heaviest concentration remain along the southern curb, and parts of the northern drain. Similarly to the pipe distribution, the centre of the street appears to be mostly clear of ceramic fragments. Figure 32 is a distribution map of all ceramic fragments recovered, not just the diagnostic pieces. The areas of heavy concentration had the larger pieces that could be used to identify the MNV, the ware types, and the vessel forms. Fragments in the centre of the street were small and were further broken by trampling due to foot traffic, or were too small to be swept as the street must have been regularly cleaned to help maintain the flow of people in and out of the village.

From this map it appears that some broken vessels were probably tossed directly into the street and became further broken from that act. Other vessels are likely pieces of vessels from the brewhouse, Kirke house, tavern, and Mansion House middens. The only discernible patterns of usage on the street are where the refuse was shifted during periodic cleaning to facilitate the flow of traffic.

Figure 32: Ceramic distribution and frequency map of Event 267 (courtesy of Bryn Tapper)

The large number of ceramic fragments recovered from so small a portion of the street was less expected than the pipe fragments, given the latter's fragile nature, suggesting that to the residents of Ferryland, the street was an acceptable place to toss one's trash. This 'trashscape' that accumulated over 80 years of heavy occupation informs us about the refuse disposal activities that took place on and near the cobblestone street. In this case, paving the street with cobblestones would have made it much easier to sweep the trash to the side and leave a laneway in the centre for traffic.

Based on this ceramic analysis, Area B was evidently not used for domestic purposes (at least not in the first half of the 17th century), as the nearby forge was built largely away from the rest of the settlement and subsequently few pieces of ceramic were deposited on the western side of the cobblestone street. The ceramics from Events 243 and 225 were much less numerous, and there was less variety. None of the ware types in this area of Ferryland could be attributed to a vessel form using POTS, as they were all small undiagnostic fragments. Although the ceramic vessels analyzed on all areas of the street were predominantly English in origin, there was a large variety of wares from across Europe (Table 4). Of the 186 identified ceramics, and the additional two architectural pieces, 62 vessels were not manufactured in England, or are unknown. This equates to 33% of the ceramic collection. The stoneware vessels all originated from Germany, and most of the Spanish wares were olive jars. The dominance of storage vessels alone highlights the importance of trade to Ferryland, and how it supported the planters in the colony. That importance can be further seen in the variety and amount of vessels that originated outside England. Newfoundland's role in the North Atlantic fishery was essential; trade was frequent between Newfoundland and England, and between England and the rest of Europe.

Table 4: Number of identified vessels from all events by country of manufacture[3]

Country of Origin	Number of Identified Vessels	Percentage of Total (%)
England	126	67
France	8	4
Germany	11	6
Italy	3	2
Netherlands	1	1
Portugal	19	10
Spain (Including Iberian)	8	4
Unknown	12	6
Total	**188**	**100**

For the most part, vessels not from England were concentrated in Event 267, the rich and busy hub of the settlement. Utilitarian vessels are found across Ferryland, but the more expensive wares originate from the Kirke and Mansion Houses.

[3] Also included in Appendix B, the North Devon oven fragment and the brick from Event 267 are considered architectural earthenwares. They are part of this vessel count, which made the total number of vessels 188 in Table 4.

6.3 Glass

While ceramics and clay tobacco pipes are the most numerous artifacts recovered from historic sites, glass fragments are also common. Glass is similarly useful as a source of understanding trade, economic and social status, consumption patterns, and architecture. Some glass artifacts can be reliable dating materials as well. However, unlike ceramics, 17th-century glass is more restricted, in both forms and functions.

Analyzing glass fragments is similar to ceramics. Event 267 had 852 glass fragments including window glass, case bottles, wine bottles, beads and buttons. The assemblage was separated by type, while diagnostic elements, such as rims and bases, were set aside for further study. As with ceramics, a minimum vessel count (MNV) was obtained for the glass vessels.

6.3.1 Window Glass

Most of the glass fragments recovered from the relevant events consist of window glass. Many of the Kirke-era buildings at Ferryland had glass windows. For example, a sizeable amount of fragmented window glass was recovered from the Kirke house excavation along with lead window caming fragments (Gaulton 2006: 80). The Kirke tavern assemblage also had fragments of window glass (Ingram 2015: 42). The exact structures from which the window glass in Event 267 came are unknown a multiple buildings existed in that area of the colony—the Kirke house, tavern and the Mansion House are clustered near the cobblestone street. It is also possible that some glass fragments migrated from several middens elsewhere along the street. The number of different

windows that could have produced the fragments is equally unknown. The fragments were small and could have broken for a variety of reasons, including the Kirke-era renovations to the colony in the 1640s or Ferryland's destruction in 1696. Approximately 800 pieces of window glass were excavated from Event 267 along with nine lead cames. The ratio of window glass fragments to lead cames does not offer much insight due to the unknown origin of either, and the unknown dates of deposition.

On the opposite side of the street, Events 243 and 225 had three pieces of window glass. This section of the street is removed from most buildings within the settlement. The forge is nearby, and likely had windows to provide lighting for the smith to work. It has been noted that the north wall, and the northern halves of the east and west walls—the only areas to place a potential window—were nearest the southern curb of the cobblestone street. However, no window glass was recovered from the forge excavations, indicating that the forge lacked glass windows, providing an explanation for the lack of window glass fragments in the artifact assemblage of the street (Carter 1997: 38-39). Another building, a planter's house built after the mid-17th century, did have one corner bisect the street (see Figure 3). This planter's house is likely where these window fragments are from, and by extension associated with its destruction.

The absence of window glass fragments among artifacts found on the west end of the street provides insight into the layout of the 17th-century colony. Most buildings clustered in the east, with multiple buildings known to have windows. The forge in the west had no glass, and the planter's house is a later addition to the village.

6.3.2 Bottle Glass

Wine bottles are diagnostically similar in some respect to pipe bowls, with their shapes changing in specific ways during the 17th century. The bottles had a bulbous shape and long necks, and over time the resting point diameter increased and the string rim grew closer to the lip of the bottle. Due to these documented changes, wine bottles can be typologically identified and dated (Wicks 1999b; Wicks 2003: 16). Wine bottles occasionally had seals attached that can be further used to identify who the bottle belonged to, and a date range comparable to pipe makers' marks (Wicks 1999a: 39).

As with many containers, wine bottles were often reused to store other liquids, depending on the context and the origin of the bottle, so the bottle glass recovered from Events 267 and 243 could have been filled with wine, milk, or even beer (Kelso 1984: 157; Wicks 1999b:55-8; Clausnitzer 2011; Ingram 2015). The Ferryland brewhouse had several significant artifacts that migrated onto the street. Due to their presence, it is likely that some of the wine bottles originated from the brewhouse or the later Kirke tavern which was next door (Clausnitzer 2011; Ingram 2015).

Previous studies have established six distinct pre-cylindrical wine bottle types ranging in date from 1652-1721 (Wicks 1999a: 99). Wicks (1999b) created a vessel typology from Ferryland material, making it useful for further studies on the site. Unfortunately, the artifact assemblage from the cobblestone street is lacking in diagnostic bottle fragments (Figure 33). The surviving pieces were measured (see Appendix C), but the minimum number of vessels (MNV) was based on one or two pieces. The MNV of wine bottles in Event 267 is three. No specific date range could be reliably established. Two lips survived, both with a measured string rim between 6-7 mm, which could belong to most of

the identified wine bottle types. The third wine bottle was identified from two base fragments and a neck fragment, which did not match the thickness or colour of the previous two lips. The base fragments were of the outer diameter of the wine bottle and did not have a complete indent height of the bottle to measure, although what did survive appeared to be shallow. This could indicate an earlier bottle type, such as a Type A or a Type B, but it is inconclusive (Wicks 2003: 16-17).

Figure 33: Wine bottle fragments

Similar to Event 267, Events 243 and 225 have a small MNV for wine bottles. Event 243 had a single wine bottle, identified from two very thick body fragments. Event 225 had

a MNV of two wine bottles. The first was identified from a dark green base fragment as an onion bottle. The second vessel was light green and had a string rim and mostly intact lip, but the lip was sufficiently damaged that it could not be measured. Nothing conclusive could be inferred from the few wine bottle fragments from the artifact assemblage, although the presence of an onion bottle is important to note. In Wicks' descriptions, there are two distinct Ferryland onion bottle types. The Type E was made between 1682 and 1705, and the Type F was a very squat onion bottle made between 1689 and 1721 (Wicks 1998: 18-19; 1999a: 100). Both bottle types were manufactured from the end of the 17th century into the early 18th century. They can be distinguished by the length of their necks and their resting point diameters. What remains from the street assemblage, however, is an incomplete base, meaning neither form of differentiation is possible in this case. The onion bottle could also allow us to further date the use of the street from the late 17th century into the 18th century in the west of the settlement (Jones et al. 1989: 73; Wicks 1998: 18-19; 1999a: 100).

Case bottles are also a typical vessel found during the 17th century (Figure 34). The vessel was popular, particularly in the Netherlands, where 17th-century paintings often depicted the square bottles filled with strong alcohol (Wicks 1999b: 52). Typically, the bottles were used to store distilled alcohol, but much like wine bottles were also used to store a variety of liquids (Faulkner and Faulkner 1987: 232). Similar to wine bottles, case bottles have been typologically identified in past studies. Case bottles can provide a broad date range for when they were in circulation and manufactured, as well as being identifiable by country of origin. Wicks (1999b) identified two different forms: Type A and Type B.

Figure 34: Case bottle fragments

Type A is characterized by pale green glass with thin sides, a base measuring 70 or 90 mm, and a capacity of 700-2000mL. Type A case bottles were identified as Dutch in manufacture, and commonly occur between 1625 and 1675. Type B case bottles are made

from darker and thicker green glass, with tapered walls. They are of English manufacture and date after 1650 (Faulkner and Faulkner 1987; Wicks 1999b: 21-22).

The case bottle fragments from the street assemblage were small in number, based upon diagnostic bases and rims. Little survived of the rest of the bottles. Due to this, many of the ways to measure and quantify the bottles based upon the tapering of sides, the length of the neck, the overall base measurement, and the holding capacity, could not be utilized. The identification of bottle type was based upon the colour and thickness of the glass.

The cobblestone street assemblage contains a MNV of four case bottles in Event 267, one in Event 243, and one in Event 225. Both Type A and Type B bottles are present, but it should be noted that several bottles were identified only by body fragments (see Appendix C). The equal presence of both bottle types in Event 267 indicates the bottles likely came from both the brewhouse and the later Kirke tavern. Ingram (2015) notes that the tavern, based on case and wine bottles, was very active after 1650, which fits into the date range of both Type A and Type B case bottles. The case bottles from Events 243 and 225, appear to be Type A only, which still encompasses most of Ferryland's 17th-century history.

The final type of bottle glass from the artifact assemblage was pharmaceutical bottles, two of which were found in Event 267. Glassblowers in England did produce bottles specifically for medicinal purposes from the late 16th century. Past studies in Ferryland have shown a range of size and colour from excavated pharmaceutical bottles (Wicks 1999b: 50). What survived in the street assemblage however gave no indication of the size of the bottles or what they once held.

6.3.3 Bottle Seals

Glass seals were impressed upon bottles after the mid-17th century, and are typically found on the shoulder of wine bottles (Wicks 1998: 99). Seals provide another dateable artifact within the assemblage and as such constitute the most exciting glass finds from the cobblestone street. There were two dated bottle seals from Events 267 and 243. The John Curtis 1695 bottle seal was found on the eastern end of the cobblestone street (Figure 35). Curtis was a permanent resident (or planter) from Bonavista, cited in a 1675 census as operating one fishing boat and employing two men. The 1699 Sloss seal has not been identified to a particular individual but was found in two separate parts, one directly above the cobblestone street and the other near a house which was destroyed with the rest of the Pool Plantation in 1696 (Figure 36) (Wicks 1998: 103). Both pieces were found at the westernmost section of the cobblestone street. The Sloss seal is particularly important, as it along with the AR Westerwald medallion discussed previously, indicate a *terminus post quem* for the continued use of the street after the destruction and abandonment of Ferryland.

Figure 35: Curtis 1695 bottle seal (Photo courtesy of Barry Gaulton)

Figure 36: Sloss 1699 bottle seal (Photo courtesy of Barry Gaulton)

6.3.4 Stemware

Glass stemware is another datable artifact, based on changing stem decoration styles. Early stemware vessels could be extremely fragile, meant as much for decoration and to display wealth as for daily use, although they were used for drinking as well. Due to this, stem decoration would change as styles changed (Charleston 1984; Jones et al. 1989: 138-141; Willmott 2002: 21, 58).

Unfortunately, the stemware from the cobblestone street had nothing diagnostic or complete enough to date. That said, there were two stemware vessels, one from Event 267 and the other from Event 243. The vessel from Event 267 consists of a single knop from a stem. The vessel from Event 243 was a small fragment of curved, colourless, transparent glass. The nature of this vessel is uncertain and could potentially be modern. It is likely that the glass originated from the Kirke house or Mansion House, at least in Event 267. The origin of the glass in Event 243 could be from the nearby planter's house in Area B, or a midden intrusion.

6.3.5 Miscellaneous Glass

Clothing during the 17th century was diverse in style and fabric. Both men and women would layer items, with a range of different combinations of clothes. The clothing fabric was made to be durable, meant to be an investment and to last for as long as possible (Demos 2000: 54-55: Gaulton 2006: 218). Organic preservation is often poor in soils, leading to the eventual deterioration of clothing and leaving researchers reliant on the more durable aspects of clothing, such as beads, buttons and buckles, and written accounts about

the type and styles of clothing worn (Demos 2000: 53; Gaulton 2006: 219). Glass beads are considered a small find, along with buttons. Such artifacts normally fell from clothing as the residents of Ferryland walked, interacted and worked along the street. These items would have been attached to the outside of fabrics, and could easily detach. While these artifacts do not provide details about the clothing itself, such as material or cut, the variety and value of the beads and buttons can inform about appearance and wealth (Demos 2000; Gaulton 2006: 219). The material they were made from gives an indication of the owner: glass, gold, silver and brass fixings were worn by those more affluent or middle class; copper, iron, pewter and wood were used by poorer folk (Gaulton 2006: 220).

Figure 37: Gilded glass beads (Photo courtesy of Barry Gaulton)

Over two dozen glass "seed" beads were recovered from the street, ranging in colour from white to blue to green. These represent the common beads found in Ferryland, and might have ornamented a women's purse or jacket. One bead was gold-gilded, approximately 7 mm in diameter (Figure 37), and probably belonged to a well-off resident,

possibly one of the Kirkes. This bead was not necessarily an accessory for a woman, as it has been noted that similar beads can be seen worn by men in mid-17th-century portraits, including King Charles I (Faulkner and Faulkner 1987: 252; Gaulton 2006: 221). Several glass buttons were recovered from Event 267, likely originating from the Kirke house as well. Other events related to the street lacked glass beads and buttons.

