Final Excavation Report

Tram Street and Phoenix Street
Dublin 7

Licence no. 01E0229
Planning Ref. n/a

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For
RPA
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Illustrations

Figures

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Plates

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1 Introduction

1.1 This report describes the results of two adjacent excavations undertaken along Line A of the proposed *Luas*, the light rail transport system for Dublin. The excavations were carried out on behalf of what was then the Light Rail Project Office, *Córas Iompar Éireann*, and were allocated the one excavation licence number 01E0229. For the sake of convenience the sites will be referred to as Phoenix Street and Tram Street, the latter being the proposed name of the new street to link Bow Lane and Church Street (Figure 1).

1.2 The brief in both areas involved the reduction of ground levels to a level where there would be no disturbance of archaeological deposits during the construction phase. This necessitated an average reduction of 1m, with 600mm for the track formation and a buffer zone of 400mm between the concrete foundation and the underlying deposits. It was found necessary on the Phoenix Street site to excavate to a lower level due to a rise in the surface caused by eighteenth-century dumping.

1.3 The excavated areas were located along two strips of ground at either side of Bow Lane. That area to the east, between Bow Lane and Church Street (Tram Street) was excavated to the required level over a period of six weeks. The area to the west of Bow Lane ran parallel to Phoenix Street North and was separated from that street by a late nineteenth-century concrete wall. This smaller area was excavated to the required level over a period of four weeks. The work was undertaken between 2 April and 15 June 2001 in generally good weather conditions.

1.4 Structures and deposits dating from the seventeenth century onwards were recorded over both sites. Despite considerable contamination from nineteenth-century foundries, the Tram Street site revealed a 40m laneway, which had connected Bow and Church Streets until it was built upon towards the end of the nineteenth century. An adult skeleton was excavated just to the north of the laneway, possibly in a garden depicted on John Rocque's 1756 map. The rear of a property on Bow Lane was investigated and an assemblage of glassware and ceramics was recovered dating to the middle of the eighteenth-century.

1.5 Successive layers of post-medieval dumping were recorded on the Phoenix Street site with a considerable portion of the site still open on the 1756 depiction of the area. The whole

area had been built upon by the 1840s and the foundations of these and earlier buildings were recorded. Two stone-lined well shafts were recorded, one with its capillary pump surviving.

1.6 There are six appendices to the report dealing with the human skeletal material, the plant remains, the animal bone, the ceramic building material and the clay pipes. Further reports on the glass and the bricks and a full pottery report will issue on completion.

2 Archaeological background

2.1 The Sites and Monuments Record for Dublin includes several sites in this area, some of which have been discovered in recent excavations in this area (see below). The excavated areas did not impinge on any known SMR locations, although it is within the area of potential of the historic city. Monuments identified in the area range from industrial to residential and civic or defensive sites. Sites relating to the river include a revetment (an early attempt to consolidate the river bank) at Arran Quay (DU018:020568) and Arran Quay itself (DU018:020426).

2.2 Buildings or dwellings are recorded by the SMR at Arran Quay (DU018:020250, DU018:020422) that were probably identified from early maps or from excavation. There are also several mills in the area including the possible aforementioned water mill at the southern end of Smithfield (DU018:020190) and a millrace site near Hammond Lane (DU018:020569).

2.3 There are also records of two gateway sites located at the junction of Bow Street and May Lane (DU018:020189) and at Bow Street and Hammond Lane (DU018:020237), suggesting that there may have been some fortification or delineation of Oxmantown between the main road from the north and the common land of Oxmantown Green.

2.4 Ecclesiastical sites include the eleventh century St. Michan's church and graveyard (DU018:02084) and a chapel at the southern end of Bow Street and Pudding (now Lincoln) Lane. What appears to have been an ecclesiastical enclosure (DU018:020567) at St. Michan's was discovered during recent excavations (see below).

2.5 Between 1992 and 1998, a number of test excavations were carried out in the vicinity of the route of the *Luas* and on adjacent sites. Much of what has been found dates from the seventeenth and eighteenth centuries onwards, but there are occasional finds which indicate the area's long historical background.

2.6 A pre-development excavation was carried out adjacent to the south wall of St. Michan's graveyard in March 1993 by Beth Cassidy (Cassidy 1993, 17). A single trench 16m by 6m

was opened in order to assess the archaeological significance of the site. The excavation revealed a series of disturbed deposits dating from the fourteenth century to the modern period overlying natural gravels. Immediately below the surface lay eighteenth- and nineteenth-century industrial activity in the form of iron smelting. Beneath these was a layer of redeposited material dating from the thirteenth or fourteenth to the eighteenth-centuries. This material seemed to be part of a dumping sequence throughout this period that is possibly related to the activity identified in documentary accounts by Annaba Kilfeather in her archaeological assessment. Elsewhere, a 1.2m deep layer of garden soil crossed the site overlying natural gravels *c*.5m deep with no soil or sand inclusions. This was interpreted as part of the course of the River Liffey before the last Ice Age or as part of beaching gravels related to the present water systems.

The gravel depth and lack of soil on the site would have caused rapid natural drainage suggesting that a settlement here would have had to import soil to increase fertility and moisture. The unusual drainage here may have accounted for the preservation of interred human remains in the vaults beneath St. Michan's Church. A gravel ridge was recorded on Church Street possibly initiating the first fording point on the River Liffey at its southern end and identified by Clarke as the *Slighe Midluachra* (Clarke 1995, 84).

2.7 Subsequent testing was carried out by Alan Hayden at 165–168 Church Street at the eastern end of Hammond Lane (Hayden 1993, 18) involving the opening up of two trenches by machine. One of the trenches identified cellars at 2.6m below ground level. Below this lay river-deposited layers of silt and gravel. The second trench revealed cellars 2.5m below ground level with a thick deposit of stone-free yellow clay with an oxidised upper surface between 2.5m and 4.3m. This material possibly represents a bank either of human or natural origin on the edge of the Liffey. Helen Kehoe also carried out excavations at 27–31 Church Street that produced animal bone, shell, and some medieval pottery (Kehoe 1998, 47) and Alan Hayden investigated 102–108 Church Street, which produced no archaeological material (Hayden 1998, 47). In 1997, further excavations were carried out in the area between Church Street, King Street, and Stirrup Lane that revealed thirteenth- and fourteenth-century pottery, animal bone, and a medieval pottery kiln, as well as eighteenth century pits containing large quantities of earthenware and traces of a ditch which probably formed the enclosing ditch around St. Michan's Church (O'Rourke 1997, 37).

2.8 Between 1997 and 1998, further excavations were carried out in the same area that produced a small amount of disarticulated human bone, some post-medieval material, and traces of post-medieval foundations and cellars (O'Rourke 1997, 37; O'Rourke 1998, 52). Excavations by Conor McHale in this block produced evidence of a well similar to one found the year before (McHale 1998, 52–53). Earlier excavations in the same area were carried out by Frank Ryan (Ryan 1993, 24) and produced a small amount of human bone.

3 Historical background

3.1 *Introduction*

3.1.1 At the end of the sixteenth century, Dublin was not a particularly big city, and its population stood at less than 20,000. The seventeenth century, however, saw a period of extensive growth. By 1660 the population had doubled to at least 40,000, and had trebled to 60,000 by 1700 (Cullen 1992, 251). Its growth in size was accompanied by an immense growth in wealth and status, so that, by the eighteenth century, it had emerged as the 'second city' of the Empire (Fagan 1986). The city had an air of wealth and civic pride, attested to by its great public buildings. It had an inevitable colonial character, seen in the importation of English street and district names, among which are several familiar names from London in the immediate area of the excavations: Watling Street, Bow Street, Pudding Lane and Smithfield, the latter being laid out in 1665.

3.2 *The ford*

3.2.1 One of the most significant barriers to land travel along Ireland's east coast had always been Dublin Bay and the Liffey estuary. The solution developed to overcome this, a dependable ford, lay within 100 metres of the excavation. The exact crossing-point appears to have been less than 100m upstream of Father Mathew (Church Street) Bridge, linking what are now Arran Quay and Usher's Quay. The ford is first recorded in the Annals of Ulster in the year AD 770, when members of an army retreating northwards across the tidal mouth of the Liffey, having fought with their enemies south of the river, 'were drowned in the full tide'.

3.3 *The road*

3.3.1 Fords are one of the prime factors which would have dictated travel routes, and it is likely that the hurdle ford at Dublin was one of the focal points in the network of ancient roadways that criss-crossed medieval Ireland. The road, known as the *Slighe Midluachra*, ran south from Ulster, crossed the ford, and linked with several other ancient roads. If the ford is in the location suggested above, then it is likely that Bow Lane, located between the two sites, follows the line of the ancient road. (Little 1956, 27).

3.4 ***The bridge and settlement***

3.4.1 The fact that a bridge to span the Liffey was constructed at so early a period is an indication of the importance Dublin's rulers attached to the continuing access to the area north of the river. That it was the Hiberno-Scandinavians (or 'Ostmen') of Dublin who built the bridge seems clear from a reference, dating from the late twelfth century, to 'land in the suburbs of Dublin towards the bridge of the Ostmen (*versus pontem Ostmannorum*)' (Gilbert 1889, 414). In 1236 the citizens of Dublin granted to one Ralph Hore a tower 'situated at the south end of the bridge of the Ostmen' (Gilbert 1870, 488), a reference to the Bridge Tower, which survived until the eighteenth century.

3.4.2 This would indicate that this bridge was located slightly downstream from the ford, approximately where Fr. Mathew Bridge is today, linking Bridge Street with Church Street. Bridge Street was already in existence when John Cumin was archbishop of Dublin (1181-1212), and he refers to it in one of his papers as 'the street of the great bridge' (McNeill 1950, 32). In 1317 it is specifically called 'Le Briggestreete' (Gilbert 1889-1922, i, 85). Church Street, by contrast, was not known as such until the seventeenth century, but acquired the name because it ran past the pre-Norman St Michan's, one of the oldest parish churches in Dublin. The route of Church Street is outlined on the earliest known map of the town, John Speed's *Dubline* in 1610 (Figure 2), and throughout the medieval period it was the main artery northwards from Dublin, the King's Highway.

3.4.3 The bridge was in existence in 1186 when Pope Urban III confirmed to the priory of Holy Trinity (Christ Church) its possession of 'the mill near the bridge' and 'the garden near the bridge' (McNeill 1950, 15). Since the priory of the Holy Trinity was an Ostman foundation, many of its possessions dated from the pre-Norman period. A charter of about the same date, granting land to St Thomas's abbey, states that the land is located *ad pontem Dubliniensem*, at the bridge of Dublin (Gilbert 1889, 418), suggesting that it was the only bridge over the Liffey in the city.

3.4.4 It would also appear that the bridge was falling into disrepair, as in 1214, King John granted permission to the citizens 'to make a bridge beyond the water of Avenlith [the Liffey], wherever they consider may be most convenient for the use of the city; and that

they may, if advisable, cause the bridge previously constructed to be destroyed'. The citizens did build a new bridge at some stage, which lasted until it was destroyed by floodwater in 1385 That they selected the same site is an indication of this area's continuing importance in the Anglo-Norman period.

3.5 ***St Michan's***

3.5.1 The area around Smithfield and St Michan's was not only outside the area which the Vikings chose to fortify, by a massive programme of wall construction, completed around the year 1100, but had the added psychological disadvantage of being separated from the town by the Liffey. There are indications, nonetheless, that the area had a substantial settled population in the Viking period.

3.5.2 It is not clear when the descendants of the Viking settlers in Dublin were converted to Christianity, but there are indications that they, or at least their leaders, were Christian by the early eleventh century. The new religion gave rise to the need for a place of worship, and Christ Church is said to have been founded by King Sitric in 1038. Within two generations of this date, a church was founded on the north side of the river, and dedicated to the obscure St Michan (the traditional date given for the establishment of the church is 1095 or 1096). It enjoyed a pre-eminent place amongst Dublin's churches, and is the first church named in the list of the possessions of Christ Church compiled by Archbishop Laurence O'Toole in 1178 (McEnery 1903-21, xx, no. 364).

3.5.3 For six hundred years St Michan's remained the only parish church on the north side of the city, during which time it was a focal point in the life of the community. The existence of a parish church suggests the presence of a community of parishioners for whose spiritual needs it caters, and who pay for the upkeep of the church buildings and the maintenance of the parish clergy. Such a community existed in the parish of St Michan's in the period before the Anglo-Norman invasion of Ireland, and this historic church and churchyard stands immediately to the north of the proposed Tram Street.

3.6 *St Mary's Abbey*

3.6.1 St Mary's Abbey was located *c.* 400m to the east of St Michan's, near the junction with Capel Street. It was the richest Cistercian monastery in Ireland, and was valued at £537

17s 10d at its dissolution in 1539/40. St Mary's was founded in 1139 (three years before Mellifont, Co. Louth) for Benedictine monks of the Congregation of Savigny, which soon afterwards came under the umbrella of the Cistercian order. In 1147 it was made subject to the monastery of Combermere in Cheshire and then to Buildwas in Shropshire in 1156, showing the English influences already at work in Dublin in the generation preceding the Anglo-Norman invasion.

3.6.2 This English influence manifested itself in the architecture of the abbey, which apparently contained some of the finest medieval buildings in Ireland. The buildings lay close to the high water shoreline of the Liffey, between Arran Street East (formerly Boot Lane) and Capel Street, with Meetinghouse Lane following the line of the east wall of the cloister. The rib-vaulted chapter house (built *c.*1200) and an adjoining passage still survive, but the whole complex remained intact until the site was redeveloped by Sir Humphrey Jervis in the late seventeenth century, the stones being used in the construction in 1676 of Essex Bridge, which linked Capel Street and Parliament Street.

3.6.3 Stray finds from the abbey have in the past been found throughout the neighbourhood, fragments of what appear to be its cloister arcade have turned up across the river in Cook Street in 1975 (Stalley 1987, 244). As St Mary's held vast estates in the environs of Dublin, north of the Liffey, including lands at Grangegorman just to the north of Smithfield (Ó Conbhuidhe 1962), it would not be surprising if such artefacts lay scattered over the Smithfield area. The abbey would, of course, have had extensive outbuildings, and have been served by lay brothers and a community of workers. Although the site on the north side of the Liffey may originally have been chosen because of its isolation from the main population centre, its presence in the area would have inevitably made the area a more attractive place in which to settle.

3.6.4 By the thirteenth century, the abbey had its own quay and harbour on the north bank, and its own ships to use for trade with England and France. The monks had fishing rights along the Liffey, and late medieval documents detail the creating of fish weirs, by the placing of stakes and nets in the north bank of the river, to catch fish (Gilbert 1884-6, ii, 35; Gilbert 1889-1922, i, 175). After the Anglo-Norman invasion, noblemen and officials visiting Dublin stayed in the abbey's guesthouse, and its halls were used for

government and parliamentary meetings, while it had its own schools for the provision of education at various levels.

3.7 ***St Saviour's Priory***

3.7.1 In the early thirteenth century the monks of St Mary's were granted another piece of land close to the bridge, about 300m east of Smithfield. They built a chapel and, in 1224, when the first small group of Dominican friars arrived in Ireland, the Cistercians of St Mary's are said to have handed the chapel over to them. This became St Saviour's priory, the first Dominican house in Ireland, and a larger church was built on the site in 1238.

3.7.2 The development was a significant one. The Cistercians were primarily a contemplative order, the monks devoting much of their daily lives to agricultural labour, rather than catering for the spiritual needs of a wider community. The Dominicans, on the other hand, were a preaching order, and that they chose to settle on the north side of the Liffey is perhaps an indication that there were sufficient inhabitants in the neighbourhood whose needs had to be catered for. They were also a mendicant order, forbidden by their own constitution from possessing more land or worldly goods than were absolutely necessary, and dependent therefore on the alms of those to whom they ministered. They were unlikely to settle in an area where the community could not afford to contribute to their upkeep.

3.7.3 The establishment of a friary led to an increase in wealth and development of the neighbourhood. By *c.*1250 the city authorities had provided the friars of St Saviour's with a grant of water, to be taken from the aqueduct at Newgate, through a pipe of up to five inches in diameter joining the main at that point. This pipe they were allowed to lay through the public land of the city, and it ran across the bridge as far as the friary precincts (O'Sullivan 1990, 89).

3.7.4 The priory was surrendered to the crown in 1539 as part of Henry VIII's suppression of the monasteries. Although it was decreed in 1541 that the church in the priory should be demolished, the other buildings were handed over for the use of the Chancellor, the Chief Justice, and various professors of the law. Some of the precincts were still intact

in Speed's day (1610), and were by then known as the King's Inns of Court. After the building of the new King's Inns at Henrietta Street in the eighteenth century, the remaining buildings were demolished to make way for the Four Courts, which occupy the site today.

3.8 *The bridge chapel*

3.8.1 In 1348, John Grauntset, a citizen of Dublin, obtained letters patent allowing him to found a chapel on the bridge of Dublin, dedicated to the Virgin Mary, with an endowment of one hundred shillings annually for the support of two chaplains to celebrate daily Mass there. There are references to 'the chapel of St Mary's upon the bridge of Dublin' (1370) and to 'the chapel of St Mary near the old bridge belonging to the Friars Preachers' (1476). It is not clear from these conflicting statements where precisely the chapel was, but the friars of St Saviour's appear to have assumed the role of chaplains in it (O'Sullivan 1990, 94-6). It is thought that the main purpose of building such a chapel was to provide for the maintenance of the bridge by attracting the offerings of travellers. For this reason the citizens of the Smithfield area benefited directly from the bridge chapel, as it ensured continued easy access to the town at the other side of the river.