6.3.6 Analysis and Distribution

The glass assemblage from Ferryland's street was predominantly window glass fragments. This is to be expected, as most of the fragments were from Event 267, where the glass could have originated from any of the surrounding buildings, such as the Kirke house. There were also buildings at the west end of the street, which account for the presence of window glass in those areas. For a settlement with both an early brewhouse, and later an operating tavern, surprisingly few pieces of glass associated with alcohol consumption were present in the artifact assemblage of the street. Most of the identified glass that was not architectural came from bottles used for storage and consumption. The wine bottles could not be typed using Wicks' (1999b) vessel typology, due to their fragmentary state. In terms of case bottles, both Type A and B were excavated in Event 267, categorized by the thickness and colour of the glass. Type A bottles were the only type of case bottle in Events 243 and 225. Furthermore, it is interesting that later case bottle forms were not recovered across the full length of the street, suggesting that drinking either did not occur often on the street, it occurred more to the east of the street, or most bottle fragments remain under the current roadway. Additionally it could indicate that bottle

discard was uncommon on the street. Based on previous Ferryland research, many of the buildings contained bottle glass, with a higher MNV than what was excavated from the street (Wicks 1999b; Gaulton 2006: 184, 266; Ingram 2015: 93).

Additionally, two glass bottle seals were recovered from the western and eastern edges of the street, both dated to the end of the 17th century. Several glass bottles associated with medicine and ointments were present only in Event 267. Along with the single piece of stemware, the glass fragments show that a variety of activities were happening along the street, for these artifacts to end up as refuse. The lack of expensive stemware or pharmaceutical bottles reflects how well cared for the artifacts would have been in the buildings along the street and how unlikely it would be to toss these items until they were completely unusable.

Similar to the distribution of ceramics and pipes, the glass assemblage has several areas of high frequency: along the connected southern curb of the street and the stone retaining wall, some patches along the northern curb, and the drain (Figures 38 and 39). Again, there are no distinct areas of activity associated with the glass vessels, as the actual drinking likely did not occur on the street with sufficient frequency. It should also be noted, that most of the glass assemblage that is not architectural is comprised of storage vessels, meant to hold and serve alcohol, rather than to drink from directly (though the possibility cannot be discounted).

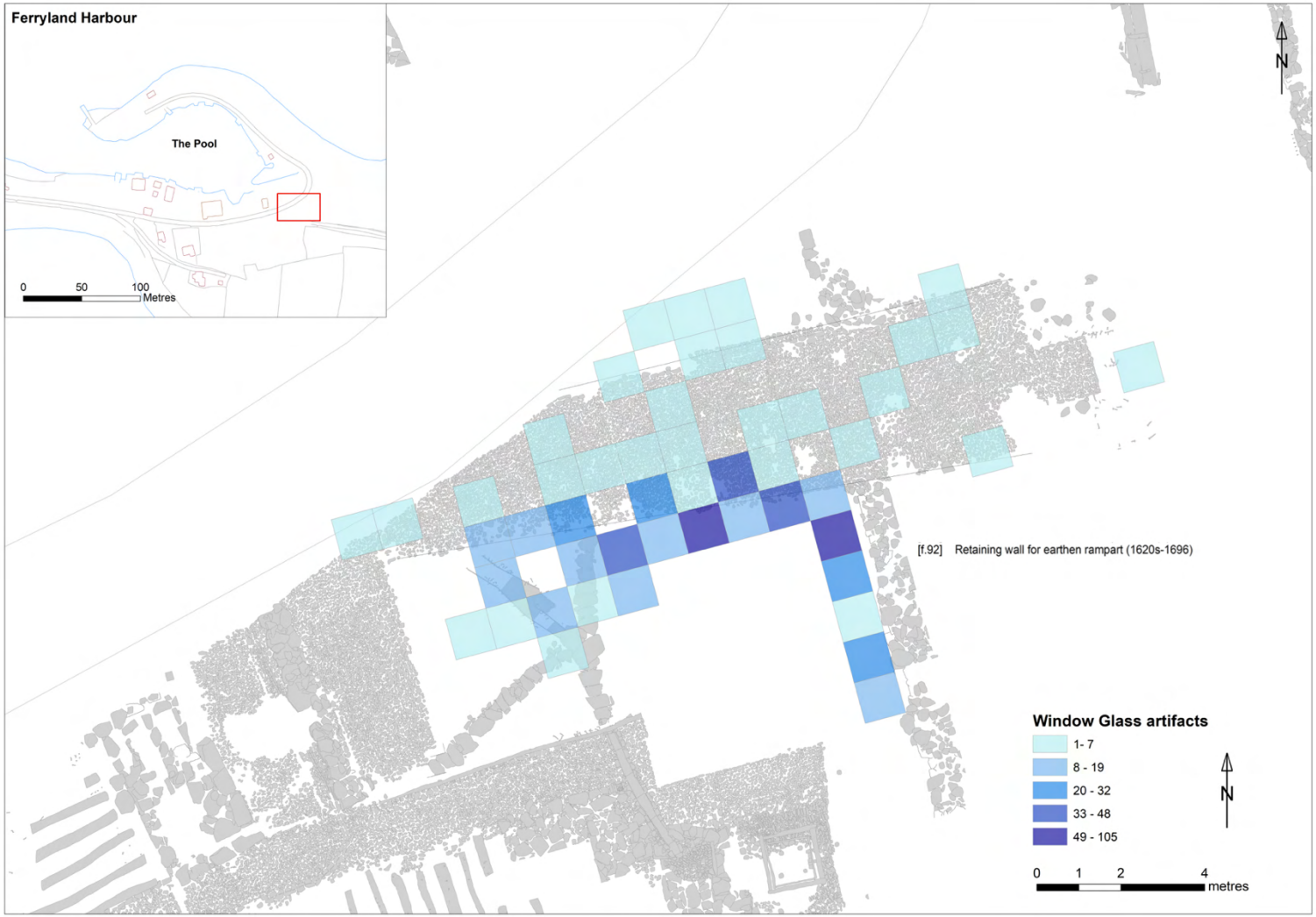

Figure 38: Window glass distribution and frequency map (courtesy of Bryn Tapper)

Figure 39: Bottle glass distribution and frequency map (Courtesy of Bryn Tapper)

Most of the glass from the centre of the street is window glass and other small fragments of bottles. This is indicative of the same behavioural patterns of the residents, as previously noted. Small fragments would not have been swept up along with the larger artifacts, and would not have hindered traffic along the street, meaning it remained on the pavement without issue. Additionally, many of the window fragments can be attributed to the Kirke-era renovations in the 1640s or the destruction of the colony, as they are architectural glass, which further explains the associated lead window cames that were excavated from the street as well. While the street was well maintained by the residents, and continued to be used post-destruction, it would not have been as well cared for after the destruction of the colony.

6.4 Metals

Miscellaneous Artifacts

This category includes metals and small finds, but both are discussed separately below. As the colony's thoroughfare, the cobblestone street amassed refuse from all parts of the village, including building materials such as roof slates and iron nails, slag, ammunition, clothing adornments and other small finds. Interestingly, no currency was recovered from the street; however, the street did provide many other artifacts that in conjunction reveal much of the same information as coins would.

6.4.1 Iron Tools

Most of the metal artifacts in the street assemblage consist of hand-wrought iron nails, which appeared in every event. The presence of the nails was noted, but otherwise they were not examined. Several heavily corroded iron objects eventually found their way onto the street in Event 267, including a padlock, tack, pivoting pin and part of a pot. Event 243 on the opposite end of the settlement produced a horseshoe and a fishhook. The horseshoe suggests that the street was used for mounted transportation in addition to carts, handbarrows and human traffic.

6.4.2 Copper and Lead Objects

Copper and lead also appeared in the material assemblage. Events 267 and 243 had the largest amount of artifacts and both produced a variety of copper artifacts. Event 267 had a copper curtain ring (Figure 40), several buttons, a tack, a pipe tamper and a thimble in addition to some small pieces of copper sheeting, shown in the frequency distribution map (Figure 41). Likewise Event 243 produced several buttons, a belt buckle and more sheeting. Most were artifacts that could easily have fallen off garments as the residents traversed the main street (Noël Hume 1969; Demos 2000: 54-55; Gaulton 2006).

Figure 40: Copper curtain ring from Event 267

Copper buckles would be similar to glass beads and buttons, an adornment for clothes or shoes. This copper buckle likely belonged to one of the Kirkes rather than an attendant. The copper buttons, however, could have adorned or served as practical clothing elements for a visiting seasonal fisher, other Ferryland resident or one of the attendants working for the Kirkes. The buttons were heavily corroded.

Figure 41: Copper artifact distribution and frequency map of Event 267 (Courtesy of Bryn Tapper)

Figure 42: Lead object distribution and frequency map of Event 267 (Courtesy of Bryn Tapper)

Lead was found in Events 267, 243, and 225—predominantly in the form of lead shot and ammunition, which is discussed below. Several lead bale seals were also recovered from Event 267 but were heavily corroded, and the seals could not be read (Noël Hume 1969; Gaulton 2006). Event 267 also had a lead weight and several pieces of lead sheeting. Multiple pieces of window caming were also recovered. Event 267 was the only event that had lead objects not related to ammunition (Figure 42).

6.4.3 Ammunition and Related Artifacts

Ammunition and related artifacts were excavated along the entire length of the street, from Event 267 at the east end of the street and Events 243 and 225 in the west. These artifacts consisted of lead shot, flint, and in Event 267, sprue. In some cases the lead shot was still attached to the sprue. The gunflints ranged in colour from grey to black, and several were burnt. Each of these artifacts could have easily fallen from pockets as residents traversed the street, but equally likely they were lost or discarded during the 1696 French attack.

6.5 Chronology

The chronology of the street can be pieced together through multiple sources. The arrival of Wynne in 1621 and his building projects are historically documented. The street is only mentioned in passing in one instance: "With your Honours leave and liking I hope to fortifie: so that within the same, for the comfort of the neighbour-hood, another row of building may be so pitched, that the whole may be made a prettie streete," (Wynne 1622b in Cell 1982: 198). If the street was further discussed in other letters from Wynne to Calvert, they did not survive. Nothing has been specifically stated about when construction began, or who was involved, aside from the mention of a single stone-layer in the 1622-23 list of residents. It can be inferred that Wynne began the street construction soon after writing that letter in August 1622, since other construction projects in Ferryland were also rapidly being completed during that period. Looking at the entirety of the artifact assemblage from the street, combined with spatial analysis, the chronology of the street can be understood.

Based upon the pipe bowl typologies, the street was an early construction for the colony. Residents likely hastened to finish at least part of the massive project before the arrival of Calvert in the summer of 1627. The pipe bowls indicate that the street was used throughout the entirety of the 17th century into the 18th, a chronology further cemented by the date ranges of the pipe makers' marks.

Ceramics are not a good medium for chronology, since many of the ware types and forms were used for centuries before and after the 17th century. Ceramics do provide a multitude of useful information for analysis, but not as tightly datable chronological tools. However, the presence of a Westerwald mug with the AR medallion for Queen Anne (Anne

Regina) that was manufactured between 1702 and 1714 (Gaimster 1997: 267) further emphasizes, along with the Roger Browne pipe mark, that the destruction of the Pool Plantation did not mean that the street was no longer used after 1696, when fishers returned to the Ferryland Pool. It should be noted that the use life of the Westerwald mug could be several decades.

Glass artifacts can often serve as useful chronological tools, however what could typically be used for dating purposes, such as surviving stemware or the shape of wine bottles, did not survive in the street assemblage. The broad dates for different case bottle types reinforce the pipe typology dates, showing that the street was used throughout the 17th century. However the two bottle seals provide the most concrete dates: the John Curtis 1695 seal was likely a result of Ferryland's destruction; the Sloss 1699 seal is another indication of the street's continuing use even after the colony's destruction. The Sloss seal is also useful as it was found on the opposite end of the street to the AR medallion and Roger Browne pipe in Area F. This signifies that the entire street remained in operation after 1696.

6.6 Discussion

By analysing the material culture assemblage of the cobblestone street, one can gain a better understanding of how the street was used by the residents of Ferryland and how it functioned within the settlement. Based on the chronological evidence from the assemblage, the street was an early construction that continued to be used extensively throughout the history of the colony. The higher frequency of artifacts after the arrival of

the Kirkes in 1638 reflects the growing population of Ferryland. The high concentration of artifacts within what is a small percentage of the entire street reflects that the street was an acceptable place to toss trash, but also highlights that the street assemblage is likely in part the result of multiple middens from different buildings surrounding the street. Artifacts also indicate that the use life of the street extended into the 18th century.

The spatial distribution of the artifact assemblage confirms that the primary function of the street was to act as a transport route for people, animals and everyday objects. This is seen in the iron horseshoe that was excavated, but mostly deals with the high concentration of artifacts along the side of the street, away from the centre, signifying that the thoroughfare needed to be preserved. Given the municipal ordinances governing contemporaneous Devon streets, as discussed in Chapter 7—and the way detritus is predominantly found on the south side of the street away from the north-side drain—the artifact dispersal is most likely the result of regular cleaning and maintenance by the colonists. The distribution of all the artifact types is similar (Figure 43). The southern curb, which was connected to the retaining wall, had the highest concentrations of artifacts, followed by some patches along the northern drain. The centre of the street remained mostly devoid of artifacts.

Figure 43: Distribution and frequency map of all artifacts pertaining to the street (courtesy of Bryn Tapper)

The artifact distribution indicates that the street was regularly cleaned, with larger artifacts being pushed aside, out of the way of traffic and the drain. The drain remained mostly unclogged for most of its use, as artifacts would collect in it easily from water runoff. From the distribution maps it is clear that the street was well maintained and the residents of Ferryland cared for their infrastructure. They made sure that the street was regularly cleared of detritus so that traffic would not be impeded, and that the drain would continue to work as intended. The original context of many of the artifacts cannot be ascertained, but in many cases could be inferred based on the work of previous Ferryland research.

The final function of the street is hard to definitively state from the artifact assemblage. The street likely acted as an offshoot of the buildings around it. The tavern would serve drinks, and occasionally meals, and the brewhouse would have been used by the entire community for brewing (Clausnitzer 2011; Ingram 2015). The forge acted as a gathering place for the community as well. These buildings were small, and larger groups could have extended out onto the street's surface to further socialize, drink, and smoke. While most of the artifacts recovered were likely tossed onto the street once broken within the buildings, or originally came from primary middens associated with each building before eventually ending up on the street, others could have been accidentally dropped as residents socialized on the street, or simply traversed across the cobbles during their daily comings and goings. Certainly the amount of clay tobacco pipes excavated from the cobbles supports the notion that residents smoked and socialized directly on the street, not just within the buildings.

As previously stated, most of the cobblestone street remains firmly underneath the current asphalt road. However, the difference in material culture from Event 267, the area surrounding the Kirke house, brewhouse and other important buildings in the colony, and the artifacts from Events 243 and 225, the areas by the forge, is significant. Area B does not appear to have been used for domestic purposes (at least not in the first half of the 17th century), according to the ceramic analysis. The nearby forge was built away from the rest of the buildings, presumably for safety reasons, and few pieces of ceramic made it from there to the western edge of the cobblestone street. Few pieces of any artifact type appeared on the street in front of the forge, indicating this area was less frequently used than the opposite end of the street.

Ferryland's cobblestone street was among the most frequented and utilized locations in the colony. Residents and visitors alike walked along this thoroughfare daily for over 80 years, and as they did so they inadvertently lost small objects and deliberately tossed their trash on it. One of the most interesting aspects of the street is its adjacency to domestic and work-related structures in the village. Artifacts from these buildings were discarded and migrated onto the cobbles, mixing together the entire history of the colony. In fact, every aspect of daily life in Ferryland is represented in this material assemblage.

Chapter 7: Comparative Sites

A major theme throughout the research discussed here was how Ferryland's 17th-century street compares to other contemporaneous examples from Devon, England, and specifically how Ferryland residents may have modified or modeled their street based on known English counterparts. Further comparing Ferryland's street with other North American examples was outside the scope of this project, but examples from cities or towns across north and south Devon do indicate how the street was designed and built.

The towns selected to visit in Devon were decided based on mentions of extant streets in reports, references within the northern and southern Devon Archives, and personal research. Many of the streets considered were found through walking surveys of probable locations for cobblestone walkways in these towns. The details of each cobbled pavement found were recorded: the name of the street or pavement where possible, the cobble alignments were noted, the direction of the street was photographed, whether the sand bedding remained, indications of patching and repair, the existence of curbstones and drains, nearby structures that could be used to date the walkways, the length and width of the walkways, and the average size of the cobbles. As further research in the archives revealed, most of the extant streets and walkways identified do not have surviving records of their construction, or archaeological reports on their excavations. These streets have remained largely untouched and unstudied for almost four centuries. This is especially true of the side alleys far from major buildings, which may well have survived until now because they were largely forgotten. The streets and passageways identified below have been tentatively dated to the 17th and 18th centuries based on the known ages of the surrounding

structures, as well as the construction style of the pavements, and an understanding of the socio-economics of the cities and towns during the 17th century.

The visited urban centres were Exeter, Plymouth, Totnes and Dartmouth in central and south Devon, and Clovelly, Bideford and Barnstaple in northern Devon (Figure 44). Twenty-six streets or other cobbled walkways were examined for similarities to Ferryland's street, including an approximate date of construction, how the stones were pitched for construction, patterns of the stone laying, the presence of a drain, whether the street has been modified or patched, the original use of the pavement, and how the residents of these towns and cities used the cobbled pavements then and now. Outlined below are the most prominent pavements. Each street, pathway, and courtyard outlined below has an estimated 17th-century construction date, ranging across the entirety of the century. Each example provides a good analogue of what a typical 17th-century paved feature was like in Devon and how that translated into the finished result in Ferryland.

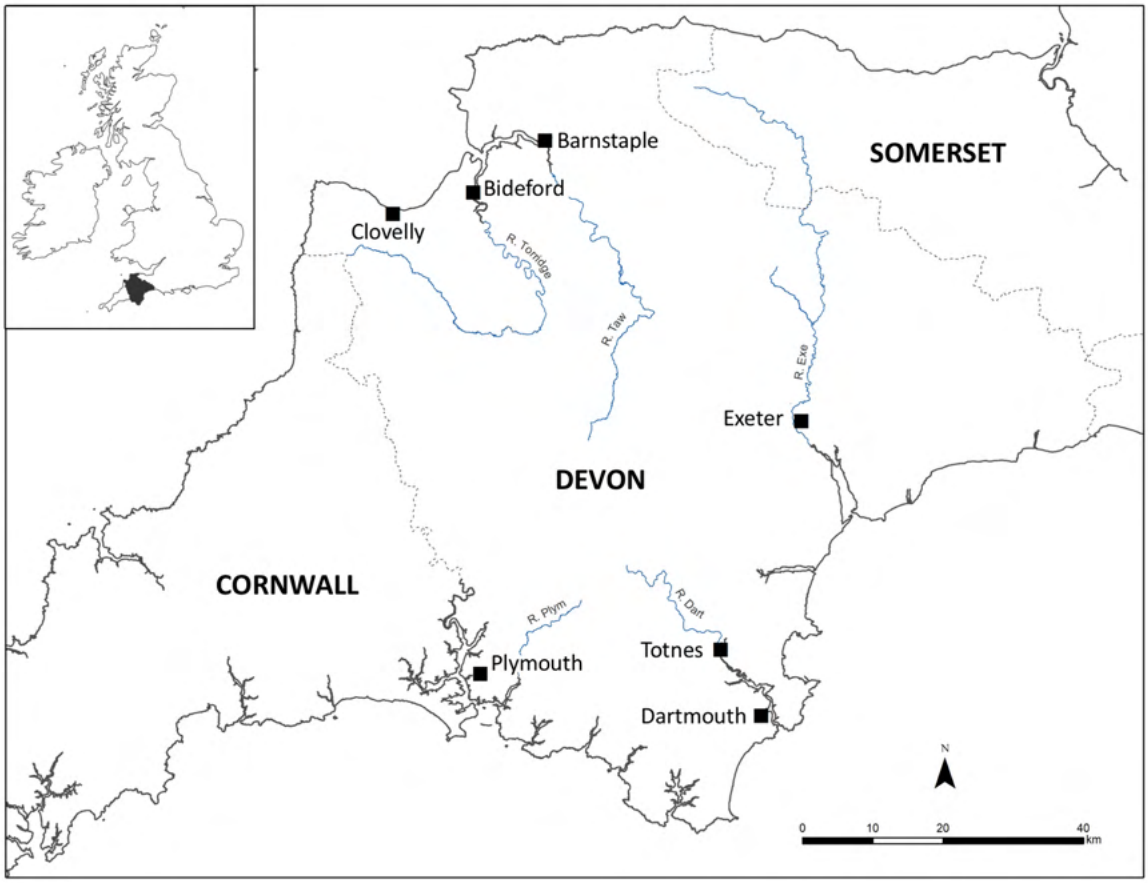

Figure 44: Map of Devon, with specific reference to cities and towns visited (Courtesy of Bryn Tapper)

7.1 Exeter

Exeter is the capital of Devon County and located in its centre, along the River Exe. The entirety of Devon underwent extensive infrastructure rebuilding following the English Civil War in 1651 and again after the Second World War. Extant Exeter cobble pavements include the northern Quayside, the Cathedral Close and surrounding Cathedral cloisters and commons, a small laneway, and Exeter Castle's courtyard. The Cathedral Close was the oldest paved feature, and has seen extensive archaeological work around the Cathedral following the end of the Second World War (Figure 45). The archival evidence surrounding

Figure 45: Exeter, Cathedral Close, facing west

the Cathedral pavements points to the Close and cloisters being paved in the late 16th to early 17th century (Parker 1997: 16). The Cathedral close was built right up to the Cathedral's walls and the buildings opposite it, which were constructed in the later 16th century (Parker 1997). The close is remarkably similar to Ferryland's street, with stones pitched predominantly in the ground, surviving curbstones and a central drain. It is approximately 400 ft. (121 m) long and 18 ft. (5.5 m) at its widest, running along the entire northern boundary of the Cathedral grounds, from the eastern edge to what is now the Royal Clarence Hotel, a mid-17th century structure. (NHLE 1104027 accessed 24/09/20; DALSS 8264A).

Exeter Castle's courtyard has largely been paved over with asphalt, however sections of the road leading into the courtyard and parts of the courtyard itself remain undisturbed. The surviving castle walls date to the Norman period, with plaques and indications that extensive infrastructure was added following the end of the Civil War. Due to this, the working theory is that the pavement dates to the post-Civil War era (DALSS QS/95). Castle Street remains largely untouched around the surviving cobbles, with the original sand bedding still visible through vegetation and no clear indication of repair. Curbstones remain along the edge, along with the general sloping of the street towards the centre. Although this is consistent with other 17th-century examples with visible central drains, the central part of Castle Street has been paved over, and no drain could be discerned. The Castle courtyard was extremely informative. While the Castle itself is now used for modern functions, and the courtyard is largely a parking lot, the edges have not been paved over and the cobblestones remain, indicating that originally the entire courtyard was once paved with cobbles. All the stones along Castle Street and in the courtyard are

pitched and placed tightly together to form a firm pavement. A large portion of cobblestones in front of the entrance to the Castle remain asphalt-free, as the area features lighter-coloured cobbles set into patterns: two small diamonds approximately the same size, a star, and one larger diamond, all set approximately 1.8 m (6 ft.) apart.

Both the Cathedral and the Castle are large and important buildings within Exeter's history. The Quayside is likewise an important area. The cobbles surviving there show indications of multiple patching over the last several centuries, notably after being bombed in the Second World War. Most of the cobbles have now been paved over by cement, but where surviving, the sand bedding and the pitch of the stones is visible. There was no set pattern to how the cobbles were laid. The Quayside was rebuilt in 1680 to accommodate Devon's expanding wool industry that was centred in Exeter (Bedford and Henderson 1997: 6). The canal was further expanded in 1698 for more trading. Most of the current Quayside is from rebuilding in the 18th century. The pavement likely dates from that time (Bedford and Henderson 1997: 7). Observed pavements from the 17th century used smaller, locally sourced, and naturally rounded cobbles. Pavements in the 18th century were similar to earlier examples and do not show a discernable difference in pavement style or construction, but were made wider for more traffic (Furnée and Lesger 2014: 6). By the 19th century, cobblestoned surfaces were replaced with quarried setts, which were easier to clean than the more rounded natural cobbles (Ferguson 2005: 368).

The last notable pavement analyzed in Exeter was actually a small laneway. Rockclose Lane is a surviving alley with 17th-century style paving, approximately 8 ft. (2.5 m) wide, with a central modern drain that has indications of a previous cobbled drain, and some surviving curbstones. The cobbles are of a consistent size, with areas of patches. All

the stones were pitched in the ground, and the bedding was either originally sand before asphalt was placed between the cobbles as a modern form of maintaining the street, or this laneway was constructed to mimic the local tradition. The latter seems unlikely in this case given how out of the way and small this laneway is. Rather it is more likely that asphalt was used as a cheap way of maintaining the street. Rockclose Lane is significant because of its small size. The lane stretches 100 ft. (30 m) away from the road, and is located just north of the river. Additionally, the lane is a block away from Tucker Hall and St. Nicholas Priory, both heavily in use from the 15th century on as the weaver's guild hall and a monastery (NHLE 1239752 and 1103965 accessed 20/09/20). This little laneway did not have to be paved, although it likely saw heavy traffic, but it signifies that the practice of cobble paving in Exeter was expansive, ranging from spaces that surrounded significant governmental and religious buildings to small and obscure pathways, and indicating a cultural practice employed by more than a few tradesmen in the city.

All the cobbles used in Exeter's pavements were likely sourced directly from the River Exe, which bisects the modern city. Some of the stones surrounding the Cathedral and Castle could have been sourced from further away, however the effort and cost would have been enormous, particularly as Exeter only truly began to expand in the late 17th century following the Civil War and the growth of the market for wool.

7.2 Plymouth

Plymouth is a major port city situated on the south cost of Devon and enclosed by the Plym and Tamar rivers. Plymouth is famous as the launching point of English settlers setting out for what would become Plymouth Colony in Massachusetts, in 1620. The first

group of settlers to Ferryland likewise sailed from Plymouth in 1621. Similar to the rest of Devon, Plymouth was involved in the English Civil War. The city was heavily damaged during the Plymouth Blitz, and the central core was entirely rebuilt following the Second World War. No surviving pavements were found during the walking survey, but archaeological records do contain evidence of 17th-century pavements, and surviving streets in the Barbican from the late 16th century were likely originally paved with cobbles before rebuilding efforts paved them over.

Excavations at Hawker's Avenue on the North Quay of Sutton Harbour in 1994 uncovered several waterfront storehouses developed during the post-medieval period (Stead and Watts 1998: 68). This portion of the harbour began to be reclaimed in the mid-17th century when Plymouth obtained the area from the Duchy of Cornwall following the end of the Civil War in 1651. Excavations unearthed well-preserved remains of cobbled surfaces (Stead and Watts 1998: 69). The earliest document for Sutton Pool was a rental agreement from Plymouth town to merchants in 1650, with the plots further described in 1663 as containing a merchant's house, with a cellar and yard (Stead and Watts 1998: 70).

Archaeological excavations have determined that due to the high water mark, the entire area had to be raised before the area was paved and drains were installed. On the surface of these cobbles were the majority of imported ceramics found on the site (Stead and Watts 1998: 73). Excavations indicated that the cobbles were distinctive, small and rounded, all oriented east-west, and pitched so that they were tightly packed within the bedding. There were indications of some patching, but enough survived to indicate that the entire Quay area at the rear of the merchant's house had originally been cobbled. The pavement was angled towards the centre where a drain was situated to carry the surface

water into the harbour (Stead and Watts 1998: 75). Additionally, a paved surface is much easier to maintain and clean than a wooden or dirt surface and is worth the expense for merchants (Stead and Watts 1998: 78). Today, the site is beneath an apartment complex and parking lot, but the style of the merchant's house and storerooms did represent an early departure from the medieval vernacular styles that continued in Devon into the 17th century (Stead and Watts 1998: 79).

Like Hawker's Avenue, much of Plymouth's waterfront was reclaimed following the Civil War, and there are indications of infrastructure being constructed and added to throughout the 17th century. Even so, much has been paved over or destroyed during the past several centuries. Most of Old Plymouth and the Barbican are cobbled, although not with natural cobblestones but rather quarried Belgian Blocks, or setts, which would be considered cobblestones today. Many of the current pavements date from the 19th century or post-1945, but they maintain the same style of pitching and sloping towards drains. Many modern pavements incorporate cobblestones in cement to give the illusion of the original cobbled pavements (Stuart and Whimster 2018).

New Street was originally built in the 1580s, with many of its extant buildings dating from that period. It has been paved over with newer setts, but the street survived the Plymouth Blitz and measures 13 ft. (4 m) in width, just enough for a single lane of vehicular traffic. New Street is a very close example to what Ferryland would have featured, with many small pathways branching off from the street, and goes directly from the Hoe, Plymouth's large cliffside park, down to the sea. Plymouth harbour and the surrounding shorelines had cobbles of sufficient size to properly pave streets and pathways, as well as

fine sand, signifying that there was a readily available source for raw materials near the core of the city (NHLE 7684 and 1386272 accessed 01/10/2020).

7.3 Totnes and Dartmouth

Totnes is a small market town at the top of the River Dart, and home to a distinctive ceramic style during the 17th century (Allan and Pope 1990: 51), several examples of which were present in Ferryland's cobblestone street assemblage. Multiple examples of extant cobbled streets exist within the town. The Church Close, while mostly repaved, had surviving pitched cobbles tightly packed within a sand bedding. There were surviving curbstones and a portion of a surviving drain. No records for the pavement, or archaeological work around the church could be found, but the style of the rounded stones and the way it was paved are comparable to known 17th- and 18th-century examples found elsewhere in Devon. Alterton Lane, lined with surviving 17th-century buildings, is 6 ft. (1.83 m) wide, with cobbles that go right up to entrances, suggesting that the cobbles were placed in the ground around the time of the buildings' construction. The sand bedding still exists, currently filled with moss and vegetation. The central drain was replaced with a more modern brick drain, but several curbstones are still visible between modern patching.