3.9 *Gibbet Mead and Hangman's Lane*

3.9.1 The charter of liberties to Dublin (1192), in describing the city's bounds, mentions them extending across the Liffey at the Islandbridge ford, past barns belonging to Holy Trinity (Christ Church), 'and from those barns to the gallows' (Harris 1766, 119). A charter of Richard II (1377-99) refers to the city boundaries in the area as 'passing into a meadow which leads towards the west as far as the highway from Dublin to Cabra, and from thence to the barns of Holy Trinity...and so to a hill towards the north where the gallows anciently stood' (Harris 1766, 126).

3.9.2 The precise location of this gibbet or gallows is uncertain, but Gibbet Mead takes its name from it, and it is likely that the approach to the gallows from the town of Dublin was via the old bridge. Turning left, into what would have been one of the oldest laneways outside the walls, Hangman Lane (now Hammond Lane) was to the south of the proposed Tram Street (Gilbert 1889-1922, i, 282). The Gibbet Mead must have lain

west of Hangman Lane, somewhere past Smithfield. If indeed Arbour Hill takes its name from the Irish *cnoc an arbhair*, 'corn hill', perhaps it is here that the Holy Trinity barns were located, in which case the 'hill towards the north where the gallows anciently stood' would be Arbour Hill.

3.10 ***Oxmantown***

3.10.1 Public gallows tended not to be placed near the homes of the wealthier citizens, and needed to be in an area with plenty of open space where the jeering crowd could gather. For this reason, one of the Dublin gallows (there was another at Gallows Hill, or Gallows Green, on Lower Baggot Street, and the archbishop also had his own) was set up north of the Liffey. The area was less cramped than, and probably socially inferior to, the area south of the Liffey in and around the walled town. Indeed, in the fifteenth century it was one of the town's designated dumping sites. In 1468 it was ordered that 'ne persones cast ne ley noo dunke [dung] at noo gatte [Newgate] ne in none other place of the citte, but oonly withoute Hankmans ys lane [Hangman Lane], in the holles and pittes there' (Gilbert 1889-1922, i, 329). Somewhere west of Hammond Lane, therefore, somewhere at or very close to Smithfield, possibly in the region of Phoenix Street, lie the holes and pits containing the dung of medieval Dublin.

3.10.2 In 1454 the citizens of Dublin granted to the abbot and monks of St Mary's abbey that they 'shulde have a mese', apparently a quantity of herring or a device for catching same. A later reference, dated 1516, states that 'the said mese lyeth in Oxmanton in the subbarbys of the said cite, besides Hongemon lane, the wych mese ys olde ruynes and waste; and the sayd abbot and convent schall byld the sayd mese of the newe' (Gilbert 1889-1922, 281-2). Somewhere very near Hammond Lane, therefore, was the place where the monks of St Mary's, and no doubt others, trapped their fish and landed their catch.

3.10.3 The area's name had somewhat inferior connotations. It was known as Houstemanebi or Ostmanby, later Oustmanton or Ostmanstown, and laterally, Oxmantown, and was evidently a suburb originally inhabited exclusively or largely by Ostmen or Vikings. It is generally assumed that Oxmantown was the place to which the Hiberno-Scandinavians of Dublin were compulsorily banished after the Anglo-Norman capture of the city in 1170, but there is no definite evidence for this. However, in the aftermath

of the invasion, Limerick, Cork and Waterford all had a 'cantred of the Ostmen', which appears to have been an area reserved for them, and it seems reasonable to assume that Oxmantown served a similar function for Dublin.

3.10.4 The exact dimensions of Oxmantown are vague. Its southern limit was defined by the Liffey, and its eastern limit may well have been formed by the Liffey's tributary, the Bradogue, the small river that rises in Cabra and runs (today, largely underground) in a southeasterly direction, joining the Liffey at Upper Ormond Quay. There was no natural barrier to northerly expansion in Oxmantown, but medieval occupation is unlikely to have extended much further than North King Street. The western boundary of Oxmantown may well have been the ancient *Slighe Midluachra*, which, as mentioned above, ran parallel to Smithfield, perhaps along the line of Lincoln Lane and Bow Lane. The latter is called 'Lough Buoy' on Bernard de Gomme's 1673 map (Figure 3), which seems to be derived from the Irish *Loch Buidhe*, yellow lake or pond, and suggests that a tidal pool once existed here, within *c.* 100m of Smithfield. The area beyond Bow Lane, including what became Smithfield, was common land.

3.11 ***Oxmantown Green***

3.11.1 A large area of commonage was known as Oxmantown Green. As with other areas of medieval Dublin, its limits are not clear. Over the centuries, parts of it were encroached upon for various purposes, as with a lease dated 1330, which refers to 'land in Oustmantown Green, near Dublin, where Holy Trinity [Christ Church] had a windmill' (McEnery 1903-21, no. 578). The city authorities, however, were dissatisfied with such appropriations of what was public property, and a complaint was later made to the effect that the Prior and canons of Holy Trinity were occupying and 'usurping thirty perches of land on both sides of the old corn mill, worth by the year three half-pence' (Gilbert 1889-1922, i, 158).

3.11.2 It is not clear where, exactly, the wind-powered corn mill was located. Clarke's map (1978) places a mill precisely at the corner of Smithfield and Haymarket, but it is possible that this may have been on the basis that it was a water-powered mill, since some nineteenth-century contours of ground profile suggest that a stream may have flowed past this point, entering the Liffey some short distance downstream of Mellowes (Queen Street) Bridge (Sweeney 1991, 52).

3.11.3 It is certain that the original extent of Oxmantown Green greatly exceeded the Green and bowling green marked on Pratt's map of 1708, which are shown as occupying only, what is now, the site of the Law Society's premises at Blackhall Place. Brooking's map compiled twenty years later shows the Green further eroded, including the presence at its northeastern corner of a church dedicated to St. Paul (Figure 4). It was constructed after 1697, in which year it was reported that so many gentry had built their country houses in Oxmantown that St Michan's church was too small for the increased population. Therefore, by an act of Council, two new parishes of St Mary and St Paul were created, and St Michan's parish was confined to the districts immediately around the church. The Corporation then made a grant of land in Oxmantown Green for the new church and graveyard of St Paul, the entrance being on North King Street (Young 1940-41, 2). John Rocque's 1756 map (Figure 5) also shows similar signs of encroachment on the green.

3.11.4 Bernard de Gomme's map (1673) shows an area that he calls the 'Common', and a bowling green, evidently all that was left of the Green at that point, larger than what was left by the time Pratt depicted the area a generation later. De Gomme was working at a time of sudden and very dramatic development of this whole area, and his map can be used to help reconstruct the landscape during to this period of change.

3.11.5 Oxmantown Green was one of the few great green spaces in Dublin's suburbs, and the city authorities were anxious to ensure that it was preserved for recreational purposes. In 1635 the municipality ordained that 'no part or parcel of the greens and commons of this city, viz., Hoggen Green [later, College Green], St Stephen's Green, and Oxmantown Green, might from henceforth be sold or leased to any person, but that the same shall be wholly kept for the use of the citizens and others to walk and take the open air, by reason [of the fact that] this city is at this present time growing very populous' (Gilbert 1889-1922, i, 253). In 1665, the city authorities arranged for the bowling green to be shaded with elms and sycamores.

3.11.6 Pressure on the Green increased, and in 1637, Sir Gerard Lowther, the Lord Chief Justice, was granted a small parcel of land from Hangman (Hammond) Lane to the Liffey, and King Charles I, having proposed to build a mint-house on the Green, was given the plot next to it to the west, described as being one hundred yards long (de

Courcy 1996, 10). The project does not appear to have been finished although a 'Bridewell' (prison) was constructed near here shortly afterwards. De Gomme places the Bridewell immediately south of Smithfield, between it and what was then the shoreline. It would have occupied at least part of the area bounded by Queen Street, on the west, Hay Market, on the north, Arran Street West, on the east, and Bridewell Lane on the south. When de Gomme was at work, the Bridewell was still a recent construction, part of the continuing encroachment on the area, and would have formed part of the southeastern corner of the Green.

3.11.7 After the Restoration of the monarchy in 1660, the city granted to the duke of Ormonde lands lying at the western end of Oxmantown Green, and these are shown by de Gomme as lying immediately west of what he calls the 'Common'. This, too, would have been part of the original Green, although the land further west of this belonged, during the medieval period, to the priory of Kilmainham. It had come into the possession of the crown at its suppression in 1541, and eventually became Phoenix Park. As to the duke of Ormonde's lands shown on de Gomme's map, it became the site of the Royal Barracks (later, Collins Barracks), work on which began in 1701, and which was said at the time to be the largest military barracks in Europe.

3.11.8 In the meantime, however, the city authorities had decided that all of the most easterly portions of the Green would have to be sacrificed, and at their Christmas assembly in 1664 they passed the following resolution: "Order that Oxmantown Green be taken and set by lots in fee farm, reserving a highway and large market place. Order for staking out the lots to be disposed of by lottery" (Haliday 1884, 248).

3.11.9 This order created Smithfield Market. It was 'the large market place' mentioned in the order, while the 'highway' became Queen Street, named for Charles II's wife, Catherine of Braganza (Bennett 1991, 166). There were ninety-six plots and these were acquired by their new owners, in accordance with the policy of the corporation, by the drawing of lots.

3.11.10 Queen Street, therefore, became the easternmost boundary of the Green, but even this did not remain so for long. Although de Gomme in 1673 shows nothing built west of

Queen Street, Charles II in 1670 lent his support to the construction on a 'piece and parcel of ground in Oxmantown Green' of 'a mansion-house, and place of abode, for the sustentation and relief of poor children, aged, maimed and impotent people inhabiting or residing in the said city of Dublin', work on which had already begun (Harris 1766, 413-20). This, the 'Hospital and Free School of King Charles II, Dublin', better known as the Blue Coat School, fronted onto Queen Street, and survived for a century until replaced in 1773 by the new Blue Coat School further west in Blackhall Place, which now houses the Law Society.

3.11.11 At this stage only two basic infrastructural requirements were necessary to consolidate the development of the area. The first was to fortify it against high tides and flash flooding, which would have periodically inundated the new Smithfield and Queen Street. The consolidation of the shoreline began in earnest in 1682 when William Ellis was granted the entire strand running from the Old Bridge (Fr Mathew Bridge) westwards to what is now Heuston Bridge and beyond, a total distance of 1.2km, on condition that he build a quay, 12 yards wide. He began by concentrating his efforts on what is now Arran Quay, building the quay wall, and reclaiming the land behind it. By 1692 Arran Quay, called after Richard Butler, earl of Arran (who died in 1685), son of the duke of Ormonde, was designated one of the four quays in the city at which coal might legally be unloaded (de Courcy 1996, 10-11).

3.11.12 The final phase of this expansion was to make this rapidly developing north-side area less isolated from the rest of the city on the other side of the river. This was done by a process of bridge construction, which saw four bridges built across a 1km stretch of the Liffey in the period from 1670 to 1683. The first, a wooden bridge, called the Bloody Bridge, on the site of what is now Rory O'Moore Bridge, was built in 1670, to link the north side with Watling Street (it was replaced by another wooden bridge *c.*1683). The second, Essex (now Grattan) Bridge, was built in 1676 by Humphrey Jervis with, as mentioned above, stone from St Mary's Abbey. It links Parliament Street and Capel Street. A third bridge was built on Ormond Quay in 1683 and called Ormond Bridge. This collapsed in 1803 and was never rebuilt. In the same year, at the western end of Arran Quay, a bridge of the same name was built (now Mellowes Bridge), the effect of which was to turn the new Queen Street into a thoroughfare, and to give easy access to the market at Smithfield to all the citizens of Dublin.

4 Archaeological excavations on Tram Street

4.1 Two trenches were excavated along the extent of the proposed Tram Street. Trench A extended for 44m east-west, with its western end situated 13m from the street frontage on Bow Lane. The trench was between 9m and 10m in width. Trench B was located 10m to the east of Trench A. It was 15m in length (north-south) and 10m in width. The 10m gap was put in place to provide emergency egress from the new Law Library, which formed the northern boundary of the site. The southern boundary was taken up by yards and sheds formally in the possession of Maguire and Paterson, now acquired for the Office of Public Works.

4.2 The cartographic evidence suggested that the area had been heavily industrialised in the nineteenth century. Two iron foundries occupied the area of the site, the Eagle Foundry fronting onto Church Street and the Hammond Lane Foundry, which had encroached over the whole site by the turn of the twentieth century. Earlier maps indicated the presence of a laneway across the site, linking Bow Lane and Church Street. This may have developed over the late seventeenth century to provide access to industrial spaces to the rear of Hammond Lane depicted by John Rocque in 1756.

4.3 Alan Hayden's 1990 excavation at 9-12 Arran Quay, directly to the south of the site, is of particular relevance to the early development of the area. Although no medieval deposits were excavated at Tram Street, the presence of river gravels under post-medieval garden soils below the level of excavation, suggested that the site was subject to either regular tidal inundation, or that the gravels had been deliberately introduced to build up the ground. Hayden recorded a series of timber revetments, the earliest dating to the early fourteenth-century, with associated deposits of river silts and organic dump layers introduced to build up the ground behind. Hayden additionally recorded two masonry walls, the first dating to the fourteenth or early fifteenth centuries and the later wall dating to the late sixteenth or early seventeenth centuries. These were constructed to retain the river but do not seem to have acted as quay walls.

4.4 The excavation identified four phases of activity over the site. Phase I related to post-medieval reclamation work and was characterised by the presence of large dumps of river gravels and garden soils. Phase II related to the late seventeenth- and early eighteenth-

century domestic occupation of the site, with walled gardens backing on to the metalled laneway transecting the site. It was under one of these gardens on the north side of the lane that the skeleton was recovered. Phase III included the further consolidation of the laneway and the early industrialisation of the area. Phase IV was characterised by the upper levels of solidified foundry waste, which covered most of the site and twentieth-century disturbance, which took the form of massive concrete foundations. Natural subsoil was not located on the site, although John Ó Néill's archaeological assessment located compact clays and river gravels at depths below the limits of the excavation.

4.5 *Excavation results: Trench A*

4.5.1 *Phase I, reclamation*

The earliest activity recorded in Trench A would appear to relate to the reclamation of the area after the construction of the stone quay at Arran Quay in the 1680s. Due to later disturbance from foundry structures, the evidence for Phase I was mostly confined to the western half of the trench. This took the form of a deposit of river gravels, between 600mm and 800mm in thickness visible in the sides of a well shaft (F30) (Plate 1) and in the section of F58, a construction trench for a cellar, the latter dating to Phase III. The river gravels were between 40mm and 60mm in size and a mixture of sub-angular and water-rolled. The upper level of this deposit extended from between 2.30m and 2.70m OD. The gravel sealed a deposit of brown marl, which was visible in the well section for a moment before it collapsed.

Reclamation and garden soils

The gravel was sealed by a deposit of cultivated garden soil, F70. This deposit was not excavated, as its upper level was that of the base of the buffer zone. It was recorded in a small patch at the very western extent of the trench and in the northern section of F58, where it lay directly below the masonry wall F3. The garden soil consisted of a dark brown clayey-loam with frequent inclusions of charcoal and small stones. It was 1.5m in depth. Visible in section were two voids (F196) indicating the presence of stake holes along the line of F3, which was constructed directly on the garden soil. The stake holes may indicate that the laneway transecting the site (F189) may have had a timber fence defining its southern extent prior to the construction of the masonry wall (Figure 6).

An attempt was make to consolidate the surface of the garden soil by introducing a deposit of orange/brown gravel, F89, over the area (Plate 2). This was sufficiently thin (at between 50mm and 200mm) to have constituted a metalled surface and survived in a small patch measuring 4.8m (north-south) by 3.7m (east-west). This was in turn sealed by a thin deposit of soil, F36, which is possibly the remains of an occupation layer. This was a mid-brown deposit of silty clay containing charcoal, animal bone and oyster shell; two sherds of post-medieval pottery were recovered, a strap handle (possibly late-Saintonge) and an unidentified body sherd. This deposit was recorded in the area 4.5m to the south of the laneway, F189.

Further to the east, a rough cobbled surface occupied the same stratigraphic level as F89. The cobbling, F59 also sealed the garden soil F70, however it was quite different in its composition to the other surface. It survived in patches over an area 2.4m by 1m against the southern limit of excavation; the cobbles were larger and rougher than those to the east and appear to have been thrown down on the surface of the garden soil to consolidate it. The area between both cobbled surfaces, F59 and F69, was truncated by later disturbance, however, a north-south property boundary depicted on Rocque appears to delineate the two areas. No evidence for this plot division was recorded at this level.

Laneway deposits and F119 and F186 surfaces

A small area of the laneway (F189) was excavated in two sondages excavated below the Phase II surface, F10. A metalled surface was recorded at the same level as the occupation level F36, although a direct stratigraphical relationship was not established. The surface, F119, consisted of both rounded and sub-angular cobbles between 40mm and 90mm in size and would appear to constitute the earliest formal surface of the laneway. It was located at 3.47m OD at the western end of the laneway (Plate 3). As has been mentioned above, the laneway possibly had a timber fence along its southern extent, although this has been mostly obliterated by the later sequence of masonry walls.

An occupation surface was recorded over F119. The deposit, F118, was between 80mm and 200mm in depth and contained a large number of broken slates, suggesting demolition debris. The deposit contained fragments of red brick, roof tile, pottery, clay

pipe fragments, oyster shell and animal bone within a gravel-soil matrix. This deposit may be indicative of the demolition of either of the structures fronting Bow Lane at either side of the laneway.

This lower surface of the laneway was also recorded at the eastern end of its extent within the excavated area, also at 3.47m OD. The cobbling, F186, was similar to that of F119 and was set into F187, a garden soil similar in all respects to F70. The northern limit of the F186 surface did not extend as far as the construction cut for the masonry wall delineating the northern extent of the lane. The fact that the cobbling did not extend this far to the north indicates that the earlier extent of the laneway lay slightly to the south of the eighteenth-/nineteenth-century one.