The last pavement in Totnes was found attached to the museum, which is housed in a 17th-century cottage, and a 16th-century merchant's house (NHLE 1235946 accessed 01/10/20). The cobbles in Manor Cottage Lane are all pitched, and lead into a cobbled courtyard. The sand bedding still exists, along with the curbs and drain. No references to the pavement have been found in archaeological or archival records, but the cobbles go

right to the doorway of the museum and merchant's house, meaning they may have been laid around the same time as the buildings were built. The existence of small cobbled laneways in Totnes suggests that paving was an important infrastructure for the town.

Dartmouth is a small town on the western bank of the River Dart estuary. Its castle is a small artillery fort built in the late medieval period to protect the town, and saw heavy service during the Civil War from 1642-1646 (Weddell 2016). It continued to be in use following the conflict, and underwent repairs during that period. On the outer side of the fortalice's gate, which provides the main entrance into the castle's grounds while also leading directly to the Church of Saint Petrox, is a cobbled pathway. The church dates to 1641 in its current form (NHLE 1297086 accessed 01/10/2020). This pathway extends from the original gate of the castle for 17 ft. (5.2 m) and is 4 ft. (1.2 m) wide. All the cobbles are from the nearby River Dart, and tightly packed and pitched. The pavement had no visible curbstones or drain; however, the entire path was slanted slightly down the hill leading away from the gate. There is no indication of patching and the sand bedding appears mostly undisturbed.

Bayard's Cove was the most expansive paved surface found in the Devon surveys, outside of Exeter Cathedral. The entire street stretches over 260 ft. (80 m) and fluctuates in width from 10 to 20 ft. (3-6.3 m). The street has two dates outlined in the cobbles, created using lighter river cobbles, outlining first "1665" in a diamond and square pattern and beside that "1750," (Figure 46). The way the numbers are formed suggests that they were preserved throughout multiple patching and repaving episodes over the centuries. The cobbles that make up the dates show no difference in size, placement, or weathering from

the surrounding cobbles, nor do they show the indications of repair that other sections of the pavement do. They remain as a solid surface, not raised higher in the ground from repair

Figure 46: Dartmouth, Bayard's Cove, interior dated cobbles "1665", facing south

patching, and appear to be original to the construction (Keystone Historic Buildings 2016: 77). The entire street had multiple indications of patching, and a medallion stating further modern work had been done for Queen Elizabeth's Silver Jubilee in 1977. If original, the "1665" would make Bayard's Cove the earliest internally dated example of cobbles in Devon (Keystone Historic Buildings 2016: 76). Curbstones are still extant, with some

appearing in the middle of the street, suggesting a later expansion of the original pavement. There is no indication of a surviving drain. All cobbles are pitched within the surviving sand bedding, and the street leads from an area for docking boats to the Bayard's Cove fort. Expansion and finishing was likely the result of the Civil War and the need to push heavy cannons towards the fortification.

7.4 Bideford and Barnstaple

Bideford and Barnstaple are historic port towns at the mouth of the Bristol Channel. Both were heavily involved in ceramic and clay pipe manufacture and trade during the 17th century (Ratcliffe 2015). Bideford is on the estuary of the River Torridge. Many of its historic cobbled streets have been partly or completely paved over. Chapel Street is a pedestrian alleyway, with an unknown date, as the buildings were probably constructed later than the street. The style of the street is consistent with those seen in known 17th- and 18th-century street construction, with a slope to a central drain that has been replaced with a modern fixture, tightly packed and pitched stones, and sand bedding, all outlined by curbstones. New Street, constructed in the 17th century, with many of the original buildings remaining, was once cobbled but has now been paved over. It is currently wide enough for a single lane of vehicular traffic. Bridgeland Street is the best documented street found, though the cobbles themselves are no longer extant. The street was intended to front large houses for the mercantile elite, constructed between 1692 and 1694. The Trustees of Bideford Bridge controlled the development and the leases, which included tight building controls: the lease-holders were responsible for paving the area in front of their properties

to the middle of the street, and caring for its maintenance (DLASS 4274F; DLASS 96M/0/Box 83/28-29; Keystone Historic Buildings 2016: 76). The creation of Bridgeland Street suggests that 17th-century merchants were willing to pay for a paved, well-maintained surface when constructing a new street.

Barnstaple is a port along the River Taw, with several extant cobbled pavements. The Penrose Almshouses were completed in 1627, per the date stone still visible over the front entrance. The cobbled courtyard, 50 ft. by 50 ft. (15 m by 15 m), is surrounded on all four sides by 20 two-storey apartments, still in use. The courtyard remains largely untouched, its original cobbles showing minimal newer patching (Figure 47). All the cobbles are tightly packed and pitched into the sand bedding. Curbstones and drains are still intact. The drain placement goes from the original late 17th-century pump in the centre outward in an X-shape (NHLE 1385215 accessed 22/09/20). The courtyard is well-maintained and there may be a pattern as to how the stones were laid, but it was not immediately apparent. The entrances in and out of the courtyard are likewise cobbled. The Horwood Almshouse was founded by merchant Thomas Horwood (1600-1658) and completed in 1674 by his widow Alice, who had already in 1659 opened a school for young women beside it (NHLE 1385102 accessed 23/09/20). The courtyard is in an L-shape and entirely cobbled with pitched stones. There are some indications of patching and repair, and the original drain has been replaced, but the original sand bedding and curbstones remain. Outside of the almshouse, cobbles of the same size as those in the courtyard can be seen through cracks in the asphalt road, suggesting that areas near the church were considered worth the extra expense and labour to entirely pave over.

Figure 47: Barnstaple, Penrose Almshouse, facing northwest

7.5 Clovelly

Clovelly is a small coastal town along the north coast of Devon in the Bristol Channel. The single main street is entirely cobbled and constructed along a 400 ft. (121 m) cliff, similar in length to Ferryland's street (Figure 48) (Keystone Historic Buildings 2016: 85). The street is brilliantly constructed, with cobbles of various sizes angled and pitched so that the incline of the cliff can be easily traversed by foot traffic. No vehicular traffic is allowed on the street, allowing it to survive without much damage or need for modern construction materials to hold the cobbles together. The street curves before heading almost

directly down to the cobbled beach and docks. The street remains well maintained, but weathered and extremely slippery in any weather. Curbstones and several drains remain. The street is constructed in stepped portions at its steepest, though the entire street maintains an approximate 20% incline, and patterns within the cobbles exist, such as large X's and triangles, formed from the drain and curbstones. Many small walkways lead off the main street and are likewise cobbled. The village buildings, all listed with Historic England, are 17th- and 18th-century constructions. The village is privately owned and there is an admission fee for all non-resident visitors that is put towards the maintenance of the buildings and cobbles (Keystone Historic Buildings 2016: 86). While the street itself is a draw for tourists, the history of the cobbles is not documented. Based on the construction style of the cobbles, and the mid-to-late 17th-century buildings, the street is likely contemporaneous with the buildings and other examples discussed from Devon that can be more firmly dated.

Figure 48: Clovelly, Main street, facing northeast

7.6 Comparison

Despite some differences in pavements, the cobbled surfaces in Devon and Ferryland are remarkably similar. The universal use of pitched stones, consistent sand bedding, curbstone lining and pavements sloped down to drains for water runoff, were found on both sides of the Atlantic. Due to this, and the knowledge that many of Ferryland's original settlers came from that part of England, the Devon pavements offer a suitable comparison in how and to what degree the vernacular tradition of pavements changed when they were transferred to North America.

As no archaeological excavations were conducted on many of the English pavements discussed here, there is no comparison in the artifact collections between them and Ferryland. However, it has been discussed that 17th-century refuse disposal frequently involved the tossing of trash onto streets, and how much easier it is to sweep and clean cobblestones rather than other contemporaneous surfaces. The exact nature of each community's refuse disposal cannot be stated, but it can be inferred that, by and large, local residents everywhere used each pavement in much the same way. Paved surfaces were used to better keep communities clean, facilitate movement, improve transportation, and remain usable year round in any weather. In many cases the age of a pavement was inferred based on typical 17th- and 18th-century construction style, and the age of surrounding buildings with historical documentation, not from dateable artifacts, as at Ferryland.

The continued use of the pavements since their construction is an important point of comparison. Ferryland's street was used into the 18th century as it was, with artifacts indicating that the cobbled surfaces were still functional even after the colony's destruction

in 1696. Furthermore, after the street was paved over, the same route was maintained and considered important. In the same way, many of the pavements in Devon were paved over, or had asphalt placed between the stones to allow for heavier vehicular traffic, but the streets themselves in some capacity continued to be used. Importance was placed on these pavements as signs of patching and repair could clearly be seen.

It is, in fact, Ferryland's street—which predates virtually all the extant Devon examples—that is informative about them, rather than the other way around. The significance of streets in 17th-century Devon is reflected in how commonplace, intricate and solid the constructions were, and how many still survive. The prerequisites for most cobblestone paving in Devon included the end of the Civil War and the subsequent surge in the wool trade, but also regulatory and governance changes. The administrative systems capable of implementing urban redevelopments, including large-scale paving plans and restructuring existing medieval streets, did not exist until the late 16th century in the more prosperous townships, and later for smaller areas (Keystone Historic Buildings 2016: 76). Churches and military areas likely were first to have the systems and legal authority to implement pavements, and the funds to hire pavers.

Around the same time that Devon pitched its abundant cobbles into paved surfaces, the whole of the county, north and south, embraced the practice, cobbling everything from important, expansive public and religious sites (Exeter Castle and Cathedral, Barnstaple's Penrose Almshouse, Clovelly's steep and intricately constructed street) to tiny Rockclose Lane (which may have been named after its pavement). From its founding, Ferryland had cobblestones, sand, relative peace, prosperity, the willingness to bring skilled labour from England, and administrative/governmental freedom over what was to be constructed where.

There was nothing to hinder what was clearly, for settlers from Devon, an important cultural expression as well as a commercial need. The result, begun almost immediately, was a “prettie [Devon] streete” older than most extant pavements in Devon today.

Chapter 8: Discussion and Conclusions

Pathways, streets and other thoroughfares in the early modern period have not been extensively studied in the past, their significance overlooked by researchers focused on the artifacts and surrounding constructions. Streets have not been treated as their own entity to be studied exclusively, rather they are supplementary for research focused elsewhere, as a context for a society's events and gatherings, and as an inconsequential afterthought of an area's urban planning. Such a limited conception neglects the materiality of streets and fails to consider those who use them, as matters of equal importance. In actuality, streets are complex entities, which encompass a diversity of significant factors: streets and those who use them are mutually influenced by their location and layout, who built them, and for what purpose. Both the street and the residents of Ferryland had equal agency and acted upon each other.

The analysis of Ferryland's cobblestone street was framed around a series of four distinct research questions: 1) How did 17th-century concepts of city planning and transportation needs influence the construction and operation of the cobblestone street in Ferryland? 2) What can an examination of the street's artifacts, daily use and chronology tell us about its purposes, and how long it was utilized? 3) How did the taskscape of the street and the people of the community mutually influence each other, and how does that inform us about what the settlers believed necessary for new immigrants in a new landscape? 4) What were the essential similarities and differences between the cobblestone streets of Devon and the one in Ferryland, and what were their causes?

The goal of the first question was to understand how the street was originally built, and why it was paved. The second question was concerned with understanding how the street was used daily, through an analysis of consumption patterns as seen through artifacts and their distribution, while also establishing a chronology of the street's use life. Question three dealt with more intangible issues, but incorporated the artifact analysis to better understand how residents of Ferryland moved along the street, where/how they tossed their trash, and the original contexts of the artifacts. This part of the thesis also reflected how the excavated artifacts demonstrated residents' needs, and how the street met those needs and influenced how the residents continued to use the street, calling back to the Actor-Network Theory (ANT). The goal of the final question was to relate everything back to why the street was needed and constructed in the first place through a comparison with contemporary streets in Devon, England.

Construction

Based on previous archaeological excavations, along with the fieldwork conducted in summer 2019, the street measures approximately 400 ft. (121 m) long and 13 ft. (4 m) wide. The feature is entirely cobbled, using an estimated 75,000 stones (Gaulton 2006: 51). Feature 56a, the east end of the street, is the largest portion of exposed cobble surface. This section shows the entire 4-metre width of the feature, including the V-shaped surface drain along the northern curb. A sequence of construction can be suggested based upon the evidence recovered. Construction began with the creation of wooden curbs set 13 ft. (4 m) apart, outlining the width, length, depth, and planned route of the street. Ultimately, it is

unknown if the entire street was planned out at once. It is likely, however, that the east and west ends were begun at approximately the same time, with sections of the middle of the street being added as construction continued. After the wooden curbs were in place, approximately 7 in. (17.8 cm) of sand bedding was poured between the curbs along the length of the street. Due to the results of the 2019 test pitting, it can be inferred that the depth of the sand was consistent throughout the entire feature, meaning approximately 3,016 $ft.^3$ (86.15 m^3) of sand was used to construct the street.

The reconnaissance surveys conducted before the test pitting allowed for an understanding of the origins of the raw materials used to build the street. From the surveys of the modern beaches, the sand could only have originated from the beach to the west of the site (referred to today as the Back Side). Furthermore, the sand from the test pits appears to have been collected at low tide, as established by the fine grain size observed in both test pits and modern observation that fine sand is only visible at low tide. Irrespective of tide levels, a considerable amount of time and effort would have been required to transport the heavy sand all the way to the eastern end of the street, and to continually collect the sand. Previous excavations of the privy in Ferryland uncovered a 17^{th}-century wheelbarrow. If we assume that wheelbarrows were used to help carry materials for the street, and that a wheelbarrow could carry approximately 2-3 ft^3 (56.6-85 L or 0.056-0.085 m^3) per trip, then it would take approximately 1,005-1,508 wheelbarrows to transport all the sand used for constructing the street (Gaulton and Tuck 2003; Gaulton 2017: 162).

Once the sand bedding was in place, two or more stone layers laboured to pave the street, using cobbles that were gathered from the beaches that were nearest each end of the street. This explains the discrepancies of construction style and raw materials that were

observed between the east and west ends of the 17th-century street. The artifact analysis further reinforces that the construction of each end began at approximately the same time, as both test pits lack a significant cultural layer below the sand bedding, suggesting that there was no time for artifacts to accumulate before construction began early in the colony's history, and concurrently at each end.