A section of the F4 wall was removed at this point to investigate the presence of an earlier boundary for the laneway below the construction cut. A slot trench, F183, with a maximum depth of 100mm and width between 140mm and 170mm was excavated for a length of 1.34m, cutting the F187 garden soil. It was filled with F181, a dark brown clay-silt and no finds were recovered. A post hole, F184, was excavated just to the north of the slot trench in the area below the construction cut for F4. It was ovoid in plan with a diameter of between 230mm and 320mm and a maximum depth of 111mm. Its fill, F197, was a light brown silty-clay and no finds were recovered (Figure 7).

Deposits north of the laneway

The garden soil F70/F187 was also present in a test trench section north of the laneway in the small area excavated between the northern limit of excavation and the masonry wall, F4, (delineating the northern extent of the laneway). A small dump of clay, F126, was recorded running off under the northern limit of excavation at 3.55m OD. This was light brown in colour with green inclusions and contained charcoal, some pebbles and cockleshells. This was sealed by a 100mm deposit of clay and water rolled pebbles, F120, which may have been laid as a preparation for the F97 surface above.

This in turn was sealed by a second deposition of cultivated soil, F63, a compact grey/brown silty clay, between 100mm and 200mm in depth, containing charcoal, brick, mortar, tile fragments and animal bone. This deposit was recorded at 3.75m OD sloping

off to the west to 3.50m OD. No pottery was recovered from the small area of this deposit excavated, which was mostly left *in situ*, being below the level of the buffer zone.

Pits F110 and F106

Two pits at 3.60m OD cut the later deposit of garden soil. The earlier of the two, F110, was 300mm deep and measured 1.40m by 1.20m. The pit contained two distinct fills, the lower fill, F102 containing quantities of charcoal, clinker and slag. Sealing this was a fill of light brown clay with inclusions of charcoal, mortar, slate and hand made brick fragments, F190. Three clay pipe bowls of mid-seventeenth-century typology and fragments of North Devon gravel-tempered ware and black and brown wares were recovered from this fill. F110 was cut by another pit F106. This oblong pit was 300mm deep and 800mm wide, and continued under the northern limit of excavation. F106 was filled with a looser mix of clay, mortar and hand-made brick, F191. Some of these bricks were still bonded, implying this was a demolition fill. Both of these pits were sealed with a layer of irregular cobbles, F192, possibly laid to level and consolidate the ground.

Truncated deposits northeast of F4

A later foundry foundation of mass concrete had truncated much of the archaeological deposits at the eastern end of the trench to just below the level of the buffer zone. This area was defined by the nineteenth-century continuation of F4 to the south, the nineteenth-century arcaded wall F194 to the west and the baulks to the north and east (Figure 8).

It was excavated by machine to 3.40m OD, a level below the buffer zone, and to 2.90m OD in the eastern part of this area, after a large concrete pile was removed. As none of the features were excavated, it was not possible to adequately interpret the stratigraphy in this area. However, it was possible to phase some of the deposits and pit fills.

At approximately 3.4m OD, a post medieval garden soil was recorded below the disturbance, F151. This was a mid-brown silty clay with visible inclusions of mortar, shell, charcoal and cinders. Also recorded were animal bone, sherds of sgraffito and

other North Devon wares, red brick and slate fragments. This deposit was not excavated as it was below the level of the buffer zone. Deposits sealing F151 or pits cutting it are discussed below in Phase II.

4.5.2 ***Discussion of Phase I***

The early excavated levels in Trench A would appear, on the basis of the finds recovered, to date to the period after the construction of Arran Quay. While there was undoubtedly medieval occupation in the area, as evidenced in Hayden's excavation and the references to Hangman's Lane (Hammond Lane), the gravels recorded in section and the garden soils sealing them were introduced in quick succession, probably to create gardens for the new plots. While there has been no evidence recovered for a medieval building line along the northern side of Hammond Lane, it is likely that it was formally built upon during this period, with associated garden plots extending northwards to the rear. Speed's map of *c*. 1610 depicts several houses here extending as far west as the corner of Bow Lane (Figure 9). The earliest reference to a lease on the site actually occurs in 1610 where Nicholas Allen, a channeler, was granted a lease of the plot of ground between St Michan's and Hammond Lane fronting Bow Lane, for sixty-one years at an annual rent of 10 shillings (Gilbert 1889-1922, iii, 2). Speed, in addition, depicts is a wall running for several hundred meters westward from the bridge along the shoreline, possibly that structure recorded by Hayden in 1990.

It is unlikely that the deposits of garden soils recorded in Phase I date to the sixteenth-century occupation of the site; the lower of the two deposits, F70, seals the deposit of river gravels, which is too substantial to have been deposited naturally. It is unlikely at any rate that the area would have been subjected to extensive flooding after the construction of the present quay walls in the 1680s. An accumulation of garden soil over natural gravel would also be unlikely without the formation of a clay sealant over the gravel. Although Ó Néill recorded the presence of medieval pottery within F70, this material is presumably intrusive to the context, which itself was brought onto the site after the ground was consolidated.

In any case, the earliest documentary evidence for building in the area pre-dates the reclamation work, when in 1637, the lord chief justice, Gerard Lowther was granted a plot of ground beside a stable which was already in his possession (Gilbert 1889-1922,

iii, 331). The same year, Charles I was granted a large plot beside Lowther's holding to build a mint house. By 1674, the royal site had not been developed and the plot was granted to a John Greene, who had not developed it by 1682. In that year William Ellis was granted the whole shoreline from the old bridge westwards to the gates of the Phoenix Park. He was to construct a quay 11m wide, leaving in position 'the present highway where coaches and carriadges now pass fourty feet wide' (Gilbert 1889-1922, v, 237). This is a reference to the Hammond Lane-Benburb Street thoroughfare.

The development of the Smithfield area can be best examined in the context of the post-restoration stability that initiated a significant property boom in the city. Ellis was one of the several property speculators over this period that was to profit from the sub-division and leasing of Corporation-controlled properties. His holding was doubtless all the more valuable due to its location along the river and its proximity to the Corporation's own development just to the north at Smithfield. In 1665 the Corporation had divided part of the medieval Oxmantown Green into 99 lots, set out on a grid of streets surrounding the formal market place (Gilbert 1889-1922, iv, 323). Buildings of some distinction were constructed, including the Bluecoat School and a walled bowling green, while several aristocratic residences were planned for the new quarter. However, while the earl of Bective built his residence on the western side of the square close to that of lord Bowes, the duke of Ormonde did not build his mansion on the seven acres granted to him west of Smithfield. The area became less fashionable by the early 1700s as new leases were allocated to a second generation of speculators on smaller plots.

By the publication of Brooking's map of 1728, the whole area had been built up to the quays and the laneway had developed to service the rear of the Hammond Lane plots, though it did not extend as far as Church Street (Figure 10). While it is likely that the buildings and gardens of the 1680s development took the form of those as illustrated on Rocque eighty years later, the area as a whole had taken on a different social complexion, becoming more industrial.

The evidence for the laneway at this early level is strong. It is likely to have developed immediately after the plots were established to provide access to the back gardens and would appear to have been delineated by timber divisions. The masonry walls were

constructed later as the gardens were converted to the warehouses or stables depicted on Rocque.

The limited area excavated north of the laneway produced a sequence of garden deposits, which were later cut into by pits filled with evidence of demolition debris. This activity pre-dates the warehouse/stable structure depicted on Rocque.

4.5.3 *Phase II, early eighteenth-century occupation*

This second phase of occupation relates to the early eighteenth-century domestic occupation of the area, which comprises the bulk of the archaeological evidence recorded in the trench. While the bulk of the stratigraphy recorded was located in the western half of the trench (Figures 11 and 12), several features cutting the deposit of garden soil F70 were recorded under the later disturbance. These features (comprising mostly of pits) were not excavated, as they were located below the level of the buffer zone (Figure 13). The deposits and structures recorded relate to the eighteenth-century occupation of the site and the formal establishment of the laneway, now partly defined by masonry walls.

Metalled surfaces F67 and F69

The post-reclamation occupation sequence at the western end of the trench, suggested by the F89 and F36 deposits, was sealed by an extended metalled surface F67 and F69. This activity is associated with a building fronting Bow Lane (later to become No. 3) and probably constitutes an early yard surface. The F67 metalling was located to the west of F69 and differed by being a thicker deposit, or possibly two separate deposits. The surface consisted of rounded pebbles measuring between 40mm and 50mm, set into a deposit of gritty gravel, with particles of between 10mm and 20mm. The surface had a general depth of up to 140mm and occupied an area south of the laneway measuring approximately 6m (north-south) by 4.4m (east-west). The F69 surface was located further to the east and consisted of similar sized particles to F67, although the surface had a maximum depth of 100mm. It occupied an area 1.8m square to the west of F67, south of the laneway.

Cellar F45

A small cellar return was excavated in the southwestern corner of the trench (F45), cutting F67 (Plate 4). Constructed in brick and calp limestone, it survived to a height of

1.4m and had full internal dimensions of 1.5m (east-west) by 1.88m (north-south). The lower courses of the structure were constructed in a mixture of brick and stone, with the upper six courses in brick. The bricks were well fired to a mid-orange hue and measured 9" x $3^{3/4}$" x $2^{1/2}$". The calp blocks were roughly coursed and had typical dimensions of 400mm x 320mm x 280mm. The binding agent was a gritty white lime mortar with particle sizes of less than 2mm. The space was floored in a yellow clay with some small pebbles driven into it. There was no apparent opening in the walls (apart from later disturbance), nor was there any material in the fills suggesting that it may have been a latrine.

The material backfilling the cellar was significant in the quantity, quality and condition of the artefacts recovered. Three fills were recorded; F42 was a loose demolition deposit, 600mm in depth, consisting of rubble stone, brick and mortar. It also contained pottery, glass, slate, pan-tile and animal bone. This material sealed an undisturbed dump deposit, F43, which was 420mm in depth. This deposit contained a plate inscribed '*Ireland 1748*' around a harp, along with intact wine bottles, two almost intact wine glasses, a fragment of an erotic wall tile (Plate 5), an intact sgraffito plate and an almost intact mottled ware tankard (Plate 6). The latter was recovered upright on the floor surface. This material is currently undergoing conservation and analysis. The contents of an almost intact chamber pot are described in Appendix 2 below. A lower fill, F44, was a deposit similar to F43, and was 120mm in depth, while containing a greater amount of ash.

Well F31

The F45 structure was associated with a well shaft, F31, later recut as a rubbish pit. The upper courses of masonry had been removed by the recut to a level of 1.86m OD. The construction cut was between 1.75m and 1.85m in diameter and was excavated to a depth of 1.60m below the F67 surface (Plate 7). The upper course of masonry was in small water-rolled stones less than 200mm in size. The diameter of the well shaft was between 900mm and 1m. The masonry appeared to be a dry stone construction, although it is possible that water action may have eroded any binding agents.

A linear cut ran off to the southeast from the well. The cut, F53, had a maximum width of 1m and depth of 140mm with gently sloping sides and a flat base. Its terminal was

truncated by the later insertion of the masonry wall F2, however it had a maximum length of 1m. Its fill, F52, was a silty sand with frequent small stones and gravel particles. It contained small fragments of mortar, red brick and charcoal and finds recovered included post-medieval pottery, clay pipe fragments, copper particles and animal bone.

A timber base plate with a small upright was set into F67 just to the southeast of the well shaft, cutting the F52/F53 gully. The base plate measured 1.78m, with an average width of 340mm. A sample submitted for analysis consisted of two fragments of squared beams joined together with several iron nails in a perpendicular position. On the contact area between the two pieces there seemed to be an iron sheet. One side of the best-preserved section was completely encrusted with iron, and must have been in contact with another section of iron. The wood was of very regular growth. It must have formed part of a heavy construction, considering the length of the nails and the use of at least three nails on this short section. Both wood pieces were of *Picea* (spruce).

The structure sat in a rectangular cut, F41, 300mm deep and with slightly larger dimensions than the base plate. Pottery recovered from the fill included black and brown wares, a body sherd of a Staffordshire slipware plate and cream wares. The F52/F53 gully below it may have been dug to carry water overflows or bucket spills down slope to the southeast.

Laneway deposits and F10 surface

The laneway (F189) had a surface associated with this phase. A layer of fine cobbling, F10, directly overlay F118, the occupation layer recorded in the sondage (Plates 8 and 9). The cobbles formed a consistent surface where they were undisturbed by the insertion of the masonry walls at either side of the laneway and excavation of the laneway stopped at this level. The surface was located at between 3.39m OD and 3.71m OD. The lower depth occurred at a point along the extent of F3, where the deposits below appeared to be slumping into a large pit. The F10 surface sealed a separate deposit in the eastern sondage where F185, a sandy deposit 30mm in depth, overlay the F186 surface. This was possibly laid down deliberately as a bedding layer for the F10 surface.

Masonry wall F4

The F10 surface was associated with a short length of masonry walling which survived in poor condition (Plate 10). The western 6m-8m of F4 (the feature number allocated to the wall delineating the northern extent of the lane) was cut below the level of the F10 cobbles. The masonry here survived to a maximum height of 450mm and was constructed from irregular blocks of limestone rubble. The southern face (facing the lane) survived to one course and there was no surviving northern face, which appears to have been removed in antiquity. The surviving thickness of the wall was on average 300mm, however, the disturbance north of the wall under the baulk would suggest an original thickness of 450mm. The remaining extent of the wall to the west post-dated the F10 surface.

Deposits north of laneway

In the small area excavated north of the laneway, a spread of off white/yellow mortar, F97, was recorded at 3.66m OD, extending over the F63 deposit of cultivated soil. The depth of this deposit was between 20mm and 100mm. It is possible that this mortar was connected to construction activity on the site in the mid-eighteenth century. Three stake holes that cut through F97 were recorded, F98, F99 and F100. These ranged in depth from between 60mm and 120mm.

A grey/black and purple clay surface with ash and charcoal lenses was laid over F63, F97, F106 and F110 at around 3.70m OD (Plate 11). This surface, F64, was contained within the cut F83 and can be seen as its upper fill. F64 was between 20mm and 100mm in depth and no finds were recovered. It was from this level that the masonry wall F4 was constructed.

Inhumation B1

Further east, in the disturbed area east of F194, a human skeleton was recovered in the baulk from a section, which had been created when a massive concrete foundation was inserted in the foundry during the last century (Plate 12). The skeleton was truncated just to the right of the vertebrae and was missing its right leg and arm, mandible and the right half of the skull. It had a maximum length of 1.54m and was correctly orientated east-west. Its skull was located at 3.11m OD. The burial is discussed in detail in Appendix 1 below.

There was no evidence in section or in plan for a grave cut, nor was there any evidence for a coffin. The skeleton lay in a slight depression in the garden soil F63 within a green/brown gritty burial soil. It was sealed by F195, a dark grey/green sandy clay with small stones, marine shell and occasional animal bone. This deposit was up to 400mm in thickness over the burial and would appear to be a cultivated garden soil. Within the burial soil were frequent fragments of what appeared to be lime mortar, although this was less gritty than that usually encountered. A sample of this is undergoing analysis for quick lime.

Truncated deposits northeast of F4

A later foundry foundation of mass concrete had truncated much of the archaeological deposits at the eastern end of the trench to just below the level of the buffer zone. This area was defined by the nineteenth-century continuation of F4 to the south, the nineteenth-century arcaded wall F194 to the west and the baulks to the north and east. It was excavated by machine to 3.40m OD, a level below the buffer zone, and 2.90m OD in the eastern part of this area, after a large concrete pile was removed.

Ten Phase II deposits or spreads were identified over F151, none of which were excavated (Figure 13):

- F137 was a brown silty clay with green clay mottling, with a high frequency of brick fragments and stones (angular and cobbles). There were visible inclusions of charcoal, slate fragments, pan tile, mortar, plaster, animal bone and shell. A piece of black ware and a sherd of slipware were noted at the top of the deposit. Located in the southwest of this area, F137 was recorded at 3.40m OD and continued under or was cut by F4. This deposit may have acted as a sealant for the rubble deposit F139 below it.
- F135 was a greenish-brown silty clay with green clay mottling, with a medium frequency of pebbles and small angular stones. There were visible inclusions of shell, mortar, brick fragments and charcoal. Various post medieval pottery sherds were also noted within this deposit. F135 sealed F137 and F151 and was recorded at 3.41m OD.
- F139 consisted of mortar and brick fragments mixed with brown sandy clay with green clay mottling. There were visible inclusions of charcoal and shell through the

deposit, which can possibly be best interpreted as demolition rubble of F139, recorded at 3.44m OD, was under F137 and continued under or was cut by F4.

- F140 was a pure green clay. F140 and may have constituted the fill of a pit cutting F139 and F138. F140 was recorded at 3.38m OD and ran under or cut by F4.
- F141 was a light brown silty clay with a high frequency of pebbles and angular stones. This deposit was over F137 and F138, and it was recorded at 3.41m OD.
- F154 was a dark brown silty clay with visible inclusions of mortar, shell, charcoal, brick fragments and animal bone. This garden soil sealed F151 and was recorded at 3.43m OD. It continued beyond the eastern limit of excavation.
- F150 was a mid brown silty clay that was slightly stonier than F151. There were visible inclusions of charcoal, shell, mortar, brick fragments, animal bone and post medieval pottery. F150 sealed F154 and continued beyond the northern and eastern limit of excavations. F150 was recorded at 3.43m OD.

Cobbled surfaces northeast of F4

The remains of several cobbled surfaces were recorded in this area. They were recorded and drawn, but as they were located below the buffer zone, they were not excavated:

- F130 was the remains of a cobbled surface located in the northwest of this area, cut by pit F134 to the north and the concrete pile to the west. The surface was made of mainly river rolled cobbles, with some angular stones and one granite cobble measuring 140mm on its longest axis. F130 was recorded at 3.33m OD.
- F153 comprised of the remains of a cobbled surface set in green brown gravely clay bedding in the south of the trench. The surface was very disturbed and continued beyond the southern limit of excavation and its relationship to F4 was unclear. It was recorded at 3.45m OD.