The documentary history of the colony names one stone layer, James Buell, who was probably involved in the construction and planning of the street. Buell was likely directly responsible for constructing the east end of the street, which exhibits the most skilled labour, with the stones tightly packed and pitched to prevent shifting and provide a stable surface on which to traverse. Given the workmanship that went into the eastern end of the street as compared to the western end, construction would have taken longer there. This was due not only to the use of smaller cobbles with a smaller surface area, but also the sloping of the street to the north to accommodate the drain, and the use of proper curbstones in conjunction with the wooden curbs, exhibiting a craftsmanship not seen at the western end. With most of the cobblestone street remaining under the Pool Road, thereby limiting archaeological work, the extent of this more 'professional' construction pattern is unknown. I have hypothesized that it links in some fashion to the Mansion House courtyard, but that cannot be stated for certain at this time. It is also possible that this construction pattern continued to the midway point of the street, although this is less likely if only for aesthetic purposes, as a visible change in construction style could have been jarring. Another theory is that speed in construction became paramount, resulting in this well constructed pattern existing only in the area around the Mansion House, brewhouse, and storehouse.

The western end of the street (Feature 56b) differs considerably in construction style. While initial theories surmised that this was due to it being of later construction, subsequent test pitting indicated, by the absence of refuse beneath the cobbles, concurrent construction. Consequently, other explanations have to be considered. The exact pattern and care that went into the western edge of the street cannot be ascertained, as most of it remains under the asphalt road, but inferences can be made. Those responsible for constructing this part of the feature were different than those involved at the east end, probably because of time constraints, as demonstrated by the raw material used and how the paving was laid. The cobbles here are larger and rounder, originating from the western beach. Stones were laid in a fashion whereby a larger surface area was present above the sand bedding, thus the stones were less pitched in the bedding and not as tightly packed together, resulting in a less stable pavement. The wooden curb was consistent here, along with proper curbstones, but the end result was a paved surface with shifting stones. The stone layers had some idea of what they were doing, as evidenced by the well-placed curbstones. However, they were not as invested as their eastern counterparts in this section of the street, either because of skill level or, more likely, due to the small number of buildings that were initially located in this part of the settlement and the functions of said buildings (non-domestic).

Based on the timing of the construction, most of it occurred in tandem with the early buildings in Ferryland. More workers were likely involved with the construction of the eastern portion of the street, as that part of the colony had the most work and traffic occurring on it. Final analysis of the street cannot yet be determined, with so much of it still under the Pool Road and currently unknown. There is much more work that can be

completed regarding the street to learn more about its construction style, if it is ever fully excavated. The continued use of the asphalt road—the factor that prevents excavation of the cobblestone street—itself emphasizes the sheer importance and enduring legacy of the 17th-century street, both 400 years ago and today. The need for a large pathway that can support heavy and frequent traffic from the mainland to the Pool, well-constructed and capable of dealing with the regular changes of weather in Newfoundland, cannot be overstated. The importance still placed on the creation, continuous use and repair of a modern road to support the same access to the Pool are of equal significance in demonstrating the care, effort, and dedication involved in constructing the original street.

Chronology

The chronology of the street was established from multiple and varied sources. It mainly stems from the presence of certain artifact types, but is further refined by the construction details noted above and documentary evidence. Captain Wynne's arrival in Ferryland in 1621 and the numerous early building projects of the colony are well established. The historical documents assisted in dating many of the early 17th-century structures, but mention of the cobblestone street exists within the documents as a future plan of construction, and thus lacks a documented beginning or end date. If further letters between Wynne and Calvert mentioned the construction or completion of the feature, they did not survive. Given how quickly the rest of the colony was constructed, it is reasonable to infer that construction of the street began soon after 1622.

The age of the street, and the duration of its use, was primarily established using pipe bowl typologies. The size, shape, and number of pipe bowls recovered from the street

indicate that it was an early construction, as several bowls date between 1620 and 1650. The same bowl forms, as well as makers' marks, suggest the street was used throughout the rest of the 17th and into the early decades of the 18th century. The earliest possible marks were dated to the 1630s, whereas the latest mark was attributed to Roger Browne and dated between 1753 and 1775. This mark could be intrusive, as it is decades younger than other chronological evidence discussed. It has been noted and included, however, because it is not the only evidence from the 18th century.

Unlike the pipe bowls and makers' marks, ceramics could not be used to determine a possible start date for the street's construction. Nonetheless, the presence of a Westerwald mug with an AR medallion was found amongst the artifact assemblage from the street. The mug was manufactured between 1702 and 1714, during Queen Anne's reign (Gaimster 1997: 267). This further emphasizes the continued use of the street into the 18th century. The earliest date for the mug's manufacture was six years after Ferryland's destruction; coupled with ceramics' lengthy possible use-life (Adams 2003: 38), it may not have been discarded for several more decades. The street chronology was further established using the broad date ranges from glass bottles. The date ranges of the case bottles reinforce the dates of the pipe bowl typologies, showing continued use throughout the 17th century. Two glass bottle seals provide more concrete dates: the John Curtis 1695 seal dates to shortly before Ferryland's 1696 destruction, and could well have been broken during that event; the Sloss 1699 seal is another piece of evidence for the continued use of the street into the 18th century. The latter was found on the opposite end of the street to the AR medallion and the Roger Browne pipe, indicating that the entire length of the street continued to see use.

The artifactual evidence was combined with the fieldwork and test pitting completed in summer 2019. The early date of construction based on pipe bowl typologies is supported by the lack of artifacts found beneath the cobblestones during the 2019 excavations. It is possible residents cleared the area of the street before construction, but unlikely due to the dearth of artifacts excavated and how unnecessary it would have been. The workers laid enough sand bedding that the street construction would not have been impeded by most artifacts. The roadway was used even before it became a paved feature, as a thoroughfare likely always existed between buildings, providing a possible explanation for the layout of the cobblestone street. Due to this, either the accumulation of refuse was swept away before the wooden curbs and sand bedding were placed down or, more likely, there was not enough time for the refuse to accumulate, resulting in few artifacts emerging from the test pits.

Artifact Distribution and Use

An understanding of the distribution of artifacts on the street, and the subsequent use of the street by the residents of Ferryland, provides context for local consumption patterns, how residents viewed the feature, and how it functioned within the settlement. The spatial distribution of the artifacts indicates areas of high concentration along the curbsides, predominantly the southern curb that lacked the drain. This suggests that the street was cared for and maintained, with most of the artifacts being swept to the side so as not to impede traffic. Furthermore, the large number of artifacts recovered from the east end of the street, and the fact that some (such as ceramics and glass) can be traced to multiple buildings adjacent to the street, makes it clear that the street acted as a secondary

midden. Refuse disposal during the 17th century was not complex, and unwanted items tended to be tossed out windows and doors (Gaulton 2006: 76). The presence of ceramic cross-mends from pieces found both in the street assemblage and from previous excavations of other structures in the settlement, indicate that some vessels ended up on the street due to redeposition and further breakage from the primary middens of these structures. Ceramics, glass, and likely pipes and metals tools are similar to what has been excavated from the surrounding buildings noted in previous studies (Carter 1997; Gaulton 1997; 2006; Stoddart 2000; Crompton 2001; Gaulton and Tuck 2003; Brandon 2003; Newstead 2008; Claunitzer 2011; Miller 2013; Ingram 2015), and represent the different consumption activities in the immediate area.

Overall consumption patterns and artifact distribution demonstrate that the primary function of the street was as a pathway to enable regular, heavy, daily traffic of humans, animals, and everyday objects. This can be seen in the evidence of higher traffic (reflected in bowl typologies and pipe-makers' marks) that followed the increase in population after the Kirke era began in 1638. And also through the regular cleaning that must have taken place, to sweep artifacts to the side, and the continued operation and use of the drain for most of the colony's 17th-century history, requiring regular cleaning so that refuse would not build up. The centre of the street was largely devoid of artifacts, so as not to impede residents using the thoroughfare. Residents cared for their infrastructure, and took the time to maintain it. This suggests that residents found the street important, that they used it regularly and they needed to maintain it to the degree that would enable continued use in a regular fashion. The regular foot traffic could have disturbed and redeposited artifacts away from the centre of the street. This does need to be considered and could explain the lower

artifact frequencies along the northern side of the street where the drain is located. However, regular maintenance is clear due to the drain having to be regularly cleaned to allow it to still function, and the high frequency of all artifact types along the southern curb and retaining wall, the area most out of the way of any other infrastructure. Additionally, the inhabitants of Ferryland would likely have been familiar with mandates in Devon that required regular road maintenance. Thus, the creation of the street influenced the residents, as it forced them to continually repair and maintain it, just as the residents influenced how the street was used as both a casual midden and an important thoroughfare.

Lastly, the street was not a separate entity unto itself: it acted as a connection between the colony's adjacent buildings and as an extension of those buildings, as seen from the artifact assemblage. The dwellings and work-related structures within the colony extended outwards onto the street, where residents could gather and socialize. The Ferryland tavern and brewhouse served the community and the forge would likewise have acted as a communal hub. As a result, while many of the artifacts excavated were intentionally tossed from the buildings, or came from their primary middens before eventually settling onto the street, some artifacts are part of the street assemblage simply through residents accidentally dropping them during the course of daily movements for work or pleasure. This is likely the case for many of the pipe fragments, small tools, and personal adornments recovered. A comparison of typical artifacts excavated from Ferryland, and where many of those specific artifacts originated occurred throughout the artifact analysis of Chapter 6. Ferryland's street is not unique because of its artifacts, but rather, due to the artifacts connecting to so many different middens. The street did not exist in isolation from the rest of the colony, which is reflected in its artifact assemblage.

The activity areas and use of the street can be further expanded based upon differences in artifact assemblages found between the east and west ends. Artifacts from Event 267, surrounding the Mansion House, Kirke house, and other buildings, were more numerous and varied, ranging in function from utilitarian to pieces likely used only for display. In contrast, Events 243 and 225, near the forge in Area B, had significantly fewer artifacts, of purely utilitarian function. The distinction between the two ends of the street is important as it indicates that the west end of the cobblestone street (Feature 56b) was not associated with or within proximity to domestic tasks, particularly in the early decades of the colony, as the forge was built some distance back from the street. As a result, few pieces of ceramic, pipe, or glass were found on Feature 56b, suggesting that this portion of the street (and colony) saw less frequent use and traffic compared to the opposite end of the street. This fact ties in with the differences in construction previously noted. Just as Feature 56a in Area F was built more carefully, with more time and effort spent on construction, so too did it accumulate a wider variety of artifacts. Area B has fewer artifacts, and the street was constructed with less effort, with those responsible for the construction of the feature likely thinking that less traffic would occur in that section of the street, and would therefore not require as much care.

The artifacts excavated from the cobblestone street are deeply informative. The conclusions reached throughout this thesis were strongly supported by previous analysis of other structures excavated and researched across Ferryland, through which I have been able to link activity areas and original contexts of many artifacts found on the street. That said, it would be possible to reach similar conclusions using *only* the artifacts excavated from the street itself. These artifacts show clear evidence for nearby domestic and non-domestic

activities, they indicate the presence of individuals of different socio-economic status, and they even indicate the full scope of the trade networks Ferryland was involved in.

The archaeology of the cobblestone street can thus be conceived as something of a proxy for nearby occupation and activities. It is possible to understand that the east end of the street was within proximity of wealthy residents as seen by the large variety of ceramics from Event 267. Conversely, the smaller amounts of utilitarian wares excavated from the west end of the street (from Events 243 and 225) indicate that this area of Ferryland was not much used for domestic purposes. Yet, the street itself, its place and importance within Ferryland, can also be broadly understood through a detailed study of the street alone.

Future research on historic settlements can be focussed through the lens of their streets and pathways. Initial excavations of these pathways would provide broad insight into how the settlement was structured, the lives of the residents, the importance placed on maintaining infrastructure, and other adjacent activities of those who worked and lived nearby. Future research could therefore use these thoroughfares to direct their work and areas of interest for excavations.

The 17th-Century Street of Ferryland, and its Similarities with Devon Streets

The early modern street was both public and private. Streets exist within communities and are often extensions of residents' homes and businesses. A street guides the movements of humans, animals and goods, thereby structuring settlements, and can exist as a meeting place for community members. Additionally, streets are fixed features. Once laid out, they do not change, per say, but can be added to, extended, repaired and repaved, setting a pattern that permanently directs movements. Due to its many functions,

there is no one single use for a street. The creation of such a feature can stem from a general desire for order and cleanliness in crowded urban settings, but can also originate from what residents in these environments think they should have. A street can offer a shared identity to a community, since how it is used, what is stored on it, and its general state or condition reflects directly back on the community. It therefore connects the immaterial with the material.

Typical examples of a 17th-century street contained several universal identifying features: refuse would be tossed on them and accumulate; the street would have a structure to its surface and subsurface; and there was care taken in repairing it. Ferryland's street comprises all of these features, and stands as a prime example of what those who planned a 17th-century street strived to achieve. There is evidence of planning, and the result is a complex form of materiality. The planning and thought put into the feature tightly ties together the structure of the street itself, the layout of the settlement (including the placement of the buildings and other pathways), the landscape of the settlement impacted by its construction, and the people and animals that lived adjacent to the street and used it.

When creating a new settlement, street construction would be based on preconceived designs and concepts derived from other streets in pre-existing towns or villages. Streets could change in design and layout depending on cultural, political, economic, religious, and even familial factors . Islamic and Christian cities have vastly different urban designs, as importance is placed on different factors. Asian and African streets would differ from European streets. Larger urban centres would not have the same design as smaller towns and villages (Rapoport 1982: 78; Rykwert and Atkin 2005: 9; Laitinen and Cohen 2009: 4). Older cities, which had grown organically since medieval

times to accommodate larger populations, would be vastly different to newly created towns designed around a seasonal fishery. Consequently, European intrusion into North and South America and the creation of colonial towns initiated their own vernacular designs, based on the experiences and history of those planning and building the towns and associated streets.

Ferryland's 17th-century street has many similarities with streets seen in Devon, England. The universality of pitched stones, the consistent sand bedding, proper use of curbstones and a small incline towards a drain were as visible across Devon as in Ferryland. Archaeological investigations have not occurred on many of the English pavements, therefore no comparable artifact collections or means of assessing potential differences in the spatial distribution of artifacts on pavements on either side of the Atlantic are available. Moreover, the dating of cobblestone streets in Devon is less precise in the absence of documentary evidence for the streets themselves, and had to be extrapolated based on inferences from the documented dates of surrounding buildings, and the construction style of the pavements. That said, certain conclusions can be made through an understanding of 17th-century life.

The presence of a paved pathway in a community meant a degree of care was taken in the area, as it would not only help keep the community clean but allow for the street to be used year round. Bayard's Cove in Dartmouth was originally cobbled to facilitate the movement of heavy artillery from the harbour in Dartmouth to the fort. Exeter Quayside was cobbled for ease of use in year-round trading. In Plymouth, Hawker's Avenue was likewise cobbled so that the merchants could easily move wares to and from the harbour in any weather. The almshouses in Barnstaple and Bideford were cobbled so that the residents

could use the courtyards between the buildings without tracking mud indoors. It is important to note that while Devon has been the focus for the cobblestone street comparison, this was due to its links with Ferryland. Many of the original settlers came from Devon, so a direct comparison can be made between their styles of building pavements. That said, cobblestone pavements themselves, in a variety of forms and styles, began to become ubiquitous during the 17th century throughout Britain and Northwest Europe. Many urban centres started to use them for the exact reasons those in Devon and Newfoundland did, because they were easier to clean and maintain.