4.5.4 ***Discussion of Phase II***

The cellar return excavated is undoubtedly part of the large building depicted by Rocque on the southern corner of Bow Lane and the unnamed laneway running across the site (Figure 14). The building No. 3 Bow Lane and its neighbour, No. 2, appear to have been rebuilt at some stage before the first edition of the Ordnance Survey and the demolition material recorded in the laneway (F118) and within the space itself (F42)

may derive from this. The cellar space was in the very southwestern corner of the excavated area and it was not possible to establish its relationship to structures to the south and west. There was however, no evidence of access at the excavated level, suggesting that a ladder originally accessed the space or that it was under a now truncated floor level.

The decorated plate dating from 1748 may commemorate a turbulent year in Dublin, when political tensions were exacerbated by a dispute within the city assembly concerning the aldermen's almost exclusive control over office holding and patronage. Charles Lucas, an apothecary and controversialist of some ability, highlighted the cause of the freemen and city guilds with a series of pamphlets, the contents of which were eventually to open him to charges of sedition. The political vacuum caused by the deaths of the two sitting MPs in 1748 led to renewed agitation in the city and saw Lucas begin to attack the government itself. The resulting election campaign was the first in the country to politicise the local press (Lucas himself was later to help found the *Freeman's Journal*) and to give the city's 4000-odd electorate an idea of the power that they could wield under the right circumstances. Lucas himself was charged with sedition and forced into exile where he remained until his election to parliament in 1761.

The well located in the yard to the rear is typical of similar structures recorded elsewhere in the city. Two similar examples were recorded in Phoenix Street to the west. It is likely that the well went out of use as piped water was introduced to the area towards the middle of the eighteenth century. In 1741, the Piped Water Committee of the City Assembly (later to be known as the Committee for Better Supplying the City of Dublin with Piped Water) recommended that the Liffey be tapped at Islandbridge, to relieve pressure from the city basin at James Street (Gilbert 1889-1922, ix, 32-33). In 1746 a consignment of timber consisting of 800 to 900 yards of 'good round fir… 10 feet to 14 feet long, 15" to 18" diameter exclusive at the butt end' was awaited from Norway (Gilbert 1889-1922, ix, 198). The main ran along the north quays into the city and the Smithfield area would have been one of the first beneficiaries of the new water supply.

The base plate associated with the well would appear to be the foundations of a canopy or hoist. Unlike the wells recorded in Phoenix Street, there was no wooden pump surviving in the shaft, indicating that a winch system may have been in use to raise buckets from the bottom. Spruce was only planted on a large scale in Ireland in the last few centuries. The origin of this wood species is therefore either European (Baltic or Scandinavian) or from Irish plantations, and not from natural woodland. Apart from the absence of *Picea* from the indigenous vegetation of Ireland after the Ice Age, another indication for this assumption is the fact that most wood shows very regular, relatively fast growth. The presence of *Picea* indicates the sample is of relatively recent antiquity (*pers. comm.* Dr. Ingelise Stuijts).

The close corroboration between the dating of the material recovered from the backfill of the cellar and the introduction of piped water to the area as evidenced by the well's going out of use, would indicate that the building occupying the Bow Lane plot may have been demolished in the 1750s or 1760s. Its replacement is possibly that building depicted on the 1847 edition of the Ordnance Survey, which will be discussed below.

The skeleton was recovered from an area depicted on Rocque as being a garden (or yard) between two warehouses or stables just to the north of the laneway. The location of the burial is approximately 22m south of the present precinct wall of St Michan's church and graveyard, which has remained stable since at least 1756, and possibly since Bernard de Gomme's depiction of 1673. The earliest representation of the church precinct is on John Speed's map of c. 1610, which appears to depict the southern extent of the church precinct extending further to the south. Beth Cassidy's excavation in this area did not record the presence of human skeletal material, which would suggest that the southern precinct boundary has remained stable since the fourteenth century. All the evidence therefore suggests that the Tram Street burial is an isolated one, dating to the middle of the eighteenth century.

4.5.5 ***Phase III, mid to late eighteenth-century occupation***

The material recorded relating to this phase was mostly concentrated towards the western end of the trench, as the eastern end had been greatly disturbed by concrete foundry foundations. The main activities recorded were the backfilling of the well shaft,

the construction of masonry walls alongside the laneway and the excavation of a cellar space, ostensibly to construct a revetting wall against F3 (Figures 15 and 16).

Well recut F14

The well was recut after it went out of use. The cut, F14, cut vertically through the F30 fill of the well shaft, removing the masonry sides in the process to a depth of 1.8m below the surface of the yard. The resultant pit had a diameter of between 1.46m and 1.76m. It was filled with F7, a dark brown silty clay with a high organic content. Over 270 sherds of post-medieval pottery were recovered from the fill, along with fragments of glass, animal bone and building debris. The relatively low density of the material would suggest that the pit was filled over a short period of time (Plate 13).

The surface of the fill was cut by F26, a linear cut filled with a timber plank, F27. The cut was 1.93m in length with a width of 370mm and a maximum depth of 440mm. The plank was a fragment of spruce and was extremely rotten; it may have been subject to running water, although probably prior to its deposition over the pit (*pers. comm.* Dr. Ingelise Stuijts). The soil matrix in the fill was a grey/brown silty sand, with a higher concentration of gritty sand towards the bottom. Building debris, post-medieval pottery and animal bone were recovered from the fill. The plank was probably added to the domestic debris in the pit after it had been filled up.

Masonry walls F2 and F32

The plot fronted by No. 3 Bow Lane decreased in size after the cellar space went out of use. A new boundary was created to the rear, dividing the original plot in half. This is represented by the construction of a masonry wall, F2 (Plate 14), which predated the construction of F3 to the north and abutted a masonry wall, F32, which cut through the backfilled cellar.

The F2 wall was 6.2m in length within the trench, with a width of between 440mm and 600mm. Only the lower course survived to a maximum height of 200mm, the calp blocks measuring on average 380mm x 360mm x 140mm. There were some fragments of red brick within the wall, which was held together by a friable white lime mortar. The construction cut, F68, was only 150mm in depth, indicating that the wall may not

have stood to any great height. The lower course of masonry was laid tightly up against the sides of the cut and there were no finds recovered.

The F32 wall survived in fragmentary form only and may have been partly robbed-out after the building fell into disuse. It ran alongside the earlier south wall of the cellar space, cutting the east and west walls and the backfill material, extending for 1.7m, with a width of 600mm. It survived as a loose linear deposition of large calp stones within a dark grey silty clay matrix. The stones had average dimensions of 460mm x 320mm x 280mm and there were several large chunks of lime mortar in the trench, F33.

There were no obvious occupation surfaces associated with either wall, although a deposit consisting of 60% clay silt and 40% construction debris post-dated F2 to the west (F24). This was sealed by the F1 disturbance, which, in this instance was associated with the insertion of a new structure on the plot in the 1980s.

Laneway deposits

A build up of soil mixed with gravel separated the F10 surface of the laneway with the fragmentary surface associated with the Phase III occupation of the site, F95 (Plates 15 and 16). F18 was a thin deposition of sand and small pebbles which survived in a small area over F11. The presence of the F18 deposit in the area of the F58 cellar feature (see below) is significant and possibly provides a link for the two events. F11 was defined by the masonry walls F3 and F4 and ranged in thickness from 105mm to 220mm, consisting in the main of grey/green gravel within a soil matrix. Finds recovered included animal bone, post-medieval pottery and a fragment of a medieval floor tile. This deposit was possibly deliberately laid down as bedding for the latest cobbled surface in the laneway, F6.

The F11 deposit seems to have been cut by a construction trench relating to F3 (the southern wall associated with the laneway). The cut, F17, was excavated for 3.7m and had a maximum depth of 550mm below the top of the F11 deposit. The edge of the cut was between 550mm and 250mm north of F3 and filled with F16, which consisted mostly of crushed red brick and lime mortar. Glass sherds, post-medieval pottery, animal bone and clay pipe sherds were also recovered from the fill.

Masonry wall F3

The masonry wall F3 was essentially of one build, although repair work was visible along its extent. It survived for most of its length to 500mm below the modern ground surface to an average height of 300mm above the F95 surface. The initial 1.3m section, preserved in the western baulk, was built in large blocks of calp limestone with smaller spall stones and bonded in a hard lime mortar. The individual blocks had typical dimensions of 320mm x 300mm x 270mm and the wall was approximately 550mm in width. Although the construction cut was not visible, the lower course was at the same level as the base of the construction cut further east.

The second section (working to the east) extended for 3.6m and ran adjacent to the backfilled well F14 to the junction with F2. The well (or perhaps the recut) had undermined the primary build of the wall and a new foundation course of red brick was constructed under the calp blocks. The bricks were hand made and badly fired with grey, red and white seams. They measured 9" x 4" x $2^{1/2}$" and were laid on their sides. The bricks were recessed by 110mm from the wall face. The wall foundation was two stretchers wide (460mm) at this level, however the masonry above gave the wall an above ground width of 600mm. One course survived on the south face and the deposits on the northern side were not excavated.

The third section of the wall was excavated on both sides, although much of the wall itself was left in situ. The build of this section remained generally consistent for 5.2m, with some evidence of repair. The wall held a consistent thickness of between 500mm and 600mm and survived to a height of between 105mm and 260mm. The wall was built from calp rubble with average dimensions of 200mm x 150mm x 100mm and red bricks were used frequently as infill. The binding agent was a friable white/grey lime mortar with frequent brick fragments within the matrix. This section of the wall terminated at a kink where the wall took a more southerly direction. This kink is quite noticeable on Rocque (1756) but becomes increasingly less obvious on the subsequent editions of the Ordnance Survey.

Most of the fourth section of F3 was rebuilt on its southern side, although the initial 1.9m would appear to survive in its original state. Here, the wall averaged between 500mm and 540mm in thickness and between 250mm and 360mm in height. The

northern face was better built than the southern one and there was no evidence for coursing. Calp limestone blocks with average dimensions of 180mm x 140mm x 100mm were used along with occasional bricks, particularly towards the base of the wall. The binding agent was a hard off-white lime mortar with charcoal and small stones.

F58 cellar and brick revetting wall F19

The remaining 9.4m of the fourth section of F3 within the trench was substantially rebuilt on its southern side in red brick (Plate 17). This may have been necessary due to subsidence, evident in the adjacent F10 cobbled surface, which may have caused the wall to fail. An earlier medieval pit or an existing cellar feature, which may have been re-excavated to act as a construction trench for the new section of wall, may additionally have caused the subsidence. A masonry wall F60, seems either to have revetted the back of the trench during construction or to have survived there as part of an earlier structure.

The refaced section of the wall constituted the northern side of a linear trench excavated against the southern side of the wall (Plate 18). The trench had an earthen section at its western end, which corresponded with the beginning of the brick re-build and a masonry wall along its southern edge, F60. The eastern end of the trench was outside the area of excavation. The F60 wall was built against the earthen section and would therefore appear to be contemporary with the brick re-build. The base of the trench was located at 2.49m OD, 1.30m below the level of the top of F3 and it was between 1.32m and 1.4m in width (from north to south, prior to the insertion of the walls).

The F60 wall survived to a maximum height of 3.48m OD and was on average 450mm in thickness. It was constructed from a mixture of massive blocks of calp limestone, smaller blocks of limestone rubble and occasional red bricks. The larger blocks of masonry had typical dimensions of 800mm x 600mm x 400mm and were in the lower courses of the wall. It was built against the southern edge of the trench and survived in relatively bad condition, with much of the face being robbed out at the western end.

The northern edge of the trench had a brick wall built against it in two skims, F19, which terminated at the base of the masonry wall F3. The brick wall was built against a section through the F70 garden soil, which displayed evidence for stake holes underneath the F3 masonry. The brickwork ran under the base of the masonry and was obviously inserted to support it. The bricks conformed to Imperial regulations (9" x 4" x $2^{1/2}$") and were laid with their stretchers against the section for the four lower courses (Plate 19). The nine courses above were laid in two skims in an arbitrary bond and the trench was backfilled with F25, loose construction/demolition debris containing clay pipe fragments, animal bone and post-medieval pottery. Notwithstanding the backfill material, the pressure exerted by the garden soil on the F19 wall caused it to bulge out alarmingly.

The trench bottomed on a layer of lime mortar, which had been compressed to form a rough surface. A scar running across the trench along the surface indicated the presence of a wall, F198 two headers in width. There was no indication that this wall was keyed into F19, although the brick impressions were of the same dimensions as the F19 bricks.

F3 east of F58

The northern face of the masonry wall F3 was recorded in section for a 720mm stretch west of the F58 cellar. It survived for 230mm above the F95 surface and was similar in build to the third section of walling described above.

Masonry wall F4

The western 6m-8m of F4 has been described in Phase 2 below. A central 10.8m section of the wall was constructed from the same level as F3. The construction trench on the southern side, F21, was difficult to locate due to the loose nature of the gravel it was cut through. In places it was imperceptible and the wall may have been constructed directly against it. The fill, F20, was again difficult to identify and the pottery recovered may derive from F18.

The construction cut on the northern side of the wall, F61, was easier to identify. Cutting F64, the cut had an irregular profile and ranged in depth from 80mm to 360mm

below the F64 surface. It extended out between 400mm and 660mm from the wall face. It was filled with F62, a mixed fill containing patches of heavy sticky clay, stony clay, loose sandy soil and building debris. Animal bone, glass fragments and post-medieval pottery were recovered.

This section of the wall was well built in calp limestone blocks and was relatively fair faced on either side with rough coursing (Plate 20). The wall ranged from 410mm to 590mm in thickness and survived to a height of between 380mm and 460mm. A hard lime mortar was used as a binding agent with some evidence of crushed red brick in the matrix.

F95 surface

The surface in the laneway corresponding to Phase III sealed F16, the fill of the construction trench of F3. This surface survived mostly along the sides of the laneway against the F3 and F4 walls, however larger cobbles survived in places along a drain in the centre of the laneway, which was recut at a later date.

The cobbles surviving against the walls were generally between 100mm and 150m in length and up to 120mm in width. More survived on the southern side of the lane than on the northern side. Those lining the drain were larger and more rounded, measuring between 150mm and 200mm.

Features north of F4

A large posthole, F47, cutting F64, measured some 440mm in depth and 600mm in diameter at 3.58m OD. There were two distinct cuts and fills associated with the feature: the wider diameter at the top of the cut gave way at its base to a narrower cut with vertical sides and a flat bottom. The upper portion of the cut was 600mm in diameter with a depth of 240mm and the lower portion was 270mm in diameter and 200mm deep. The upper portion was filled with F46, which predominantly consisted of crushed red brick; the lower portion F193 contained greasy black silty clay and a fragment of roof slate with lime mortar adhering to it acted as a pad. There was no evidence for any *in situ* timber within the feature.

The posthole was located just to the north of the construction trench of F4 and may have held a scaffolding pole, which was later removed. The posthole would then have filled with wall construction debris.

A wall extending north from F4 was recorded in a small area of the trench, which was not excavated. The wall, F9, extended for 1.6m south from the baulk and its junction with F4 was removed by later disturbance. The wall was between 440mm and 460mm in width and survived to two courses to a level of 4.12m OD. While much of the wall was in calp rubble, well made red bricks with dimensions of 9" x 5" x 4" were also present.

Truncated features to the northeast of F4

Several features and deposits located to the northeast of F4 in the area disturbed by later foundations can tentatively be phased top this period. These features were not excavated but were drawn and recorded (Figure 17).

- F127 was an oblong pit measuring 4.00m by 2.60m located in the west of this area, north of F189 and east of F194. This pit was revealed after the removal of a large concrete foundation. F127 appeared to contain two fills, F128 and F129. F128 was a dark brown silty clay with a significant sand content. It had inclusions of charcoal, coal, shell, mortar, slag and brick fragments. Also visible were clay pipe stems, post medieval pottery and ferrous objects. F128 could be interpreted as a deposit of industrial waste. F129 was light brown greenish sandy clay with visible inclusions of pebbles, stones, charcoal, mortar and brick fragments. F129 can be interpreted as a sealant for the pit, however, as F127, F128 and F129 were not excavated this could not be established. F127, F128 and F129 were recorded at around 2.92m OD.
- F134 was a coarse greenish light brown silty clay with a high ferrous content. F134 appeared the fill of a circular pit that continued beyond the northern limit of excavation.
- F136 was a circular pit with a diameter of 460mm. It was filled with grey brown silty clay with inclusions of charcoal, mortar, ash, slate and brick fragments. One ferrous object was also recovered from this fill. F136 cut F139

and F140. Its relationship with F4 was unclear, but it appeared to be under or cut by the wall. F136 was recorded at 3.38m OD.

- F145 was a circular cut in the centre of the area. It measured approximately 900mm in diameter. F145 was filled with F144, dark brown silty clay, with visible inclusions of charcoal, burnt stone, clinkers, coal and mortar. Red brick fragments and post-medieval pottery were also present. The feature was probably the base of a pit filled with industrial waste. It was recorded at 3.32m OD and was not excavated.
- F146 was an oblong pit cutting the eastern extent of F145. It measured 1.20m by 800mm and was recorded at 3.39m OD. F146 was filled with dark brown silty clay, F147. This fill had visible inclusions of mortar, animal bone, charcoal and cinders. There were also black wares and other post medieval pottery, along with slate and tile fragments. The fill could be interpreted as fire or industrial waste and was probably earlier than the foundry works recorded on the site in 1847.
- F148 was a light grey brown sandy silt with some clay within its matrix. It had visible inclusions of shell, mortar, brick fragments, charcoal and ferrous material. Sgraffito sherds were visible and a fragment of medieval floor tile was recovered. F148 can be interpreted as the lower fill of a pit cut from a height of around 3.70m OD. This fill is cut by a later pit recut, a small patch of its black charcoal and cinder fill evident in plan. F148 was cut by the wall F152.
- F155 constituted the remains of a cobbled surface that continued under the eastern limit of excavation. F155 was recorded at 3.67m OD, a much higher level than the other cobbled areas and sealed F154.

Masonry and brick walls to the northeast of F4

Several walls were recorded, mostly in section after the removal of the concrete foundations.

- F131 constituted the slight remains of a north-south wall that continued beyond the northern limit of excavation. In the northern section, the cut for this wall was at around 3.80m OD. This implies that the wall is relatively late and possibly connected with early nineteenth-century activity on the site. The wall

could be traced for 3m south of the northern limit of excavation and the width of the construction trench was from between 440mm and 540mm.

- F 143 constituted the remains of an insubstantial north-south wall abutting F4 and extending to the north for 1.60m, with a minimum width of 300mm. One course of brick and some mortar remained. Brick staining could be traced on F4. It is possible that this wall corresponds to a structure depicted on Rocque, but F143 is more likely to be a rebuild. F143 was recorded at 3.44m OD and was not excavated.
- F152 was the remains of a thin wall, which continued under the northern limit of excavation. It was recorded at 3.40m OD. In plan F152 appeared to be a thin slot trench 100mm wide and filled with mortar. The northern section indicated that F152 was the remains or base of a wall cut through from the top of the post-medieval garden soil at around 3.60m OD. F152 cut the F148 deposit.

4.5.6 ***Discussion of Phase III***

The structures and deposits associated with the Phase III occupation of the site date from the period just before the area became industrialised. The activity recorded to the rear of the Bow Lane property, the backfilling of the well and the demolition of the early eighteenth-century building, point to the future shape of the area, which was to become increasingly less residential and more industrial. The process can be examined in plan form on the three editions of the Ordnance Survey, the earliest dating from 1847 (Figures 18 and 19).

Also evident here is the beginning of a process conceptualised by the German geographer M.R.G. Conzen, the burgage cycle. This relates to the progressive building over of the principal plots within urban centres and their ultimate clearance prior to redevelopment. This will be examined further in the general discussion.

Apart from the obvious re-edification of the fourth section of the masonry wall F3, there is little evidence to suggest that the walls defining the laneway were rebuilt along the lines of earlier masonry walls. Their relatively late construction may have been a function of the necessity to have load-bearing walls, at least on the southern side of the

laneway. In this area Rocque has depicted stabling or warehouse activity running off from F3, which presumably covered the gardens which must have existed to the rear of the Hammond Lane plots (the evidence for which has been outlined in Phases I and II below). While the laneway may have evolved to service these plots, there was no evidence within the trench that the 1756 structures were accessed from the laneway. Nor was there any evidence located for internal divisions or occupation surfaces in this area.

The difficulty of locating archaeological evidence for the hachured structures depicted on Rocque has been commented on before by this writer in relation to the buildings mapped by the cartographer to the rear of properties on the eastern side of Francis Street. Here, a significant structure has left no trace at all on the archaeological record. While the accuracy of Rocque's street front measurements is acceptable within the constraints of the period, it is quite likely that less attention was paid to structures not immediately evident to the general public. A possible future avenue of research might be to compare the standard and quality of Rocque's depictions of his subscribers' properties with those depicted elsewhere in the city.

On the whole is likely that the process, which reduced the walls adjoining the laneway to their excavated heights, also removed the occupation evidence for this period south of F3.

One of the walls recorded north of F4 can be located on Rocque and would appear to be part of one of the structures discussed above. The wall, F9, was relatively narrow and did not appear to be of sufficient structural quality to be any more than a garden wall.

The subsidence recorded in the F10 surface, which possibly also resulted in the failure and the subsequent rebuilding of a section of the F3 wall can be possibly ascribed to a large medieval ditch initially recorded by Alan Hayden in the adjoining site to the south. This linear trench extends towards the northwest towards the area under discussion and subsequent archaeological testing by Linzi Simpson suggests that it may be as much as 2m in depth and 8.5m wide (*pers comm.* L. Simpson).

4.5.7 ***Phase IV, nineteenth-century industrialisation***

The material recorded relating to this phase of occupation is mostly associated with the expansion of the Hammond Lane Foundry over the area of the site during the latter half of the nineteenth century. Between the 1876 and the 1909 editions of the Ordnance Survey the laneway running across the site was completely built over and the eastern section of F4 was rebuilt, as it had now become an integral load-bearing wall (Figures 19 and 20).

Features south of the laneway

Any occupation in the trench south of the laneway relating to this phase was truncated by modern activity probably relating to the re-use of the area by Maguire and Paterson.

Laneway deposits

The F11 deposit described above may have been introduced as bedding for F6, the latest level of cobbling delineated by F3 and F4 within the laneway. This survived over a distance of 18m and consisted of well-laid limestone setts, with typical dimensions of 9” x 6” x 5”. This surface was recorded both on the interior and the exterior of the foundry building as depicted on the edition of the Ordnance Survey published in 1866, but presumably pre-dates this arrangement of structures by several decades. The indicated thickness of the foundry wall at this point on the 1866 edition suggests that the laneway acted as a rear access for the foundry and it may merely have been covered by a lean-to at this date. The next edition (1876) does not depict this arrangement and has the laneway extending as far east as that depicted on Rocque.

A drain cutting F11 would appear to have been cut through F6, the setts of which were re-laid over the fill. The fill, F 12, was composed of loose water-rolled gravel and contained the remains of a timber pipe with a 4” diameter iron pipe through it. The cut, F13, had a maximum width of 500mm and an average depth of 600mm. Although this cut through the earlier cobbled surfaces, there was evidence surviving, along the F95 surface in particular, that a surface drain had run along the centre of the laneway. Whether by accident or design, the F6 surface also had a similar feature, where the setts had perhaps subsided into the fill of the water pipe.

Sealing F6 was a deposition of solidified metals, slag and mortar, F5. This material was sufficiently hard to justify the use of a rock breaker to effect its removal. In some areas, the molten material had percolated down through the F6 surface into the F11 deposit below.

Features to the north of the laneway

The mass concrete foundations of buildings and machinery, which were constructed on the site in the twentieth century, heavily contaminated the area to the north of the laneway. While the remains of several walls survived in the northern section, only one of the walls north of the laneway can be positively located on the Ordnance Survey. F194 is represented as a property boundary on the 1864 and subsequent editions of the Ordnance Survey until being subsumed into the footprint of the extended foundry by 1909. The wall was constructed as an arcade, with two piers surviving. They measured 600mm by 1m and were constructed from calp limestone with some brick. The upper level of masonry survived to 4.28m OD.

The remains of a circular structure of calp limestone and cinder brick were recorded in the F1 disturbance to the north of the laneway. The structure, F90, had a diameter of 3.3m and survived to a height of 800mm; the base was in blocks of calp, which were roughly coursed and not particularly well laid, indicating that the structure was at foundation level. The upper course was in red cinder bricks, which had been laid on their ends. The core of the structure consisted of a compact black stony mixture of mortar, brick fragments and black sand. The scant remains of a red brick wall extended to the north of the structure into the baulk. The structure was located to the east of the arcade wall and may therefore have been the foundation of a small blast furnace. There are no chimneys depicted on any of the editions of the Ordnance Survey at this location

Several pits were cut through the F6 surface to house cast iron roof supports. These were backfilled with a mixture of the material under the surface and fine black sand. They are associated with two larger pits, which were also cut from the F6 surface, which were excavated to a depth of 2.5m.

4.5.8 ***Discussion of Phase IV***

The industrial development of the site is well documented on the various editions of the Ordnance Survey. The first edition is strikingly similar to Rocque in the arrangement of the buildings fronting onto Hammond Lane, Bow Lane and Church Street. More detailed information can be gleaned from subsequent editions, which were surveyed at the larger scale of 5' to 1 mile; the 1864 edition depicts a *Foundry* on the Hammond Lane frontage and the *Eagle Foundry* fronting onto Church Street. An *iron works* on the map occupied the area just to the north of the site where the new Law Library is today. There are several other similar enterprises depicted in the general area and this appears to have been the main industrial function of the area until well into the twentieth century.

The archaeological deposits relating to this period of the site's history seem to consist in the main of large mass concrete foundations, presumably positioned to act as a base for the smelting equipment. Also evident was a heavy deposition of slag, which covered the extent of the laneway for all of its length within the later buildings. This material F5, appears to have percolated through the underlying deposits for up to 200mm, initially sealing the final laneway surface in the sequence, F6.

The Hammond Lane Foundry

The Hammond Lane Foundry was also in existence from at least the 1830s and was owned and operated by the Strong family until the site was acquired and redeveloped by Paterson & Company in 1910/1911. It appears to have acquired its name only shortly before its closure when the business was transferred to Pigeon House Road in the south docks, where it still trades today as the Hammond Lane Foundry.

The development of the site can be traced on the various editions of the Ordnance Survey but probably developed from buildings depicted on Rocque. By the time of its closure, it had extended northwards to the precinct wall of St. Michan's, encroaching over the length of the laneway.

Maguire and Paterson

Maguire and Paterson started life as Paterson & Company in 1882. They were initially based on the southern side of Hammond Lane but they acquired the site of the foundry in 1910 and seem to have raised the foundry structures, redeveloping the site as offices and stores. The company remained on site until recently and the area south of the *Luas* line will be developed by the Office of Public Works in the near future.

4.6 *Excavation results: Trench B*

Trench B was located just to the east of Trench A and measured 15m in length (north-south) and 10m in width. Clearance of mixed rubble brought the level down to that required for the buffer zone below the level of the track formation. The remains of four walls were recorded, all of which date to the late-eighteenth or early nineteenth centuries and relate to tenement dwellings on the southern side of Smullen's Court, which backed onto the Eagle Foundry. Deposits below the level of the buffer zone were planned and recorded but not excavated (Figure 31).

4.6.1 *Phase I, earliest deposits*

Garden soil and pits

The earliest deposit recorded in Trench B was a general spread of post-medieval garden soil, F170. This was located throughout most of the trench where it was not disturbed by later pits. The garden soil was quite similar to that recorded at the western end of Trench A (F70) and was not excavated.

Several pits were cut through F170, some of which can be assigned to this early phase. The largest of these, F196, was situated in the middle of the trench and had several fills evident in plan. The pit measured 7.05m (east-west) by 2m and was ovoid in shape. The earliest fill, F161, was recorded around the northwestern edge of the pit and consisted of a sandy clay; it may have acted as a sealant for the fills above. There were three main fills of which F160 was the earliest. This was a friable grey/brown sandy clay, which occupied the northwestern quadrant of the pit in plan. This was sealed by F159, which occupied the northeastern quadrant of the pit. This was another sandy clay and contained flecks of charcoal and cockleshells. This was in turn sealed by F158, which

constituted the largest fill in plan. This was a dark brown deposit of clay, with no obvious inclusions.

Three pits grouped together in the western side of the trench are also possibly part of Phase I. F163 was located under the western end of the masonry wall F165 and consisted of a dark brown silty clay extending over an area measuring 2.7m (east-west) by 1.2m. The fill of a second pit, F162, was located in the northwestern corner of the trench and measured 1m (east-west) by 400m. Half of the third pit, F166 was located underneath the western baulk. Another dark brown clay, it extended for 1.8m, from the baulk and was 1.4m (north-south). All three pits cut the F170 garden soil and were left unexcavated.

The remains of a cesspit, F167 were recorded in the southwestern corner of the trench cutting the garden soil. As with the other features at this level, it was not excavated. The ovoid pit was 1.15m in diameter and the fill consisted of a cessy mixture of organic silty clay and straw.

A later of mid-grey clay was recorded sealing F170 in the northeastern corner of the trench. This spread, F173, extended for 2.6m (north-south) by 2.4m and contained animal bone and charcoal flecks. A small section through the deposit indicated that it was 200mm in thickness and it probably can be interpreted as being a dump layer above the garden soil.

4.6.2 ***Discussion of Phase I***

The features recorded in Phase I would appear to relate to the early eighteenth-century development of the site, when the area was occupied by gardens extending to the rear of the Church Street properties. As the features were located below the construction buffer zone they remain unexcavated. One of the pits, F167 was evidently a cesspit, the only such feature recorded on the excavation.

4.6.3 ***Phase II***

Pits and masonry walls

Two pits north of the F165 wall would appear to belong to Phase II. F171 was located directly underneath the wall and measured 2.2m (east-west) by between 200mm and 500mm. The uppermost fill consisted of a dark brown sandy clay; F172 was a large circular pit with a diameter of 2.2m, filled with a loose dark brown sand with a quantity of clay in the matrix.

The earliest masonry walls recorded in the trench were F177, which extended for 3.2m east-west and its southern return, F178 that extended for 4.2m. Both walls were constructed in uncoursed calp limestone rubble with an average width of 500mm and demonstrate rebuilding work, which is possibly related to the construction of the Eagle Foundry.

A third wall, F176 extends to the north for 3.3m from the angle formed at the junction of the two earlier walls. It is similar in all respects to the other walls but later, due to the build up of disturbed deposits either side of it. The wall extended into the northern baulk and probably delineated an early terminal of the laneway, which was subsequently demolished as the laneway was extended west.

4.6.4 ***Discussion of Phase II***

The walls recorded belonging to this phase are probably those depicted on Rocque's 1756 representation of the area. The buildings were possibly stables leading onto the laneway, which became Smullen's Court on the later editions of the Ordnance Survey. The cartographical evidence does not suggest that this laneway connected to the one recorded in Trench A; from Rocque onwards they are separated by a large yard to the west of the eagle Foundry.

The earlier walls were later incorporated into the cottages, which lined the southern side of the lane and are depicted on the Ordnance Survey.

4.6.5 ***Phase III***

Masonry walls

The walls dating to this phase are connected to the F177/8 wall but abut it. F165 is a westward continuation of F177 and extends from the junction of F177/8 for 8.6m before returning to the south. It is constructed from uncoursed calp rubble with an average width of 500mm. The southern return, F188, is actually earlier than F165 from the evidence at their junction. This extended for 7.2m into the southern baulk, but was only recorded at foundation level. Both walls were probably built together on the basis of the disturbed deposits at either side, which only survive along the walls. They do not appear to be depicted on Rocque.

F157 pit

The truncated remains of a pit can be assigned to this phase on the basis of a clay pipe bowl and fragments of red brick, which were securely associated with the visible upper fill. The pit survived in plan to 2.8m (east-west) by between 400mm and 800mm and the fill visible in plan was a dark brown sandy clay with charcoal flecking. It was cut through the sequence of pits recorded in Phase I.

4.6.6 ***Discussion of Phase III***

The evidence for this phase in the site's development was mostly removed by the disturbance caused by the demolition of the Eagle Foundry in the 1950s. The two sections of wall recorded are depicted on the first edition of the Ordnance Survey and are part of the Eagle Foundry.

The Eagle and North City Foundry

The Eagle Foundry was situated on the Church Street frontage from at least the 1830s and the earlier buildings depicted on Rocque may have been also used for the purposes of iron smelting. The foundry appears to have concentrated on mill-wrighting, bell making and general engineering. From the mid-nineteenth century the foundry was known as the *Eagle and North City Foundry* but it does not appear to have developed much spatially from this period through to its closure and demolition in the 1950s. The buildings fronting onto Church Street were residential throughout the history of the foundry and were leased out by the foundry owners, the Sheridan family.

4.6.7 ***Phase IV***

The four truncated deposits associated with this phase are all that remains of the foundry. These consist of F175, a small cobbled area in front of F174, which was the brick base of a domestic fireplace, which was inserted into the F177 wall.

The truncated remains of two intercutting pits were recorded against the southern limit of excavation, may perhaps be better phased in Phase III. The earlier pit, F169, measured 1.2m (north-south) with a width of 900mm. The upper fill consisted of a mixture of yellow sand and molten metal and slag. A clay pipe bowl suggested a mid-nineteenth-century date. Cutting this fill was a smaller pit containing a black sandy clay with charcoal and small lumps of coal. It measured 900mm (north-south) by 400mm and both pits were left unexcavated.

4.6.8 ***Discussion of Phase IV***

Again, due to the extensive demolition work, which cleared the site in the 1950s, there was little remaining of the later deposits, which could be associated with the foundry. When foundries are dismantled, there is usually a second-hand market for the specialised equipment used, and it would appear to be unusual to have much remaining apart from the shell of the building. In this particular case, the demolition rubble appears to have been mostly taken off site, apart from that which was compacted into the basement spaces.

There appears to have been additional truncation of the underlying archaeological deposits due to the necessity of providing good solid foundations for the heavy plant involved in the manufacture of iron products and machinery. The remains of deep reinforced-concrete platforms were recorded over most of the trench and they can be assigned to the modern period after Phase IV.

5 Archaeological excavations at Phoenix Street

5.1 A single trench was excavated along the area to be disturbed in Phoenix Street. The trench extended for 41m west of Bow Lane, with a maximum width of 11m. The site was bounded on the northern side by the offices of Irish Distillers and on the southern side by a mass concrete wall dating to the turn of the twentieth century. The eastern end of the trench was located at 4m from the Bow Lane frontage and the eastern end was delineated by a cellar wall 27m from the access gate. Due to the slope of the site, there will be little disturbance of substrates over this 27m stretch. Any works in the area will be monitored under licence 01E0733.

5.2 There was a marked rise in the surface level between the western and eastern ends of the trench. This necessitated a greater reduction in ground levels than on Tram Street, to 2.6m OD. The excavation was carried out over a four-week period in May and June in generally good weather conditions.