Ferryland's street was used into the 18th century, even after it ceased to be maintained, with the relict thoroughfare continuing to see use in subsequent centuries before eventually being paved over with asphalt to better meet the needs of the community in the 20th century. Many of the cobblestone street examples surveyed in Devon remain extant in the 21st century, some paved over and others with asphalt poured between the cobbles to allow heavier vehicular traffic use. This serves as another important comparison. In each example, it demonstrates that the street, or any subsequent thoroughfare, was important to the community: important enough that solutions were found to continue to use it in some capacity. Additionally, due to Ferryland predating many of the extant examples from Devon, it rather helps to inform about Devon cobbled thoroughfares.

Cobbled pathways, streets, courtyards, alleyways, and decorations are shown to be significant to Devon culture by their commonplace nature. The constructions remain solid and intricate centuries later, further indicating the skill of the pavers who laid the stones. Certainly, a prerequisite for the construction of many cobble pavements in Devon was the end of the Civil War, which resulted in more money coming into the county due to the

increased wool trade and the improvements to administrative systems. The subsequent urban redevelopments included large-scale plans to pave towns and the restructuring of medieval centres that did not originally have planned development as they grew organically over time. These changes began in the late 16th century in larger and more prosperous townships when administrative systems were created, but were not widely implemented until after the Civil War, when they also spread to smaller, less well-off areas. The earliest examples of cobblestone pavement are associated with churches or government-owned property, which would have had access to the administrative services and the funds and legal authority to hire proper pavers.

When conditions in Devon were finally suitable for the creation of cobbled pavements, the entire county was in the process of embracing the practice. From the smallest alleyways to expansive public spaces and religious and political places, the prevailing tendency seems to have been that if it could be cobbled it would be cobbled. In contrast, from Ferryland's inception the necessary raw materials and knowledge were present in a settlement being built from the ground up. There was nothing to stop the construction of a cobbled street, and an evident desire to have one. For the people of Devon, at home and abroad, nothing portrayed a proper town like a "prettie streete."

Conclusions

Ferryland's street serves as an important addition to our understanding of the development of the 17th-century settlement, and helps to comprehend the concept, evolution, and construction of 17th-century streets across England and British North

America. This research will help to further studies on pavements and urban development during the 17th century.

Excavations in Areas B and F uncovered two ends of a cobblestone street constructed within the first decade of the colony's inception, likely between 1622 and 1628, while also demonstrating how the street was constructed from locally sourced materials. Initial excavations and further test pitting have established that, while the majority of the feature remains unexcavated, it is a singular feature constructed continuously until completion, with no apparent gaps between either end. The feature measures 400 ft. by 13 ft. (121 m by 4 m), with an approximate depth of 7 in (17.8 cm) of sand, across its entirety. The street was constructed by at least two separate workers, one likely the documented stone-layer James Buell, the other a potential apprentice to Buell or another undocumented tradesperson. The street was a focal point of the settlement, with major structures immediately adjacent to the feature, and it passed through the centre of the settlement, from one end to the other. The street was continuously used from the Calvert era through the Kirke period and the destruction of the colony, and continued to see use for several decades after. No significant structural changes are evident where the Kirkes may have attempted changes to the feature; some patching may have been done to maintain the street, but major changes did not occur. The street was constructed to such a standard that maintenance of the drains and regular sweeping of refuse would have been all that was required for its continued functioning.

The archaeological research establishes an initial construction date and the continued use of the street after 1696, answering part of my second research question on how long the street was utilized. Furthermore, the feature had periods of higher traffic,

which also reflects the growing population of the settlement after 1640, when the Kirkes arrived. The artifact assemblage also demonstrated activities in the surrounding buildings, adding to other archaeological work previously conducted in Ferryland. The artifacts demonstrate how the street was used, acting as a traffic thoroughfare and as a secondary midden for refuse from the adjacent buildings. Similar to other streets surveyed in England, and research on other 17th-century streets, the artifacts reflect the public uses of the street. Large quantities of clay pipe stems and bowls were recovered, reflecting social interactions between residents, with clusters extending from the surrounding buildings, indicating the street was an extension of them. The street also reflects the many trade connections of Ferryland, with ceramics originating across England and continental Europe.

The material culture further answered the question of how residents moved along the street and tossed their trash. The 17th-century street at Ferryland reflects the universal components needed for a functioning street in Europe and elsewhere in British North America, something clearly thought necessary for a functioning town. This feeling of necessity among the residents influenced how they cared for the feature. Well-constructed and regularly maintained, for more than 80 years the feature was used every day by the population of Ferryland—as shown by how the taskscape reflected the entirety of the colony's life—as they traversed it, lost items and tossed their garbage on to it.

The research questions pursued in this thesis were all elements of a central overarching theme: what did the cobblestone street signify to the residents of Ferryland? Its importance to them is obvious, as testified by its immediate, expensive and careful construction, its ongoing maintenance and constant daily use for over 80 years and even the pride and ambition exhibited in Wynne's letter. Its meaning, however, did not solely lie

in its practical benefits. The “prettie streete” signified to the inhabitants of Ferryland their old home in Devon, the needs and adornments of a proper town, and their new start in a new land.

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Appendix A (Part I): Pipe Bowl Typologies

Event 267

Date Range	Cat. #	Description	Notes	Maker's Mark	Citation
1620-1640	246958	Bowl	English/Dutch Small belly bowl P		**Gaulton 2006: 313**
1620-1640	258440	Bowl	West Country Small West Country bowl 12		**Ibid: 315**
1620-1640	247235	Bowl	West Country Small West Country bowl 5		**Ibid: 314**
1620-1650	247958	Bowl	Bristol/London Small belly bowl J		**Ibid: 311**
1620-1650	247407	Bowl	Bristol/London Small belly bowl J		
1620-1650	251324	Bowl	General English Form Small belly bowl F		**Ibid: 310**
1620-1650	249065	Bowl	London (general form) Small belly bowl K		**Ibid: 312**
1620-1650	261973	Bowl	London (general form) Small belly bowl K		
1620-1650	258162	Bowl	London (general form) Small belly bowl G		**Ibid: 311**
1620-1650	246841	Bowl	Unknown *Similar to Small West Country bowl 4*		**Ibid: 314**
1620-1650	246821	Bowl	West Country Small West Country bowl 4		
1620-1650	252035	Bowl	West Country Similar to Small West Country bowl 4 (incomplete)		
1620-1650	247408a	Bowl	West Country Small West Country Bowl 4		
1620-1650	261011	Bowl	West Country Small West Country Bowl 4		
1620-1650	252026	Bowl	West Country Small West Country Bowl 4		

Date Range	Cat. #	Description	Notes	Maker's Mark	Citation
1630-1650	247500	Bowl	Bristol/London Small belly bowl I		**Gaulton 2006: 311**
1630-1650	249936	Bowl	Bristol/London Small belly bowl I		
1630-1650	254326	Bowl	Bristol/London Small belly bowl I		
1630-1650	220693	Bowl	Central Southern/ Southwest England Chinned bowl 2		**Ibid: 317**
1630-1655	246895	Bowl	General English form Small belly bowl A-C		**Ibid: 309**
1630-1655	249925	Bowl	General English form Small belly bowl A-C		
1630-1655	252029	Bowl	General English form Small belly bowl A-C		
1630-1660	247409	Bowl	Barnstaple/Plymouth Small West Country bowl 11 *Similar to Dutch pipe bowl 5*		**Ibid: 315**
1630-1660	249930	Bowl	Barnstaple/Plymouth Small West Country bowl *Similar to Dutch pipe bowl 5*		
1630-1660	246842	Bowl	Devon Small West Country bowl 10		
1630-1660	218358	Bowl	General English form Spur pipe 4		**Ibid: 316**
1630-1660	246890	Bowl	General English form Spur pipe		
1630-1660	259076	Bowl	General English form Spur pipe 4		
1630-1660	287371	Bowl	General English form Spur pipe 4		
1630-1660	220247	Bowl	London (general form) Spur pipe 3		
1630-1660	249219	Bowl	London (general form) Spur pipe 3		
1630-1660	256324	Bowl	London (general form) Spur pipe 3		
1630-1660	259812	Bowl	London (general form) Spur pipe 3		
1630-1660	263953	Bowl	London (general form) Spur pipe 3		
1630-1660	282208	Bowl	London (general form) Spur pipe 3		

Date Range	Cat. #	Description	Notes	Maker's Mark	Citation
1630-1660	220247	Bowl	London (general form) Spur pipe 3A		**Gaulton 2006: 316**
1630-1660	247537	Bowl	London (general form) Spur pipe 3A		
1630-1660	251083	Bowl	London (general form) Spur pipe 3A		
1630-1660	256775	Bowl	London (general form) Spur pipe 3A		
1630-1660	259696	Bowl	London (general form) Spur pipe 3A		
1630-1660	287652	Bowl	London (general form) Spur pipe 3A		
1630-1660	271147	Bowl	London (general form) Spur pipe 3A		
1630-1660	277778	Bowl	London (general form) Spur pipe 3A		
1640-1660	247095	Bowl	Dutch Dutch pipe bowl		**Ibid: 331**
1640-1660	257339	Bowl	London (general form)/Southern Ireland Small belly bowl L		**Ibid: 312**
1640-1660	282865	Bowl	London (general form)/Southern Ireland Small belly bowl L		
1640-1660	249933	Bowl	London/South East England Small belly bowl D		**Ibid: 310**
1640-1660	246916	Bowl	Unknown Straight-sided, *similar to West Country bowl*		**Ibid: 314, 319**
1640-1660	258001	Bowl	West Country (Plymouth) West Country bowl 3		**Ibid: 314**
1640-1670	249799	Bowl	London (likely) Small belly bowl, three different possible makers	RC mark	**Ibid: 310**
1640-1670	271179	Bowl	Southwest England Chinned bowl		**Ibid: 317**
1640-1670	252166	Bowl	Unknown *Similar to chinned and belly bowls. Fairly large*		**Ibid: 317, 320-321**
1650-1670	247960	Bowl	Bristol/Central Southern England Chinned bowl 6		**Ibid: 318**
1650-1670	254882	Bowl (joined)	Bristol/Central Southern England Chinned bowl 6		

Date Range	Cat. #	Description	Notes	Maker's Mark	Citation
1650-1670	271158	Bowl	London/West Country Straight-sided 1		**Gaulton 2006: 322**
1650-1670	261588	Bowl	London/West Country Straight-sided 2		
1650-1670	263835	Bowl	London/West Country Straight-sided 2		
1650-1680	263906	Bowl	Dutch Dutch pipe bowl 10		**Ibid: 331**
1650-1680	257992	Bowl	Dutch/English		
1650-1680	263437	Bowl	London/South West England Chinned bowl 5		**Ibid: 318**
1650-1680	249381	Bowl	London/West Country *Similar to Straight-sided 2*		**Ibid: 322**
1650-1680	254694	Bowl	London/West Country Straight-sided 2		
1660-1680	245285	Bowl	Central Southern England Chinned bowl 8		**Ibid: 318**
1660-1680	250823	Bowl	Central Southern England Chinned bowl 8		
1660-1680	282494	Bowl	Central Southern England Chinned bowl 8		
1660-1680	218351	Bowl	General English bulbous form Large belly bowl 1		**Ibid: 321**
1660-1680	261920	Bowl	General English bulbous form Large belly bowl 1		
1660-1680	261825	Bowl	General English bulbous form Large belly bowl 2		**Ibid: 322**
1660-1680	263960	Bowl	General English bulbous form Large belly bowl 2		
1660-1690	256767	Bowl	London/West Country Straight-sided 1		
1660-1690	271019	Bowl	London/West Country Straight-sided 1		
1660-1690	287655	Bowl	London/West Country Straight-sided 1		
1660-1690	289041	Bowl	London/West Country Straight-sided 1		

Date Range	Cat. #	Description	Notes	Maker's Mark	Citation
1660-1690	282104	Bowl	London/West Country Straight-sided 1		**Gaulton 2006: 322**
1660-1690	282621	Bowl	London/West Country Straight-sided 1		
1660-1690	285514	Bowl	London/West Country Straight-sided 1		
1670-1690	257881	Bowl	Dutch Rose mark 3, four-on-diamond pattern, incomplete profile	Rose mark	**Ibid: 343**
1670-1690	265999	Bowl	West County Late 17th-century bowl		**Ibid: 323**
1670-1690	288371	Bowl	West County Late 17th-century bowl		
1670-1700	218076	Bowl	Barnstaple/Exeter Late 17th-century West Country bowl		
1670-1700	249929	Bowl	Barnstaple/Exeter Late 17th-century West Country bowl		
1670-1700	249207	Bowl	West County Late 17th-century bowl 2		
1670-1700	263876	Bowl	West County Late 17th-century bowl 3		
1670-1700	261824	Bowl	West County Late 17th-century bowl 3A		
1670-1700	263958	Bowl	West County Late 17th-century bowl 6		**Ibid: 324**
1670-1700	263959	Bowl	West County Late 17th-century bowl 6		
1670-1700	279103	Bowl	West County Late 17th-century bowl 7		
1680-1710	271221	Bowl	Poole Later 17th-century Poole bowl		**Ibid: 327**
1680-1710	287761	Bowl	Poole Later 17th-century Poole bowl		
1680-1710	249700	Bowl	West County Late 17th-century bowl 1		**Ibid: 322**

Date Range	Cat. #	Description	Notes	Maker's Mark	Citation
1680-1710	271412	Bowl	West County Late 17th-century bowl 1		**Gaulton 2006: 327**
1680-1710	282425	Bowl	West County Late 17th-century bowl 1		**Ibid: 322**
1680-1720	291221	Bowl	English (London) *Like Straight-sided 2, but a spur pipe. Incomplete profile*		**Ibid: 326**
1680-1720	282063	Bowl	West County Late 17th-century bowl 3		**Ibid: 328**
1680-1720	251327	Bowl	West County Late 17th-century bowl 5		

Event 243

Date Range	Cat. #	Description	Notes	Maker's Mark	Citation
1660-1690	637178	Bowl	London/West Country Straight-sided 1		**Gaulton 2006: 322**
Likely 1680-1720 (post 1660)	637118	Bowl	Unknown (West Country) *Incomplete profile, tall and fairly straight, similar to west country bowl 4*		**Ibid: 328**

Event 225

Date Range	Cat. #	Description	Notes	Maker's Mark	Citation
1680-1720	155747	Bowl	West County Late 17th-century West Country bowl 5		**Gaulton 2006: 328**
1680-1720	154159	Bowl (joined)	West County Late 17th-century West Country bowl 4		
18th Century	154867	Bowl	Intrusive		

Appendix A (Part II): Makers' Marks

Photo courtesy of Barry Gaulton,
Department of Archaeology, MUN

IH mark
West Country bowl
John Hunt of Bristol (1651-1653)
Catalogue #: 258875
Incuse
Stamped on heel

Previous Ferryland excavations have found the complete bowl and mark in occupation layers of the forge (Area B) and storehouse (Area C). Other Bristol and Wiltshire pipe makers shared these initials and were active between 1640-1670.