5.3 Three phases of activity were identified over the area. Phase I had evidence for late seventeenth-century dumping on the site and other occupation consisting of a dry-stone well shaft at the very eastern end of the site. Evidence for the second phase consisted of the foundations of early eighteenth-century buildings, the cellars of which truncated the upper levels of the dump deposits below, and an associated well. It would appear that a certain amount of dumping continued on the site during this period. The final phase consisted of the masonry walls of nineteenth-century buildings and an associated cobbled surface to the rear (Figure 32).

5.4 Excavation results

5.4.1 *Phase I, late seventeenth-century occupation*

The earliest phase of activity on Phoenix Streets relates to the continual dumping of domestic refuse over much of the site. This was recorded as several separate deposits, although the organic matter through the material has rendered it fairly homogenous. The earliest deposits were recorded below the cellar level at the western end of the site. Due to the necessity of stepping in the trench, the deposits were only recorded over an area measuring 3m by 5.5m.

Metalled surfaces and dump deposits

The earliest features recorded on Phoenix Street were a sequence of metalled surfaces and insubstantial dump deposits at the western end of the trench. The earliest surface, F581, was located at 1.58m OD and contained fragments of roof tile and red brick. The surface was sealed by F580, a grey silty loam with an average thickness of 100mm and a rough metalling, F576 was placed over it. This in turn was sealed by F569, a substantial deposit of domestic refuse up to 300mm in thickness. A significant amount of pottery, clay pipes and glassware was recovered from this deposit, suggesting that the material was dumped there *c*. 1640-1700.

The F569 deposit was sealed by another surface, F553, which had slight traces of metalling (Plate 21). This was located at approximately 2m OD and was probably laid down to consolidate the material below. A number of clay pipe fragments recovered from the surface would suggest that considerable work took place in the area prior to *c*. 1700.

The remains of a masonry and brick wall F520 were recorded at between 2.6m and 3.25m OD. The wall survived for a length of 1.1m (north-south) and was 360mm in thickness.

This was sealed by another dump deposit, F552, which averaged at 150mm in thickness. This deposit contained significant amounts of pottery, glass and clay pipe fragments, the assemblage suggesting a deposition date of *c*. 1680-1740. The soil

matrix was a silty clay with some organic inclusions. Below that again was a deposit of lime mortar, F559, which sealed a further dump deposit, which was not excavated.

The main deposit recorded, F512, extended over much of the eastern half of the site where it was not truncated by the cellars on the street front. It ranged from 1.5m to 2.2m in thickness and initially appeared to be defined to the west by the masonry wall, F514. The deposits recorded on the eastern side of the wall, F515, were however broadly similar and the slight difference in the soil matrix may be due to increased waterlogging on the eastern side.

Metalled surface and well

The earliest levels recorded on the Bow Lane frontage date to the mid-seventeenth century and consist of a similar sequence of dumping and ground consolidation as recorded in the western part of the trench. The earliest surface, F539 was recorded at 2.43m OD and was associated with a dry stone well, F540 (Plate 22). The surface was sealed by 300mm of occupation debris, F538 and F558, which consisted in the main of loose sandy silts with some organic content. This material was in turn sealed by the main dump deposit, F512.

The well was roughly circular with a diameter of 1.15m at the upper course of masonry (Plate 23). The masonry consisted of water-rolled cobbles with typical dimensions of 450mm by 160mm. While there was some evidence of mortar adhesion to some of the stones, the general appearance was one of dry stone construction and several hand-made red bricks were used to fill gaps in the construction. The well was excavated to a depth of 1.1m or six courses below the F539 surface. The remains of a timber capillary pump survived against the south wall, consisting of a roughly squared trunk with external dimensions of 190mm by 170mm. The bore had a diameter of 140mm.

5.4.2 ***Discussion of Phase I***

The successive dump deposits recorded over the site during the excavation and during the subsequent monitoring of services are probably over earlier medieval dumps, one of which was recorded in a services trench on the street outside the site. The area west of Bow Lane is not depicted on Speed (Figure 33) while the bulk of the trench is depicted

on Rocque as being a large open yard, with a wide entrance leading onto Phoenix Street (Figure 34).

The area may therefore have functioned as a scavengers' depot during this period, where domestic refuse from the area would have been sorted and dumped. The scavenging contract must have been a profitable one; in 1656 it was reported that the city scavenger William Harvey, had only paid the city its fee of 50 barrels of wheat and still owed the city 50 barrels of malt (Gilbert, 1889-1922, iv, 101). His duties were laid down in an ordinance of 1661; he was responsible for cleaning and carrying away the dung in the city's streets and outside the walls as far as the limits of the city liberties; moreover, 'if any inhabitant shall caste any of theire house dunge, sweepings, garbadge and ashes into the streetes, and the same lye uncarryed away for twentie and foure houres after throwne out, and that the scavenger carry it away', the charge would be on the citizen as opposed to the city. The scavenger was additionally bound to the sum of £200 in order that his duties would be carried out to the satisfaction of the city (Gilbert, 1889-1922, iv, 199). Harvey in return received a toll on all corn brought into the city.

In 1664 however, he was investigated by the city for collecting the toll too readily, without there being an adequate performance of his scavenging duties. A petition suggested that the cleaning of the city's streets should be charged to the citizens directly and that a committee should be established to administer the work. The market toll formerly collected by Harvey would be put to another use to the city's advantage (Gilbert, 1889-1922, iv, 311-312). Later that year a more organised system of street sweeping and scavenging was established by the city council and the individual scavengers, now directly employed by the city, were provided with horns to blow half an hour prior to cleaning the streets to enable the citizens to bring out their refuse.

Harvey's connection with the Phoenix Street dump can be extrapolated in a reference from November of the following year. A petition to the city identified a piece of waste ground to the east of the bowling green at the southern end of Smithfield along 'the highway by the river Annaliffy, which yeeldeth noe profit unto this citty, but is filled with filth and noisomness'. Harvey was charged with the task of landscaping this area as a walk, with the planting of elms and sycamores and to build a four-foot high wall around the area to exclude the cattle from the market (Gilbert, 1889-1922, iv, 356-357).

Although no mention is made of the plague that was raging through London at the time, it was doubtless a consideration in the city's attempts to clean up an area, which was quite heavily populated by citizens of note. There were 242 inhabitants of Hangman Lane in 1659, of which 158 were English and 84 Irish. Of those, two were knights and one was a city alderman; there were in addition 17 other gentlemen, esquires and merchants living on the street (*Dublin Census 1659*, in Gilbert, 1889-1922, iv, 570). Whether or not the landscaping work was ever carried out, Harvey was reappointed scavenger in December 1666 and given a list of streets to clean both within and without the walls. His tenure lasted until 1675 when William George was appointed in his stead. The city later granted him an annual pension of £10 for his twenty-four year's service.

5.4.3 ***Phase II, eighteenth-century occupation***

The main characteristic of the Phase II occupation relates to the construction of the buildings depicted on John Rocque's *Exact survey of the city and suburbs of Dublin* (Figure 34). These were recorded at the very eastern and western extremities of the trench; the central area was depicted as a large yard with a wide entrance onto Phoenix Street at this time. The redevelopment of the area in the late nineteenth century resulted in the demolition of the buildings and the truncation of the walls to the levels recorded.

Western structures

Walls relating to three buildings were recorded at the western end of the trench. Although the buildings were constructed on the refuse deposits below, only the most western one, *Structure A*, had deep cellars truncating the deposits below the dump layers. This cellar was not manually excavated for health and safety reasons and the cellar backfill, F531, consisting of loose demolition rubble was not bottomed at –200mm OD. The building itself was larger in plan than the other two and extended further to the north. The southern face of an internal dividing wall, F584, was recorded in the section.

The back wall and a portion of both side walls of the central building, *Structure B*, were recorded (Plate 24). The single space had dimensions of 3.5m by 4.9m (east-west) and probably constituted the cellar of a gabled 2-bay Dutch Billy. The remains of a metalled surface F543 were disturbed to the north by a machine trench. The rough metalling was recorded at 3.4m OD and this probably constitutes the cellar floor.

The construction trench F555, of the western party wall with Structure A (F514) was excavated through the dump deposits to 2.04m OD and was 600mm in width on the eastern side. Its fill, F554 was a mixture of the dump deposit and loose mortar fragments. The wall itself was 500mm in thickness and survived to a height of 3.36m OD. It was constructed from thin-quarried calp limestone blocks with typical dimensions of 250mm by 100mm. Larger blocks of stone were used in the five lower courses, which had a slight batter (Plate 25). The wall continued to the north outside the limit of excavation. Its southern terminal was recorded at the street frontage during the subsequent monitoring.

The rear wall of Structure B, F548, was similar to the F514 wall. It survived to 3.57m OD where a course of hand-made red brick survived above the masonry. The construction cut, F557 was 550mm in width and extended for 450mm below the F543 surface. Its fill, F556 was similar in all respects to F554 and the trench would suggest that both walls were built at the same time. The eastern party wall with Structure C F549 survived to a height of 3.74m OD and was similar to the other two walls with more of the brick courses surviving. These were laid with the stretchers across the wall, the upper structural integrity of the building probably being provided by the western wall of Structure C, which abutted it. The lower course of masonry was not however located, indicating that F549 had a substantial foundation in its own right. Despite this however, at some stage prior to the construction of Structure C there was a necessity to support the wall at foundation level by means of a low buttress. This structure, F571, was a wedge shaped wall (in profile), extending for 1.8m from the eastern (external) face of F549 with a thickness of 560mm (Plate 26). It had its foundations in the F553 dump deposit and was later incorporated into the masonry of F570, the western wall of Structure C.

Structure B had a well located to the rear of the property, which was recorded in the section. The well, F560, had a diameter of between 660mm and 700mm and was of dry stone construction. The upper courses of masonry and surrounding area were removed by modern disturbance and it was therefore difficult to establish a stratigraphical link with the walls of Structure B. The well had not been backfilled and was plumbed to approximately –3m OD before the section collapsed. The cut for the well, F578 extended for 999m outside of the masonry; its fill, F577 produced a clay pipe fragment

dating from 1640-1670 and the typical pottery imports associated with the surrounding dump deposits.

Structure C was narrower than Structure B and although they originally shared the same plot boundary to the rear, Structure C appears to have projected further out into the street. The space recorded had dimensions of 3.55m (east-west) and there was no northern wall recorded within the trench. The western wall, F570 abutted the eastern wall of Structure B, which would suggest that it is slightly later (Plate 27). The wall was not as well built as F549 and sat in a narrow construction trench, F573, which ran 100mm from the wall face on the eastern side to a depth of 400mm from the formation level. The fill F572 contained clay pipe fragments from the period 1640-1670, but these are probably intrusive from the F553/F569 dump deposits below.

The rear wall of Structure C, F574 was secondary to the original building and was constructed in red brick. It was recorded in the section and survived to a height of 3.9m OD. The wall was sealed by a deposit of building rubble containing slag, F575, which contained clay pipe fragments dating from 1640-1710. This deposit was located in the northeastern half of the space and possibly constitutes a consolidated layer below the ground floor surface.

The eastern wall of Structure C, F510, was a substantial structure, 620mm in width and 4.7m (north-south) within the trench; it survived to a height of 3.53m OD. It was constructed in roughly coursed blocks of calp limestone masonry with typical dimensions of 300mm by 400mm, with the remains of one course of brickwork above the masonry. The wall incorporated the foundations of a chimneystack at its southern end. This measured 700mm by 1.30m (north-south) and one surviving chamfered stone indicated the base of the fireplace.

There was no floor surface recorded within Structure C, indicating that there was no cellar level. The ground floor surface was presumably removed with the site's redevelopment in the late nineteenth century.

A building which does not appear on Rocque probably dates to the period immediately afterwards and is included in Phase II. The northwestern corner of *Structure F* was located to the east of Structure E (see Phase III below) and they shared a party wall (Plate 28). The structure survived as a masonry wall, F513, 600mm in width, which survived to a height of 3.26m OD. The wall had two keyed in lengths, forming an angle in the northwest. A metalled floor surface, F543 survived at 3.18m OD within the structure and the deposits below consisted of the dump deposits described above.

Western structures

The three buildings depicted on Rocque on the corner of Bow lane and Phoenix Street were located outside the trench underneath the ESB substation. The reduction of this area was not monitored by the writer.

Rocque depicts a stable or warehouse to the north of these buildings, fronting onto Bow Lane. The western wall of *Structure D*, F533 was located within the trench at 2.70m OD along with a return to the northwest. This wall was constructed from calp limestone blocks and was 500mm in width. It was recorded over a length of 1.8m at the bottom of the trench within a narrow construction cut, F534. The return enclosed an area of cobbling, F519, which was located at 1.96m OD and was laid on F522, a metalled surface laid on the dump deposits below. This constitutes an exterior surface to the building and its western extent was truncated by later disturbance. This was in turn sealed by a 50mm deposit of fine lime mortar. The interior of the structure was not recorded and it is possible that the earlier rough cobbled surface, F539 remained in use.

A sequence of deposits was recorded to the west of Structure D (F533) and the F535 masonry wall, some of which were truncated by the site clearance. A deposit of silty/soddy material, F537 extended back against F533 and was sealed by the metalled surface F522 described above. This was in turn sealed by F528 and F529, both truncated deposits containing building rubble.

Central area

The central area of the site, defined by the masonry walls F510 to the west and F533 to the east, would appear to have continued as a dumping ground during this period. Some

additional occupation was recorded which might relate to the construction of the adjoining houses. The continued dumping here throughout the eighteenth century contributed to the rise and fall in ground levels between Bow Street and the lower end of Smithfield, which was still evident before the excavation commenced.

The nature of the dump deposits recorded was similar in all respects to the main deposit, F512, which has already been discussed. The finds from the sequence of dump deposits F547, F561, F562 and the F508, F564 and F567 deposits are discussed in the specialist report below. The individual deposits were separated in most cases by thin deposits of lime mortar, such as F565, which separated the F564 deposit from the F508 deposit above, which was in turn sealed by a mortar deposit, F509. This may have undertaken to consolidate the ground for the dumping of the next deposit, as much as to disguise the smell, which may well have been quite unpleasant.

The remains of a cobbled surface relating to this phase, F505, were recorded in patches to the east of Structure C and would appear to seal the final deposit of dump material. This was generally 3.5m in width and appeared to run alongside Structure C under the extent of the later F501 surface, which led north from Phoenix Street.

5.4.4 ***Discussion of Phase II***

The remains of the buildings recorded on the Phoenix Street frontage conform to the type of foundations associated with gable-fronted Dutch Billys, which was probably the most common type of house in Dublin until the construction of the large urban Georgian estates towards the end of the century. The structures on Phoenix Street were quite narrow, probably only two bays wide, with a brick superstructure constructed over substantial stone foundations of calp limestone.

The presence of deep dump deposits below necessitated the construction of a side buttress on the eastern side of Structure B immediately prior to the construction of Structure C. The builders of Structure A on the other hand surmounted the problem by constructing a deep basement, which was not bottomed during the excavation.

The large yard depicted on Rocque continued to serve as a dump for some of this period. Due to the constricted area, it is likely that the material might have been deposited there temporarily before being carted off elsewhere in the city. The reclamation works along the mouth of the Liffey during this period used domestic refuse to infill the areas behind the new quay walls. Such material was recorded by the writer monitoring services for the *Luas* at the junction of Abbey Street and Liffey Street and more recently by Abi Cryerhall behind Sir John Rogerson's Quay.

5.4.5 ***Phase III, nineteenth-century occupation***

By the publication of the first large scale town plan edition of the Ordnance Survey in 1847, most of the 1756 yard had been built upon and the archaeological evidence from this phase deals with these buildings and associated construction work (Figure 35).

Nineteenth-century structures (Figure 36)

Structures B and C continued in use during this period, with a small part of Structure A remaining on the 1847 town plan. The evidence for floor levels and general occupation levels within these structures was removed by the late nineteenth-century development of the site. Structure D and the three buildings at the corner of Bow Lane were also demolished before 1847 and replaced with a yard with lean-to sheds along the northern, eastern and southern sides. Evidence for this activity was truncated by twentieth-century disturbance.

Structure E was located along the Phoenix Street frontage to the east of Structure C. Its rear wall, F507 incorporated an arched gateway through from Phoenix Street to access a large cobbled yard, F501 to the rear. The cobbles extended through the gateway presumably out onto Phoenix Street.

A series of pits relating to the construction of Structure E were recorded to the north of F507, cutting the F512 dump deposit below. An oval pit, F517, measuring 1.2m by 1.1m and 350mm in depth was filled with the remains of a lime mortar mix. A large rectangular pit, F516, measuring 1.6m by 1.1m with a depth of 500mm was located beside it, against the F507 wall. This was filled with building rubble suggesting a mid nineteenth-century date. A third pit, F511, was timber lined and measured 1.75m by 1m

with a depth of 600mm. It was also filled with a mixture of lime mortar and loose soil and may have been a pit where mortar was stored prior to use in the construction of Structure E.

The F507 wall was similar to the other walls recorded over the site, having foundations of roughly coursed calp limestone with a brick superstructure. The construction cut, F546 was filled with F545, a mixture of loose mortar and the dump material from the deposits below. An earlier construction cut and fill (F550/F551) were recorded at the western end of the wall and may have related to an earlier wall, which was built upon later. The surviving wall was 700mm in thickness and recorded over a length of 8m east of the entrance at a surviving height of between 3.6m OD and 4.1m OD (Plate 29). The entrance through was 2.7m wide and a 800mm western extent abutted the eastern wall of Structure C, F510.

Although no interior walls survived within Structure E, a series of mortar deposits was recorded in a *sondage* to the south of F507 below the F531 cellar backfill. The deposits, F524 and F527 were thin (20mm-40mm) layers of lime mortar, which sealed the dump deposits below at 2.8m OD. They possibly constitute interior floor surfaces but may have been laid to seal the dump below. There was no indication of a wall delineating the eastern extent of the F501 surface on the interior of the F507 wall.

Two brick out-houses were constructed on the northern side of F507. The earliest, F503, appears on the 1847 map while the second, F504, a little to the east is absent. Both structures however have identical dimensions and constitute the foundations of outdoor dry latrines.

The F501 cobbled yard to the rear of Structures E and F (Plate 30) was set into F502, a loose deposit of soil and mortar. This sealed a patchy dump deposit F506, which appeared to be upcast from the deposits below. Both F502 and F503 appear to have been laid deliberately as a bedding for the cobbled yard. A drain ran along the centre of the yard, defined by larger, more elongated cobbles and it returned out towards Phoenix Street under the building.

The eastern end of the trench was mostly disturbed by twentieth-century construction. A series of brick walls, F544 would appear to relate to the lean-to sheds depicted on the 1876 edition of the Ordnance Survey (Figure 37). One of these was constructed directly over the F540 well.

5.4.6 *Discussion of Phase III*

The sequence of building on the Phoenix Street and Bow Lane frontages is well documented in the various editions of the Ordnance Survey (Figures 35, 37 and 38). They did not survive the industrialisation of the area in the nineteenth century and were eventually replaced by an industrial structure with walls of mass concrete, which took over the gardens to the rear as well as the street frontages. The construction of this building necessitated the later use of concrete piles as underpinning as a result of the deep dump deposits below.

The identities of the inhabitants of Structures B and C (Nos. 3 and 2 Phoenix Street) can be extrapolated from the 1851 Dublin City Census; Thomas Barden resided in No. 3 and a Mark Bannon in No. 2. Structure F had, by this stage, been incorporated into the large building east of the gateway.

By the publication of the 1907-1908 edition of the Ordnance Survey, the site had become completely built upon and the earlier structures replaced with two buildings constructed in a new material, concrete (Figure 38).

6 General discussion

6.1 The excavation of Tram Street and Phoenix Street only recovered evidence for the initial 1500mm under the surface. There were consequently no deposits excavated which pre-dated the mid-seventeenth century. The excavation nonetheless succeeded in recording deposits, which, in the normal course of events would be mechanically removed to earlier levels.

The results of the excavation can be summarised as follows. On Tram Street, four phases of archaeological activity were identified: Phase I related to post-medieval reclamation work and was characterised by the presence of large dumps of river gravels and garden soils; Phase II related to the late seventeenth- and early eighteenth-century domestic occupation of the site, with walled gardens backing on to the metalled laneway transecting the site. It was under one of these gardens on the north side of the lane that the skeleton was recovered. Phase III included the further consolidation of the laneway and the early industrialisation of the area. Phase IV was characterised by the upper levels of solidified foundry waste, which covered most of the site and twentieth-century disturbance, which took the form of massive concrete foundations.

On Phoenix Street, three phases of occupation were identified: the first and second phases both recorded dumping activity, which was late seventeenth- and eighteenth-century in date; evidence for the second phase consisted of the foundations of early eighteenth-century buildings, the cellars of which truncated the upper levels of the dump deposits below, along with a well associated with a property on Phoenix Street. The final phase consisted of the masonry walls of nineteenth-century buildings and an associated cobbled surface to the rear.

6.2 The excavation did record the transformation of an early modern suburb of the medieval city from a residential quarter into an industrial one and thus into the modern period. This transformation manifested in several ways: evidence was recorded of the progression from the use from domestic wells to the provision of a municipally developed piped water supply; the pottery assemblage ranges from high quality imports from the Rhineland and England from the early period of the site's development, to the local, mass-produced black and red earthenwares of the nineteenth century; unfortunately the marked change of use of the area as an industrial concern resulted in some truncation of the deposits below.

The recovery of human remains on Tram Street from a deposit dating to the middle of this period of transition is perhaps an indicator of the social change brought about by the transformation. The skeleton was recovered from a garden area depicted on Rocque's 1756 map and was probably buried there because of its proximity to St. Michan's. Soon after the burial the garden became part of the plot belonging to the foundry and any memory of the burial was presumably extinguished, as the site developed into an industrial zone.

6.3 The transformation is well documented on the cartographic record, with the continuity between Rocque and the first edition of the Ordnance Survey being particular evident. The spatial development of the site is a good example of the process first identified by M.R.G. Conzen in the 1950s and synthesised in his monograph, *Alnwick, Northumberland: A Study in Town-Plan Analysis*, (Institute of British Geographers Publications, No. 27, London, 1960). Here, he analysed the development of the urban morphology by dividing it into three formal spatial components, the *town plan*, *land use pattern* and *building fabric*. From an analysis of this tripartite division, assisted by field survey and cartographical research, he developed the burgage cycle theory, which identified the gradual building over of medieval plots from their earliest depiction on cartographical sources, through to their later development, where the buildings would be demolished or rebuilt and extended to the rear within the plot. This process often involved the accumulation of several plots into a larger whole, which in many instances was a function of the industrialisation of the study area. The cycle would then continue with the demolition of all the buildings within the accumulated plots for the eventual redevelopment of the area.

6.4 That the development of the Tram Street and Phoenix Streets plots follows this pattern is obvious from both the archaeological and the cartographical evidence. In the early medieval period the area would have been occupied by a shallow flood plain behind the north bank of the Liffey and probably remained susceptible to flooding until the quay wall as depicted on Speed was constructed prior to 1610. The formal development of the wider area at either side of what is now Church Street was presumably instigated initially by the location of the ford and later the bridge to the southeast, with initial building on the site pre-dating the houses depicted on Speed in 1610 (Figure 2). These were presumably of cage work construction and their plots probably extended from the Hammond Lane frontage back to the boundary of St. Michan's.

By the publication of Brooking's map in 1728 (Figure 4), the laneway excavated in Tram Street formed the rear of the Hammond Lane plots and assisted the development of the area to the north. The small extension of the laneway to the north is not diagrammatic, as it is depicted on Rocque's map thirty years later.

Rocque's map shows the further development of the plots at either side of the laneway, with the only residential occupation evident at the Bow Lane end (Figure 5). The buildings fronting onto the lane are all hachured to indicate that they are either industrial or that they functioned as stables. As there was little evidence recorded to suggest the presence of the latter, it is likely that the foundries, which existed here from the 1830s onwards, had developed earlier to the rear of the house plots on Hammond Lane and that the laneway to the rear, may itself have developed to access these workshops.

The Ordnance Survey suggests that during the first half of the nineteenth century, that development of the area was slower, with little rebuilding evident on the northern side of the laneway. As the century progressed, the open spaces evident on both Rocque and the first edition were gradually filled up, as both foundries expanded. The Hammond Lane Foundry experienced a greater amount of growth and by the 1907-1908 edition of the Ordnance Survey, had expanded across the laneway to the precinct walls of St. Michan's.

Immediately after this period, Maguire and Paterson expanded their own business to the north of Hammond Lane and took over virtually the whole area within the rectangle formed by St. Michan's, Church Street, Hammond Lane and Bow Lane. This resulted in the wholesale demolition of much of the building fabric, along with the construction of a new office accommodation along the Hammond Lane frontage. This building was itself demolished in 2002 to make way for the redevelopment of the site south of the *Luas* line.

The land use pattern can be subsequently be examined as progressing from a primarily residential function, with garden areas to the rear presumably supporting domestic fowl and livestock with a certain amount of cultivation, to an industrial one, which developed from proto-industrial units located over the garden plots. These small industries amalgamated into the larger foundries, which in turn, were part of the wider industrial development of the area in the nineteenth century.

Nothing of the early, seventeenth-century, built fabric of the area survived within the areas excavated. The development of the laneway and the rebuilding of the boundary walls do however demonstrate a progression in the quality of the bricks used, as one would expect with the gradual implementation of the building regulations from the mid-eighteenth century onwards. The wholesale use of the local calp limestone as the main building material right through until the end of the nineteenth century is a common occurrence in Dublin, where, unlike in other industrial cities, brick tended to be used more in the residential quarters of the city.

6.5 The Phoenix Street site, on the other hand, demonstrates the continuity from the medieval into the post-medieval period in the form of the large dump deposits that were excavated underneath the nineteenth-century buildings. While medieval dump deposits were not excavated in the trench itself, they were recorded on Phoenix Street itself when monitoring of services works resulted in the recording of a large medieval cesspit or series of cesspits. Several sherds of medieval pottery were recovered from the trench fill and a large cattle horn was recovered. The pits have survived underneath the street but appear to have been removed by later building behind the street frontages.

The 1468 decree forbidding the disposal of refuse outside the Newgate and ordering its disposal in the ‘holles and pittes’ at the end of Hammond Lane (Gilbert 1889-1922, i, 329) is possibly the reason why this area west of Bow Lane is depicted as undeveloped on Speed’s map. The area obviously remained a dumping ground through to the middle of the eighteenth century with only some of the street front plots developed by 1756.

A similar sequence of development in the shape of infilling and amalgamation of residential plots continued throughout the nineteenth century and resulted in the Phoenix Street frontage being occupied by just two large buildings by the turn of the twentieth century. The façade of the eastern building was in a relatively new material, mass concrete, which was later used again to underpin its back wall in the form of concrete piling.

The archaeological evidence suggests that the cellars of the eighteenth-century domestic buildings truncated the upper levels of the post-medieval dump deposits below.

Surprisingly, the upper level of the medieval deposits under the adjacent street was 1.5m higher than the upper truncated level of the later dump deposits on site.

6.6 In conclusion, the results of both excavations have recorded evidence from a part of Dublin and a period of its history, which have not received enough attention from either the historian or the archaeologist. An examination of the apposite volumes of the *Calendar of Ancient Records of Dublin* undertaken for this report has demonstrated the wealth of information available in printed form relating to the social and historical development of this small area over the seventeenth and eighteenth centuries. From an archaeological perspective, this part of the city has a long documented history of human settlement, little of which has entered the archaeological record. Hopefully the continued development in the area will provide further opportunities to examine the earlier archaeology of Oxmantown, while consolidating further our knowledge of the post-medieval period.

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Franc Myles
Margaret Gowen & Co. Ltd.

Appendix 1

Skeletal Report

Tram Street
Dublin 7

By
Laureen Buckley

5th November 2001

1 Introduction

1.1 An area excavated to the east of Bow Lane revealed a laneway extending to the east; a burial lying with its head to the west was found just north of the laneway.

1.2 The burial had been cut in the last century by a massive concrete foundation. Most of the right side of the burial was missing although some fragments were recovered. There was no obvious grave cut or coffin present and the skeleton appeared to lie in a slight depression in cultivated garden soil dating to the early eighteenth century.

1.3 Although the burial had not been examined in sit by the osteoarchaeologist, it appears from the photographs that the head had originally been slightly propped up as the cervical vertebrae seemed to be raised and the skull had rolled back slightly from the atlas vertebrae.

2 Description of burial

2.1 The calvarium of the skull was almost complete with the occipital, both parietal, both temporal and frontal bones present. The base of the skull and sphenoid bones were missing but the left side of the maxilla and left zygomatic bone were complete. Only a fragment of the left ramus remained from the mandible. The vertebral column was complete but the atlas and the thoracic vertebrae were fragmented. Twelve ribs remained from the left side and seven remained from the right. The manubrium of the sternum was complete and most of the sternal body was also present.

2.2 The left scapula was virtually complete and the left clavicle was complete. Only the medial half remained from the right clavicle and the remainder of the right arm was missing. The left arm was complete with the humerus, radius and ulna present. The capitate, hamate, scaphoid and trapezoid remained from the left wrist, all the metacarpals from both hands were present and there were ten proximal, six middle and five distal hand phalanges.

2.3 The pelvis included the left ilium and part of the left ischium, part of the right ilium and the complete right ischium and pubis. The sacrum was virtually complete but was fragmented and the coccyx was complete.

2.4 The left femur and tibia were complete but the proximal end was missing from the left fibula. Only the left talus, calcaneus and cuboid remained from the tarsal bones, all the metatarsal of the left foot as well as the right first and second metatarsals were present and there were five proximal foot phalanges.

3 Age and Sex

3.1 The sex was determined by morphological examination of the pelvis. The sciatic notches on both sides were narrow although the right was slightly wider than the left but they were definitely of the male type. Only the right pubic bone was complete and the lack of ventral arc, small sub-pubic angle and lack of sub-pubic concavity are all strong male characteristics. However the long bones of this individual were unusually gracile for a male. The muscle insertions were very weak particularly the linea aspera of the femur and soleal line of the tibia. Also the diameters of the heads of the femur and the humerus as well as the epicondylar width of the distal femur were all very small and well within the definitely female range. If the pelvis had been missing, examination of the long bones would have indicated that this individual was a female. However the pubic bone is the most reliable bone for sexing and it is strongly male. Therefore it must be concluded that this individual is male.

3.2 The epiphyses at the ends of the long bones were all fused although faint traces of the epiphyseal line could be seen at the proximal and distal femur and proximal tibia. The anterior iliac crest was fused but the posterior part was unfused. Fusion of the iliac crest is usually complete by 23 years in males. The sternal end of the clavicle, which usually fuses by 25 years, was unfused. The burial is therefore that of a young adult aged 17-25 years.

4 Stature

4.1 The living stature of this individual was estimated using the regression equations of Trotter and Gleser (1952, 58). These gave a height of 159cm. This is remarkably small even if the individual had been female and is outside the normal range of stature found in males in most other Irish sites.

5 Dentition

							C	C	C						
C					P	P	P	P	P	P	P	P			
17					21	22	23	24	25	26	27	28			

P – tooth present in socket

C - caries

Attrition: there was a slight amount of wear with formation of secondary dentine on the first and second molars and none on the third molars. The incisors had a moderate amount of wear.

Calculus: there were moderate deposits on the buccal surfaces of the anterior teeth and considerable deposits on the buccal surfaces of the second premolar and first left molar. Deposits were light on the other two molars and moderate on the lingual surface of the first molar.

Caries: there was a small cavity on the distal surface of the left second molar, 27, at the cervical margin and a small cavity on the mesial surface of the adjacent third molar also at the cervical margin. This type of interstitial caries is typical of post-medieval populations. The first molar had a very small cavity on the distal surface of the crown at the occlusal edge. The loose right second molar also had a small cavity on the mesial surface at the cervical margin. In addition the root of another tooth was present, possibly a molar root, which had a carious cavity on the superior surface, probably indicating that the crown of the tooth, had been completely destroyed by caries.

Periodontal disease: there was a moderate degree of recession around the premolars and molars and slight recession around the anterior teeth.

Hypoplasia: linear enamel hypoplasia was noted on the incisors, canines and second left molar. In addition there were pits of hypoplasia on the lateral incisor and canine and third molar. The episodes had occurred between 1-5 years and during adolescence.

6 Skeletal Pathology

6.1 Os acromiale was present in the left scapula. In this condition the epiphysis at the acromion fails to unite with the spine of the scapula and remains as a separate bone. The condition is asymptomatic unless osteoarthritis develops at the false joint surface in later life.

6.2 Schmorl's nodes, small herniations of the inter-vertebral discs, were present in the lower four thoracic vertebrae and the upper four lumbar vertebrae. There presence usually indicates strenuous labour particularly during late childhood or adolescence.

6.3 The head of the left rib was slightly porous and may indicate that the epiphysis had failed to fuse.

6.4 There was a supercondyloid process in the left humerus which although is a normal non-metric variant, may have caused some discomfort for this individual as it was 8mm long and may have protruded into muscle tissue.

7 Summary and Conclusions

7.1 This partially disturbed skeleton appeared to be the skeleton of a young adult male. However the size of the bones and lack of strong muscle insertions are female features and it is unusual to find such definitely female type bones with a definitely male pelvis. This individual had suffered during early childhood and again during adolescence with acute infections or nutritional deficiency as several teeth were affected by enamel hypoplasia. Despite his weak musculature there is evidence that the individual had undertaken some heavy work during adolescence with Schmorl's nodes present in several vertebrae. The only other features noted were os acromiale in the left scapula and a supercondyloid process in the left humerus, which may have caused some discomfort.

7.2 The teeth had some slight wear despite the relatively young age of the individual. Three of the in situ molars and two loose teeth were affected by caries. The caries was of the type usually found in post-medieval populations.

7.3 Oral hygiene was poor in this individual with most teeth having moderate to heavy calculus deposits. The calculus may have led to the development of periodontal disease, which had already led to some resorption of the alveolar bone.

Laureen Buckley
5th November 2001

Appendix 2

Analysis of the Plant Remains

Tram Street
Dublin 7

By
Penny Johnston
Margaret Gowen and Co. Ltd.

November 5, 2001

1 Introduction

A series of samples were taken during the excavation of post-medieval occupation layers at Tram Street in Dublin city. These were sub-sampled and assessed for the quality of plant remains that were found in each sample. In total, nine samples were examined. Seed remains, preserved by both organic means and by carbonisation, were recovered from four samples. These were identified and the results of identification and analysis are presented below.

2 Methodology

The samples were collected as bulk soil and these were then sub-sampled. Soil volumes ranging from one to two litres were wet sieved using meshes measuring 2mm, 500μm and 250μm. Sorting was carried out using a low powered binocular microscope. Identification of the contents of each sample was completed with the aid of a modern seed comparative collection. After extraction and identification, the species list was compiled and is presented in Table 1. Scientific and English common names are used in the table, but in this text, the common names will be used to avoid confusion.

3 Results

3.1 *General*

3.1.1 The low frequency of seeds recovered from the samples was disappointing and the majority of samples contained no archaeobotanical material whatsoever. Four samples stand out, however. A sample from F43 (a chamber pot) contained many fruit seeds that were preserved by the organic conditions within the ceramic. A few carbonised seeds were found in contexts 64 and 27 and several well-preserved grains of cereals were found in context 7. The latter sample also contained the remains of non-carbonised seeds.