(Walker 1977: 1448; Pope 1988: 18-19; Carter 1997: 55, 223; Gaulton 1999: 37; Gaulton 2006: 338).

Photo courtesy of Barry Gaulton,
Department of Archaeology, MUN

IS mark
London pipe bowl from 1635-1660
Three potential pipe makers:
- John Smith (1634)
- John Stevens (1644)
- James Stephens (1663)

Catalogue #: 256803
Relief
Stamped on heel
(Stylized tobacco plant between initials)

Only part of the heel and stem were recovered from [E 267], but entire bowl was recovered from forge occupation layer (Area B).

(Oswald 1975: 37; Walker 1977: 1529; Carter 1997: 56, 228; Gaulton 1999: 33; Gaulton 2006: 335).

Photo courtesy of Barry Gaulton, Department of Archaeology, MUN

EF mark
West Country bowl 1650-1680
Pipe maker unknown
Catalogue #: 256803
Relief
Stamped on heel
(Initials enclosed by circle of dots)

Only the stamped heel was found in [E 267]. Previous Ferryland excavations have found the mark in mid/late 17th-century midden deposit, Area F. The bowl has characteristics of both West Country and Dutch pipes within the indicated dates. No "EF" pipe maker was recorded at this time in the English West Country. The decorative border suggests Cornwall manufacture as well.

(Duco 1981: 308; Gaulton 1999: 38; Gaulton 2006: 338).

RB mark, left side of the heel "R"

RB mark, right side of the heel "B"

RB mark
Southeast/Central England
Roger Browne of Southampton (1753-1775)
Catalogue #: 258275
Relief
Stamped on sides of heel

Only the stamped heel was recovered from [E 267]. Previous Ferryland excavations have found the mark, stamped stem (see Appendix A: Part III), and fragmentary bowl in 18th-century occupation and destruction layers, Area C.

(Oswald 1975: 171; Gaulton 1999: 52).

RC mark 1: Bowl dated 1640-1670

RC mark 2: Bowl dated 1640-1670

RC mark 3: Bowl dated 1640-1650

Photos courtesy of Barry Gaulton,
Department of Archaeology, MUN

RC mark
London pipe bowls from 1640-1670
Three potential pipe makers:

Richard Cole	(1615-1659)
Roger Clare	(m. 1631)
Richard Coxe	(1634-1638)

Catalogue #: 249799 (with bowl)
277999
256389
Relief
Stamped on heel

One complete bowl and stamped heel was recovered from [E 267] (see Appendix A; Part I), with the other two marks on surviving stamped heels.

RC mark 1 was the only definitive mark recovered from [E 267]. Mark 2 is similar, and some of the distinguishing decoration may be missing. Mark 3 is not within the street assemblage.

Previous Ferryland excavations have found the three separate marks in forge occupation layers (Area B) and in midden deposits in Area F. The three separate marks could represent one or more different pipe makers.

Several Bristol pipe makers share the initials as well: Robert Cable (1639-1640) and Richard Cable (1643).

(Oswald 1975: 134, 151; Pope 1988: 19; Carter 1997: 54, 227; Gaulton 1999: 34; Gaulton 2006: 335-336).

Photo courtesy of Barry Gaulton, Department of Archaeology, MUN

PE mark
West Country bowl
Two potential pipe makers of Bristol
Philip Edwards I (1649/50-1689/90)
Philip Edwards II (1680/81-1696)
Catalogue #: 254981
Incuse
Stamped on heel

Only the stamped heel was found in [E 267]. Previous Ferryland excavations have found the mark in midden deposits in Area F.

(Walker 1977: 1125, 1420; Gaulton 1999: 36; Mills 2000: 21, 25; Gaulton 2006: 337).

Photo courtesy of Barry Gaulton, Department of Archaeology, MUN

Rose mark
Dutch pipe bowl 1670-1690
Gouda manufacture, exact pipe maker unknown
Catalogue #: 257881 (with bowl)
277566
Relief
Stamped on heel

One complete bowl and the stamped heel was recovered in [E 267] (see Appendix A; Part 1). Previous Ferryland excavations have found the mark and complete bowl in destruction layers in Area C and midden deposit, Area F.

Several identical marks and bowls were found in a 17th-century planter's house in Renews.

This mark has been matched with the four-on-diamond fleur-de-lys stem (see Appendix A: Part III)

(Duco 1981: 258, 261; Mills 1996: 21, 26; Gaulton 1999: 41; Gaulton 2006: 343).

Photo courtesy of Barry Gaulton, Department of Archaeology, MUN

Spoke Wheel mark/ Eight Pointed Star mark
West Country bowl 1650-1680
Exeter manufacture, exact pipe maker unknown
Catalogue #: 256769
258680
Relief
Stamped on heel

Only the stamped heel was recovered from [E 267]. Previous Ferryland excavations have found the mark and complete bowl in refuse deposit in defensive ditch (Area F) and mid/late-17th-century occupation deposit, Area F.

Bowl style is similar to Barnstaple pipes dating 1660-1720.

(Pope 1988: 19; Carter 1997: 56; Gaulton 1999: 38; Mills 2000: 21, 25-26; Gaulton 2006: 340).

Photo courtesy of Barry Gaulton, Department of Archaeology, MUN

AR mark
West Country or London bowl
Two separate bowls have been found in Ferryland contexts, with the large bowl dating 1660-1680. The smaller bowl dates 1630-1670.
Two potential pipe makers in Barnstaple and London
Anthony Roulstone (1630-1670)
Abraham Roberts (c. 1665)
Catalogue #: 259871
290282
Relief
Stamped on heel

Only the stamped heels were recovered from [E 267]. Previous Ferryland excavations have found the mark and complete bowl in late 17th-century destruction layer, Area C.

(Oswald 1975: 143; Gaulton 1999: 39; Gaulton 2006: 340).

DK mark
Charles City, Virginia, U.S.A. pipe 1640-1660
Initials belong to pipe owner, not maker
David Kirke (1638-1651)
Catalogue #: See Appendix A: Part III for stem
Incuse
Heelless pipe

Initials applied to the front of the bowl using a hand-held rouletting tool. Double rouletting around rim, with eight-pointed star incuse and a centre stamped circlet on the back of bowl facing smoker.

No bowl was recovered from [E 267], only the very diagnostic stem (see Appendix A: Part III). Previous Ferryland excavations have found the mark and complete bowl in midden deposits, Area F.

(Gaulton 1999: 33; Gaulton 2006: 332).

Photos courtesy of Barry Gaulton,
Department of Archaeology, MUN

Appendix A (Part III): Decorated Pipe Stems

Four-on-diamond Fleur-de-lys
Dutch
Possible Gouda manufacture
Early/mid-17th-century
Pipe maker unknown
Catalogue #: 277441
Relief: stamped shallowly into stem, somewhat crude.

No bowl was recovered from [E 267], only the very diagnostic stem. Previous Ferryland excavations have found this decoration with and without rouletting. Examples of this decoration have been found on English and French settlements.

This stem has been matched with the Dutch rose mark and complete bowl 257881 (see Appendix A: Part I & II)

(Atkinson and Oswald 1972; Duco 1981: 246, 258, 455, 464; Faulkner and Faulkner 1987: 176; Miller 1991: 80; Gaulton 2006: 129, 345; Ingram 2015: 87).

Baroque-style Fleur-de-lys
French
Probably from Rouen
Second half of the 17th century

Catalogue #: 287739
Moulded relief decoration around entire stem

No bowl was recovered from [E 267], only the very diagnostic stem. Previous Ferryland excavations have found this decoration with a crowned "IC". Some examples have a crowned *dauphin* above the IC. This type of relief moulding has been found on English and French settlements in the early 17th century. Ferryland examples are from the second half of the 17th century, coinciding with the large number of pipe makers in Rouen during that time.

The stem has not been matched with any surviving French or Dutch bowls (see Appendix A: Part I). They are not part of the MNP due to this.

(Duco 1981: 383; Faulkner and Faulkner 1987: 177; Gaulton 2006: 343; Gaulton 2018: 439-444).

Series of single Fleur-de-lys
Dutch
Possible Gouda manufacture
Late-17th-century
Pipe maker unknown

Catalogue #'s:	**General**	**Crude**
	277974	256943
	246681 (with rouletting)	277980
	279152	218736
	288232 (with rouletting)	265015
	259814	249708
	261039	279809
	218320	289421
	247239	
	290794	
	271840	
	261205	

Relief

A series of 5-6 single fleur-de-lys enclosed in a diamond border, stamped shallowly into stem.

Most common stem decoration, with 18 examples in [E 267].

No bowl was recovered from [E 267], only the decorated stem. Previous Ferryland excavations have found this decoration with and without rouletting and with a complete Dutch bowl of Gouda manufacturing (1670-1690).

Due to breakage pattern, each example of the decoration was determined to be a separate pipe.

Examples exist in both the general fleur-de-lys, the crude fleur-de-lys, and general fleur-de-lys with rouletting from [E 267].

The stems have not been matched with any surviving Dutch bowls (see Appendix A: Part I). They are not part of the MNP due to this.

(Duco 1981; Faulkner and Faulkner 1987; Miller 1991: 80; Gaulton 2006: 344-345; Ingram 2015: 87).

Photo courtesy of Barry Gaulton,
Department of Archaeology, MUN

Elaborate relief rouletting
Dutch
Possible western Holland manufacture
c. 1700
Pipe maker unknown
Catalogue #: 271807
Relief
Minimum five bands of triangular rouletting

No bowl was recovered from [E 267], only the very diagnostic stem. No other examples have been noted in previous Ferryland excavations. Various rouletting patterns have been seen on English and French settlements, but no exact match yet.

The stem has not been matched with any surviving Dutch bowls (see Appendix A: Part I). It is not part of the MNP due to this.

(Duco 1981: 250, 459; Faulkner and Faulkner 1987: 175).

Photo courtesy of Barry Gaulton, Department of Archaeology, MUN

Rouletted stem belonging to DK mark
Charles City, Virginia, U.S.A. pipe 1640-1660
Initials belong to pipe owner, not maker
David Kirke (1638-1651)
Catalogue #: 259458
277693 [E 360] (cross-mend)
Heelless pipe

Four bands of rouletting with stamped, small eight-pointed stars/spoke wheels surrounded the rouletting.

No bowl was recovered from [E 267], only the very diagnostic stem (see Appendix A: Part II for bowl). Previous Ferryland excavations have found the mark and complete bowl in midden deposits, Area F.

The stem has been included in the MNP, due to definitively knowing that the bowl was not present within the assemblage.

(Gaulton 1999: 33; Gaulton 2006: 332).

Appendix B: Ceramic Vessels MNV

Event 267

Vessel	Ware Type	Vessel Form	Catalogue Numbers	Country of Origin	Linked Events
1	Borderware	Unknown	289455, 281134, 289465	England	
2	Bristol Staffordshire Slipware	Unknown	272855, 247267, 278358, 178367, 272545a,	England	
3	Bristol Staffordshire Slipware	Unknown hollow ware	247267, 286527, 290313, 280659	England	
4	Dutch Redware/ South Somerset	Pipkin	220324	Netherlands	
5	English Redware?	Storage Vessel	247859, 286707	England	
6	English Redware?	Storage Vessel	286996	England	
7	English Redware/ North Devon Gravel	Milk pan	285775	England	
8	English White Salt Glaze	Bowl	526486, 526489	England	
9	English White Salt Glaze	Unknown	526488	England	
10	Exeter Coarse Sandy (West Somerset)	Milk pan	288086, 256560, 247418, 288080	England	
11	Fine Portuguese Redware	Unknown	251248	Portugal	
12	Fine Portuguese Redware	Unknown	285606, 265451	Portugal	
13	Normandy	Unknown	281472	France	
14	North Devon Gravel	Cooking Pot	254676, 287568a	England	
15	North Devon Gravel	Flatware; large plate	287405	England	
16	North Devon Gravel	Jug/ Chafing Dish	No Catalogue # (Handle), 254773, 263850	England	
17	North Devon Gravel	Milk pan	243752, 258014a, 287839a-c, 256503	England	

Vessel	Ware Type	Vessel Form	Catalogue Numbers	Country of Origin	Linked Events
18	North Devon Gravel	Milk pan	243982, 245773, 249975a	England	
19	North Devon Gravel	Milk pan	285772, 254615a, 252959, 287360	England	
20	North Devon Gravel	Milk pan	259168, 259680, 249309, 287561	England	
21	North Devon Gravel	Milk pan	287504, 263143a, 257487	England	
22	North Devon Gravel	Milk pan	254176, 286738a-b	England	
23	North Devon Gravel	Milk pan	287685, 247489	England	
24	North Devon Gravel	Milk pan	252841, 252367	England	
25	North Devon Gravel	Milk pan	257204, 286421	England	
26	North Devon Gravel	Oven	246938, 292897	England	
27	North Devon Gravel	Pipkin	247518, 249859, 289199, 246803, 281088	England	
28	North Devon Gravel	Pot	526430	England	
29	North Devon Gravel	Pot	249071	England	
30	North Devon Gravel	Pot	252210a-c, 256834	England	
31	North Devon Gravel	Pot	249072	England	
32	North Devon Gravel	Pot	602698, 245039	England	
33	North Devon Gravel	Pot	220899	England	
34	North Devon Gravel	Pot	526569	England	
35	North Devon Gravel	Pot/Jug	526431, 289829	England	
36	North Devon Gravel	Storage Vessel	288604, 288589	England	
37	North Devon Gravel	Unknown	246859a-b	England	

Vessel	Ware Type	Vessel Form	Catalogue Numbers	Country of Origin	Linked Events
38	North Devon Gravel	Unknown	288588	England	
39	North Devon Gravel	Unknown	285358, 291790	England	
40	North Devon Gravel	Unknown	287543, 291704	England	
41	North Devon Gravel	Unknown	289261	England	
42	North Devon Gravel	Unknown; cooking or storage pot	284865	England	
43	North Devon Smooth	Cooking Pot	288193, 263404	England	
44	North Devon Smooth	Cooking Pot	289346a, 285511, 291498a	England	
45	North Devon Smooth	Flatware; large plate	286377, 251018	England	
46	North Devon Smooth	Hollow ware	252112	England	
47	North Devon Smooth	Mug/cup	254592	England	
48	North Devon Smooth	Pitcher/ Jug	252906, 286398	England	
49	North Devon Smooth	Pitcher/ Jug	261745	England	
50	North Devon Smooth	Pot	287878	England	
51	North Devon Smooth	Pot	287404	England	
52	North Devon Smooth	Storage Pot	256661	England	
53	North Devon Smooth	Tall pot	265398	England	
54	North Devon Smooth	Tall pot	283139ab, 293163, 263645	England	
55	North Devon Smooth	Tall pot	263406a-c	England	
56	North Devon Smooth	Tall pot	263964ab, 245563, 286512	England	
57	North Devon Smooth	Tall pot	259526, 259143, 257039	England	

Vessel	Ware Type	Vessel Form	Catalogue Numbers	Country of Origin	Linked Events
58	North Devon Smooth	Tall pot	263381ab, 247889, 288833, 261745, 218300, 289833	England	
59	North Devon Smooth	Unknown	252526a, 261109	England	
60	North Devon Smooth	Unknown	289151a	England	
61	North Devon Smooth	Unknown	281568	England	
62	North Devon Smooth	Unknown	243406a, 287982	England	
63	North Devon Smooth	Unknown	249898	England	
64	North Devon Smooth	Unknown	292423	England	
65	North Devon Smooth	Unknown	602700, 247630, 290600	England	
66	North Devon Smooth	Unknown	263408	England	
67	North Devon Smooth	Unknown	263405	England	
68	North Devon Smooth	Unknown	218546, 246141	England	
69	North Devon Smooth	Unknown	265038	England	
70	North Devon Smooth	Unknown	290450	England	
71	North Devon Smooth	Unknown	256125	England	
72	North Devon Smooth	Unknown	251582, 285385	England	
73	North Devon Smooth	Unknown	291498b	England	
74	North Devon Smooth	Unknown	289558	England	
75	North Devon Smooth	Unknown	252882	England	
76	North Devon Smooth	Unknown	287691	England	

Vessel	Ware Type	Vessel Form	Catalogue Numbers	Country of Origin	Linked Events
77	North Devon Smooth	Unknown; cooking or storage pot	285576a, 257526, 261109	England	
78	North Devon Smooth	Unknown; cooking or storage pot	291782	England	
79	North Devon Smooth	Unknown; cooking or storage pot	265335, 288258	England	
80	North Devon Smooth	Unknown; cooking or storage pot	258851	England	
81	North Devon Smooth	Unknown; cooking or storage pot	287404	England	
82	North Devon Smooth	Unknown; possible bowl	249972	England	
	North Devon Smooth (CEW)	Storage Pot	254895	England	
83	North Devon Smooth Sgraffito	Flatware; dish or plate	283215ab	England	
84	North Devon Smooth Sgraffito	Hollow ware	251068, 281563	England	
85	North Devon Smooth Sgraffito	Unknown	218728a-e	England	
86	North Devon Smooth Sgraffito	Unknown; possible flatware	265531a-c, 247601, 247519, 247522, 247476	England	
87	North Devon Smooth Sgraffito/Exeter Coarse Sandy	Unknown	259029	England	
88	Portuguese Redware	Pot	246846	Portugal	
89	Portuguese Redware	Unknown	287963	Portugal	
90	Portuguese Redware	Unknown	249029b	Portugal	
91	Portuguese Redware	Unknown	286508b, 263966, 263965, 526533	Portugal	
92	Portuguese Redware	Unknown	285773	Portugal	

Vessel	Ware Type	Vessel Form	Catalogue Numbers	Country of Origin	Linked Events
93	Portuguese Redware	Unknown; possible bowl	263395	Portugal	
94	Portuguese Redware	Unknown; possible plate	291497	Portugal	
95	Portuguese Redware	Unknown; possible pot	171607b, 258861, 261482, 287070	Portugal	
96	Rhenish	Bellarmine Bottle	281545, 252521	Germany	334
97	Rhenish	Bellarmine Bottle	271547	Germany	
98	Rhenish	Bellarmine Bottle	258460, 259628	Germany	
99	Rhenish	Bellarmine Bottle	156402	Germany	
100	Rhenish	Bellarmine Jug	22510, 271494	Germany	
101	Rhenish	Unknown; Bellarmine Bottle	263254	Germany	
102	Rhenish	Unknown; Bellarmine Bottle	290266, 258546	Germany	
103	Rhenish	Bellarmine Bottle	287234	Germany	
104	Saintonge	Chafing Dish	218774, 251367a, 247708, 259670	France	361
105	Saintonge	Chafing Dish	292123, 256290, 283013, 263357a	England	
106	Saintonge	Unknown	259315, 291920	France	
107	Saintonge	Unknown	281048	France	
108	Saintonge	Unknown	254043	France	
109	Saintonge	Unknown	247617, 246582	France	
110	Saintonge	Unknown	218085	France	
111	Saintonge?	Unknown	252534ab, 263225, 263281	France	

Vessel	Ware Type	Vessel Form	Catalogue Numbers	Country of Origin	Linked Events
117	South Somerset	Bowl	259671, 216996	England	
118	South Somerset	Pitcher/ Jug	286024, 258623	England	
119	South Somerset	Unknown	245789	England	
120	South Somerset	Unknown	289454	England	
121	South Somerset	Unknown	291549	England	
122	South Somerset	Unknown	263338	England	
123	South Somerset	Unknown	289940, 290836, 285834, 293541	England	
124	South Somerset	Unknown	263052, 281074, 254593	England	
125	South Somerset	Unknown	263128	England	
126	South Somerset	Unknown	218729, 245919	England	
127	South Somerset	Unknown	271704	England	
128	South Somerset	Unknown	319869	England	
129	South Somerset	Unknown; cooking or storage pot	220927, 245786	England	
130	South Somerset	Unknown; possible bowl	252529, 218713, 258060, 285155	England	
131	South Somerset	Unknown; possible jug or storage container	288142, 286999	England	
132	South Somerset/ English Redware	Unknown	246726, 288469	England	
133	South Somerset/ English Redware	Unknown; possible flatware	289758ab, 263534	England	
134	Spanish Heavy	Olive Jar	227592	Spain	
135	Spanish Heavy	Olive Jar	286981	Spain	
136	Spanish Heavy	Olive Jar	286934, 285810	Spain	
137	Spanish Heavy	Olive Jar	287966	Spain	
138	Spanish Heavy	Olive Jar	289832, 257203	Spain	
139	Tin Glaze	Bowl	265287, 249229, 251253a, 265259, 258578	Iberia	287

Vessel	Ware Type	Vessel Form	Catalogue Numbers	Country of Origin	Linked Events
140	Tin Glaze	Bowl	258118a-f, 263693	Iberia	287
141	Tin Glaze	Bowl	265284, 108344b, 288674	Portugal	287
142	Tin Glaze	Bowl	288786, 265701, 281754a, 285313, 288691, 259715	Portugal	287
143	Tin Glaze	Bowl	288807, 288798a-c, 265485	Portugal	287
144	Tin Glaze	Bowl	236923, 237628, 210887b, 290830, 259677	England	287
145	Tin Glaze	Dish (Small plate, saucer)	263058, 263888, 246139a-b, 265694, 223957, 251253b, 283453, 285073	Iberia	287
146	Tin Glaze	Jug	265675	Unknown	294
147	Tin Glaze	Plate	265660, 261270	Portugal	
148	Tin Glaze	Plate	285318	Portugal	287
149	Totnes	Unknown	286722, 281029, 286873	England	
150	Totnes	Unknown	290252, 281311, 281881	England	
151	Unidentified earthenware	Unknown	251605	Unknown	
152	Westerwald	Mug	281098, 2144a	Germany	

Event 243

Vessel	Ware Type	Vessel Form	Catalogue Numbers	Country of Origin	Linked Events
1	English White Salt Glaze	Unknown	650349	England	
2	North Devon Gravel	Unknown	637303, 637304	England	
3	North Devon Gravel	Unknown	638964, 639304, 639313, 640859	England	
4	North Devon Gravel	Unknown	639315, 640839, 637786	England	
5	North Devon Gravel	Unknown	640318, 640320	England	
6	North Devon Gravel	Unknown	637231, 640860	England	
7	North Devon Smooth	Unknown	639953a-d, 640322	England	
8	North Devon Smooth	Unknown	637304, 637306	England	
9	North Devon Smooth	Unknown	639336a-d, 639314	England	
10	North Devon Smooth	Unknown	639310a-d	England	
11	North Devon Smooth	Unknown	639309a-b, 640312, 640852	England	
12	North Devon Smooth	Unknown	640321, 637235	England	
13	North Devon Smooth Sgraffito	Unknown	165621a-d	England	
14	Portuguese Redware	Unknown	633311, 164120, 165032	Portugal	
15	South Somerset	Unknown	642726	England	
16	Tin Glaze	Unknown	164106, 165444	Unknown	228
17	Tin Glaze	Unknown	641677	Unknown	
18	Tin Glaze	Unknown	635897, 641909	Unknown	
19	Tin Glaze	Unknown	630310, 641915, 641914	Unknown	
20	Tin Glaze	Unknown	641912, 648934, 635897b, 648934, 641903a-b	Unknown	

Vessel	Ware Type	Vessel Form	Catalogue Numbers	Country of Origin	Linked Events
21	Totnes	Unknown	637812	England	
22	Unidentified Stoneware	Unknown	165622	Unknown	
23	Westerwald	Unknown	165024	Germany	

Event 225

Vessel	Ware Type	Vessel Form	Catalogue Numbers	Country of Origin	Linked Events
1	Bristol Staffordshire Slipware	Unknown	155373	England	
2	North Devon Smooth	Unknown	155496	England	
3	Northern Italian Marble Slipware	Unknown	155842	Italy	
4	Portuguese Redware	Unknown	155834	Portugal	
5	Tin Glaze	unknown	155674 155808 155843 155350 155349	Unknown	
6	Totnes	Unknown	155681 155682	England	
7	Unidentified Stoneware	Unknown	155352	Unknown	

Event 340

Vessel	Ware Type	Vessel Form	Catalogue Numbers	Country of Origin	Linked Events
1	North Devon Gravel	Unknown	320322	England	
2	North Devon Smooth	Unknown; cooking or storage pot	223992 225142 225145 225012 225055	England	
3	Rhenish	Bellarmine Bottle	225053	Germany	

Event 356

Vessel	Ware Type	Vessel Form	Catalogue Numbers	Country of Origin	Linked Events
1	North Devon Gravel	Unknown		England	

Feature 56

Vessel	Ware Type	Vessel Form	Catalogue Numbers	Country of Origin	Linked Events
1	Tin Glaze	Unknown	No Catalogue #		

Feature 56 is the cobblestone street. No other artifact has been labeled like this, and the notes indicate the fragment was found between the cobbles. It has been included in the total MNV for the street assemblage (see Table 2).

Appendix C: Glass Vessels MNV

Event 267

Vessel Number	Vessel Form	Catalogue Numbers	Notes	Country of Origin
1	Wine Bottle	288354 (lip)	String rim 6 mm	
2	Wine Bottle	263158 (neck & lip) 292410 (shoulder)	String rim 7 mm Dark green/black	
3	Wine Bottle	292383 (base) 291828 (base) 292572 (neck)	The indent height is not complete, but appears shallow (10 mm survives)	
4	Case Bottle	265302 (entire base) 257263 (shoulder) 287432 (lip)	Base width 65 mm. Thin light green glass. Flared lip	Type A: Dutch
5	Case Bottle	256375 (half base) 292589 (half base) 289288 (neck & lip)	Darker green and thicker glass. No certain walls. Flared lip	Type B: English
6	Case Bottle	245149 (entire base) 292506 (neck & lip) 292566 (wall)	Base width 65 mm. Thin light green glass. Not enough walls to show tapering. Flared lip	Type A: Dutch
7	Case Bottle	288495 (Lip & neck) 254821a (base), 292318, 288914, 287923, 254821	Flared lip. Thick, darker green glass.	Type B: English
8	Pharmaceutical Bottle	265414, 261718, 263126, 261870, 287876	Very light green/clear thin glass. Mould blown, translucent	
9	Pharmaceutical Bottle	291518 (lip?) 292380 (shoulder) 245832a	Thin, clear glass. Colourless, transparent, fine seed bubbles. Possibly modern.	

Event 243

Vessel Number	Vessel Form	Catalogue Numbers	Notes	Country of Origin
1	Wine Bottle	636061, 640611	Both body pieces. Very thick, slightly curved, green glass. Nothing else diagnostic.	
2	Case Bottle	643379 (lip) 165445 (shoulder) 640615 (curved body), 635878, 635875	Medium green, thin glass. Translucent, mould-blown. Likely Dutch. Flared lip, no surviving base.	Type A: Dutch
3	Unknown	640610	Small, very thin colourless and curved piece of glass. Either stemware or pharmaceutical	

Event 225

Vessel Number	Vessel Form	Catalogue Numbers	Notes	Country of Origin
1	Wine Bottle	154759 (base)	Onion bottle. Dark green, thick glass. Free blown, translucent. Small part of the base.	
2	Wine Bottle	155827(lip) 156245 (thick curved body)	Wine bottle lip, with a string rim. Lip broken so it cannot be accurately measured. Light green, translucent, seed bubbles.	
3	Case Bottle	156244	Curved, thin glass body fragment. Light green, translucent, seed bubbles. The glass is too thin to be a wine bottle	Type A: Dutch

There are no glass vessels in Events 340 or 356.

Appendix D: Metals

Event 267

Material Type	Object	Catalogue Numbers	Number of Pieces
Copper	Button	264063	1
Copper	Button	315022	1
Copper	Ring	244000	1
Copper	Rod	584325	1
Copper	Spoon?	264270	1
Copper	Tack	603810	1
Copper	Thimble	355949	1
Copper	Unidentified		9
Lead	Casting waste		11
Lead	Gun ball		45
Lead	Musket ball	262540	1
Lead	Seal	170023, 255122	2
Lead	Sheeting	217215, 260089	3
Lead	Shot		195
Lead	Sprue		14
Lead	Unidentified		8
Lead	Weight	244639	1
Lead	Window came		19

Material Type	Object	Catalogue Numbers	Number of Pieces
Iron	Button	170921	1
Iron	Nails		4292
Iron	Padlock	755385	1
Iron	Pivoting pin	264152	1
Iron	Pot	755382	1
Iron	Scissors	260055	1
Iron	Spike	250973	1
Iron	Spike	219043	1
Iron	Tack	244546	1
Iron	Tool	176449	1
Iron	Spike	248266	1
Iron	Spike	255885	1
Iron	Strap	529783	1
Iron	Strap	529787	1
Iron	Unidentified		122

Event 243

Material Type	Object	Catalogue Numbers	Number of Pieces
Copper	Belt buckle	163210	1
Copper	Button	160309	1
Copper	Button	163225	1
Copper	Button	160312	1
Copper	Latch?	163721	1
Copper	Sheeting		3
Lead	Casting waste		2
Lead	Gun ball		2
Lead	Musket ball	636165	1
Lead	Shot		23
Iron	Fish Hook	632385	1
Iron	Horseshoe	160310	1
Iron	Nails		143
Iron	Slag		8
Iron	Strap	644101	1
Iron	Unidentified		11

Event 225

Material Type	Object	Catalogue Numbers	Number of Pieces
Iron	Nails		71
Iron	Unidentified		2

Event 340

Material Type	Object	Catalogue Numbers	Number of Pieces
Iron	Nails		9
Lead	Unidentified		2

Event 356

Material Type	Object	Catalogue Numbers	Number of Pieces
Iron	Nails		1