3.2 *Waterlogged Seeds from Context 43*

3.2.1 This sample was taken from inside a chamber pot; this appears to have been left in the basement without being cleaned out. At least some of the deposit that was cleared from the pot contained seeds that are clear indicators of the presence of cess. These include a range of fruit species, the "fruit salad" effect, identified by Greig (1982) as an indication of a cess origin for archaeobotanical material. In addition, a large quantity of fly puparia was recovered, suggesting of foul conditions. The preservation of the material in this sample was unusual, as it appears that many of the seeds, and certainly the fly puparia, were partially mineralised. This may be due to the presence of urine in the chamber pot, which, combined with some exposure to the air, sometimes has the effect of mineralising organic material.

3.2.2 The seed remains recovered from this sample indicate that the last user of the chamber pot had a diet rich in fruit. Blackberry/Raspberry seeds dominated the sample, but seeds from plums, grapes and strawberries were also recovered. A few weed seeds were found in the sample (nine in total) these may well have been consumed with the fruit, or within any stewed fruit or fruit compote that was made. In addition, these seeds, being windborne, can easily make their way into most deposits and they are commonly recovered from samples taken from urban material.

3.2.3 Blackberry and raspberry are both native plants and the seeds are commonly recovered from archaeological sites where there is organic preservation, in particular from faecal material. Strawberry is also often found in archaeological material,

although not as commonly as the blackberry or raspberry. This plant is also native in the wild, although Geraghty (1996) suggests that it was cultivated in Ireland from the later medieval period. Plums were, according to linguistic evidence, introduced into Ireland in the Early Christian period (Kelly, 1998). However, the majority of plum remains from archaeological sites has been recovered from sites dating to the later medieval period (Geraghty, 1996 and Johnston, 2001). Grapes were found in archaeobotanical assemblages from Dublin from the later medieval period (Mitchell, 1987). Therefore, the recovery of all these fruit species has many precedents in medieval, and even pre-medieval, Irish archaeobotanical material. However, they were presumably more readily available by the post-medieval period.

3.3 *Carbonised seeds from Context 64*

3.3.1 Two carbonised seeds were found in the sample from context 64. These had very poorly preserved outer surfaces. The majority of this surface damage was probably primarily due to changes in humidity and various mechanical processes (Hubbard and al Azm, 1990). For example, it is likely that the plant remains were present on site for some time before their final deposition and burial; they may have been burnt rubbish that was scattered in the area prior to its gradual accumulation into the deposit. Of the two grains found, one could not be identified and has therefore been classified as an indeterminate cereal. The other grain was identified as hulled barley.

3.4 *Carbonised grains from Context 27*

3.4.1 Four carbonised cereal grains were recovered from a sample taken from context 27. These were all wheat, apart from one oat grain. The preservation conditions in this sample were quite good; encrustation and abrasion were reasonably low, ensuring that all the grains found could be identified to genus level. However, there was some fragmentation of the grains, possibly due to disturbance of the deposit and these seeds may, like those from context 64, have been re-deposited.

3.5 *Carbonised grain and weed seeds from Context 7*

3.5.1 The seeds recovered from this sample were dominated by cereal grains, although several weed seeds were also found. The weeds included seeds from the dock family and the plantain family, common weeds of arable land and waste places. The

preservation conditions in the sample are poor, as there is a lot of distortion in the grains, although there is only limited encrustation and abrasion. This suggests that the distortion is due to high charring temperatures, rather than to re-deposition. The cereal grains recovered included wheat, oat and one grain of barley. Some of the cereals could not be classified due to the distortion of the grains.

3.6 *Waterlogged seeds from Context 7*

3.6.1 In addition to the carbonised grains and weeds recovered from context 7, several un-carbonised seeds survive in this deposit. These were either preserved by the organic conditions of the deposit, or they are modern inclusions. The different preservation methods make it clear that the carbonised seeds and the waterlogged seeds are not present in the archaeological deposit as the result of the same process, and they should be considered separately, as different events. The waterlogged seeds are from sedge plants, which grow in damp waterlogged conditions. All are from the same variety of sedge plant, indicating that these were deposited when the context was exposed. However, it was unclear whether this contamination occurred in the past or during excavation.

4 Conclusion

4.1 The archaeobotanical assemblages from the nine samples examined from Tram Street were often disappointingly poor. Carbonised cereals were found in three samples. In two of these, the charred seed remains were badly preserved and appear to be present in the sample as a result of secondary or even tertiary re-depositions. However, the relatively large amounts of carbonised grain recovered from Context 7 were interesting. The good quality of the surface of the seeds indicated that they are probably from a primary deposit, although distortion in many grains suggested that they were carbonised at relatively high temperatures. Another sample from a chamber pot contained seeds from faecal material, which provided very direct dietary evidence. However, despite the preservation of seeds in these samples, assemblages of post-medieval date are infrequently analysed for environmental remains; the focus of archaeobotanical research is generally on earlier material. There are, therefore, very few comparative assemblages available for the Tram St. material.

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Penny Johnston

5th November 2001

Appendix 3

Clay Building Material

Tram Street
Dublin 7

By
Joanna Wren

November 5, 2001

1 Introduction

1.1 There are 686 sherds of clay building material in this assemblage, with the majority dating to the seventeenth and eighteenth centuries. Only three percent of them are from medieval tiles, all found amongst residual material in post medieval contexts. A further eleven percent are from ridge tiles, wall tiles and floor tiles ranging in date from the late sixteenth to the eighteenth centuries. Finally by far the largest group of sherds, some eighty-six percent, are from pantiles dating from the late seventeenth to the eighteenth century

Methodology

2.1 The tiles were sorted according to fabric and then subdivided on the basis of form. They were weighed as the most accurate way of assessing quantity. The total numbers and weights of each form of tile were then recorded according to context. Within each grouping all percentages given below refer to weight. Any sherds, which had distinctive decorative motifs, had their individual numbers noted.

2.2 Amongst the medieval and early post medieval material some fabrics have been numbered as follows. D(ublin) T(ile) fabrics one to four include examples of roof tiles and some floor tiles. These have been identified previously (Wren 1997, 149) and the first three were thin sectioned (McCorry 1997, 153-4). All four fabrics are probably of local origin.

One of the medieval floor tiles (01E229:1:992) is made in fabric numbered D(ublin) T(ile) T(ype) fabric nine with the word 'type' being used to allow for the possibility that this tile is an import. Finally D(ublin) T(ile) F(abric) ten is a post medieval ridge tile ware, which once again is probably produced locally. There are also some imported tin-glazed earthenware fabrics, North Devon Gravel Tempered wares and some later red earthenwares. The material is divided for discussion on the basis of these fabric groupings and then ordered roughly chronologically. Dating is based on a combination of contextual information from this site and comparative material from other assemblages.

3 DT1 Fabric (Roof Tile)

3.1 Only one sherd was found made in this fabric, part of a roof tile (01E229:122:31). At Cornmarket in Dublin, 2853 sherds from kiln wasters in DT1 fabric were recovered (Wren in Hayden forthcoming). The majority of these wasters were from pegtiles with only a small number of ridge tiles represented and the sherd from this assemblage probably comes from a pegtile.

3.2 The contextual information from the Cornmarket site indicates that the material is waste from a kiln, in the vicinity, in production, in the first half of the thirteenth century. Evidence from other Dublin sites reinforces an early thirteenth century date for material in this fabric. This sherd (091E229:122:31) was found amongst residual material in a layer containing post medieval pottery.

4 DT2 Fabric (Ridge Tile)

4.1 The assemblage includes one sherd of ridge tile (01E229:562:21) made in DT2 fabric. This fabric is commonly found on Dublin sites and was used to produce a wide variety of crested ridge tiles, roof finials and louvers. The various crest forms, which have occurred in DT2 fabric, indicate that it began production in the early thirteenth century and continued in use to the late fourteenth century (Wren 1987). This sherd came from a dump deposit, which contained a mix of medieval and post-medieval pottery.

5 *DT3 Fabric (Floor Tiles and Ridge Tiles)*

5.1 There are fifteen sherds from tiles made in DT3 fabric in this assemblage. These include thirteen from floor tiles and two from ridge tiles. Building material in this fabric is common on Dublin sites (Wren in McCutcheon forthcoming) and is usually dated to the late fourteenth and fifteenth centuries for typological and contextual reasons (Wren 1987, 68). One of the ridge tiles (01E229:511:3) is decorated with an incised curving line on its exterior face. Ridge tiles with this type of decoration, made in this fabric, usually have 'boxed' crests. These are a standardised sub-rectangular crest with a straight back and front and a sub - triangular profile. The valleys between the crests are usually flat and when viewed from the side it appears that a series of 'box' shapes have been cut from the ridge.

5.2 Tiles with boxed cresting and double line decoration are found frequently on sites in Dublin (Wren in Lynch and Manning forthcoming) Drogheda (Wren 1987, 68) and Kildare (Manning 1981, 2) and dated to the late fourteenth to fifteenth century on contextual and typological grounds. In Drogheda in particular kiln wasters of this type of ridge tile and late fourteenth to fifteenth century floor tiles were found at the Magdalene Street kiln (Campbell 1985, 48). Boxed crested tiles were also found at Kells Priory Co. Kilkenny (Wren in Clyne forthcoming) and Washington Street Cork (Wren in McCuthcheon forthcoming). These examples were made in DT3 fabric and probably arrived at the sites as a result of casual trading. One unique example from Kells Priory combines the double incised line decoration with a low cockscomb crest.

5.3 There are seven sherds from floor tiles with line-impressed decoration. Four different motifs are complete enough to be identified (see chart). All of these have been found at other Dublin sites. Two (L18,L76) also occurred in Kildare Cathedral, and one (L76) in Drogheda. Among these motifs three (L18,L73,L76) are of a type used to form contigous circles across a floor and dated to the fourteenth century (Eames and Fanning 1988, 42). The vine scroll motif (L11) also dates to the fourteenth century.

5.4 Another four sherds are from plain square floor tiles. These were used in with the decorated varieties in building the overall floor pattern. Finally two sherds (01E229:179:5 ;01E229:148:1) are decorated with a relief motifs (R10;R59 variant). The decorative techniques used on these tiles have a date range from the fifteenth to the early sixteenth

centuries (Eames and Fanning 1988, 44). In combination with the dates for the fabric (DT3) a fifteenth century date is likely for both tiles.

6 *DT4 Fabric (Ridge Tile)*

6.1 One sherd of ridge tile (01E229:561:12) was made in this fabric. This piece was decorated with double incised curving lines on its exterior face. Ridge tiles in this fabric are common on Dublin sites (Wren in McCutcheon forthcoming) and they usually have boxed cresting and incised line decoration like those made in DT3 fabric. They are normally found in post medieval contexts with potsherds (R. Meenan pers comm) made in similar fabrics. The combination of late medieval form and post medieval fabric makes a date in the early sixteenth century likely for these tiles.

7 *DTT9 Fabric (Floor Tile)*

7.1 There is only on sherd of tile made in this fabric. It is hard and coarse oxidised to a dark red with frequent inclusions of quartzite and unidentified red stones. This sherd (01E229:1:992) is decorated with motif which includes an armed figure in Renaissance style (Eames and Fanning 1988,49). The motif was recorded before amongst a group of tiles which Fanning feels may have been imported from the Continent in the sixteenth century. The dark red colour of this sherd and the lack of mica inclusions in the fabric may suggest that this piece is also imported. It is impossible to verify this however without thin-section analysis to determine wether the clay could be of local origin. The sherd was found amongst modern rubble during surface clearance.

Motif Number	Fabric	Description	Sites where other examples were found
L11	DT3	Vine scroll border with lines at edges	Dublin, St. Patrick's Cathedral
L18	DT3	4-tile elaborate foliage in cusped circle	Dublin, Christchurch Cathedral St. Audoen's Church Kildare Cathedral
L73	DT3	Double outlined 4-foil with quarter circles	Dublin, St. Mary's Abbey St. Saviours Friary
L76	DT3	4-tile foliate spray within circular band with alternate 4-foils and Is	Dublin, Christchurch Cathedral Kilmainham St. Audoen's Church St. Mary's Abbey St. Nicholas Church St Patrick's Cathedral St. Saviours Friary Kildare Cathedral Drogheda, Dominican Friary
R10	DT3	Raised lines 4-tile chevronny band enclosing foliage	Dublin, High Street St. Mary's Abbey Winetavern Street Drogheda, St. Mary's Church
R59v	DT3	4-tile circular band with 4-foils enclosing foliage	Dublin Castle Great Connell Priory Bective Abbey Newtown Trim Cathedral
R67	DT9	Strapwork and oval framing armed Renaissance style figure	Artane Church Howth Church Monasterboice Church Inchbofin Priory

8 Tin-Glazed Earthenware (Floor Tiles)

8.1 There are two sherds of floor tile made in earthenware fabrics and decorated with tin-glazing. The fashion for floor tiles with tin-glazed decoration was introduced into England from Flanders in the mid-sixteenth century. They continued to be made there until the mid-seventeenth century (Horne 1989, 13). Most of the examples of these floor tiles found in Ireland are probably imported from England.

8.2 One of the sherds from this assemblage (01E229:8:47) was made in a light pink fabric tin-glazed with a geometric design in polychrome using green, blue and ochre. Similar tiles found in England have a date range from the later sixteenth to the early seventeenth century. The second sherd (01E229:8:48) was made in a white creamy fabric and tin-glazed in blue and white. Here the motif was too fragmented to describe. Tiles using simple blue and white glaze have been found in London where they date to the early seventeenth century (Horne 1989, 15-16). Both sherds were found in an ash deposit (8), which contained post medieval pottery.

9 DT10 Fabric (Ridge Tiles)

9.1 There are twenty-nine sherds from ridge tiles made in this fabric. It is hard and rough and completely oxdised to a brick pink. It has frequent visible inclusions of quartz and unidentified grey stones, and the tiles are covered with a brown lead glaze. The fabric resembles DT3 ware and was probably made using a similar local clay source. These sherds came from ridge tiles with low cresting, nine having the remains of flat topped cresting surviving and two low cockscomb crests with one stab mark below each crest. Nine of the tiles were decorated with curving lines on their exterior faces, eight incised and one thumbed.

9.2 Tiles with this form of very low flat topped cresting combined with curved line decoration are a later variation on the boxed crested tile. Examples in similar fabric were recorded by the writer from Dublin Castle (Wren in Lynch and Manning forthcoming) from contexts dating from the seventeenth to the early eighteenth centuries. Tiles with similar low flat-topped crests were found amongst post medieval material in excavations in Galway City (Wren in Fitzpatrick L and Walsh P, forthcoming).

9.3 Examples of the low cockscomb crested tiles with the individual stab marks below each crest are known from St.Peters Church in Waterford (Wren 1997,363) Tintern Abbey Co. Wexford (Wren in Lynch forthcoming), Dublin Castle (Wren in Lynch and Manning forthcoming) and Cornwall (Thomas1968,84). The comparative evidence to date suggests a seventeenth century date for their manufacture in Ireland.

10 Tin-Glazed earthenware (Wall Tiles)

10.1 There are sixteen sherds from wall tiles made in creamy white earthenware. One of these (01E229:43:10) is completely covered with purple glaze and probably dates to the nineteenth or twentieth century. The other fifteen are decorated with tin-glazed designs. Only nine of these are complete enough to identify their motifs.

10.2 One sherd (01E229:8:46) is from a Dutch figure tile. It is decorated in blue with a small longhaired figure, wearing a wide-brimmed feathered hat, dressed in loose clothing and carrying some type of lance or crook. The figures' garb suggests this tile dates to some time in the seventeenth or eighteenth century.

10.3 Another sherd (01E229:8:43) shows two buildings and some fencing in blue. This is likely to be from a landscape tile. The glaze has run suggesting the tile is English in origin (Horne 1989,21). Tiles with landscape scenes were produced in London, Bristol and Liverpool during the early to mid-eighteenth century. Six sherds (01E229:7:295-299) come from the same tile decorated with a flower vase set in a hexagonal border. This closely resembles tiles made in London in the early to mid-eighteenth century.

10.4 Finally one sherd (01E229:42:8) is decorated in manganese purple, showing a naked woman reclining and a clothed man standing in a landscape setting (Plate 5). The manner in which the design is executed resembles that of the biblical tiles produced in Holland and England in the later eighteenth century. The tile however, seems to represent a couple involved in sexual intercourse and may therefore be erotic in origin. It is nevertheless incomplete and many naked figures are depicted in biblical scenes such as Susannah and the elders and the Good Samaritan. Indeed breasts are shown on ***drawings*** of both sexes. It is equally possible that the man is simply standing before the naked figure and that the tile depicts a particular biblical tale.

The style of the ox-head corner motifs resembles some found on Dutch tiles and this piece may have been imported from Holland. While the style is unusual on English tiles however, it is not unknown and therefore a Dutch origin cannot be definitely be established for this tile.

11 Red Earthenware (Floor Tiles)

11.1 There are ten sherds are from plain undecorated floor tiles made in red earthenware fabrics which probably date to the post medieval period. Three of these are from a distinctive variety of tile, biscuit fired prior to glazing, and covered with an amber glaze over a white slip. This kind of tile has been found previously on excavations in Waterford City and they may be seventeenth century imports from the Netherlands (Wren 1997,360). The others are simply made in sandy red earthenwares sometimes covered with lead glazing and could date to anytime in the seventeenth eighteenth or possibly nineteenth centuries.

12 North Devon Gravel Tempered Fabric (Ridge tiles)

12.1 There are eleven sherds from ridge tiles made in gravel tempered fabric and imported from North Devon. Two sherds have low cockscomb crests and three are decorated with thumbed lines along their horizontal edge. This is the usual type of cresting and decoration found on ridge tile made in this fabric. One sherd (01E229:25:254) is unusual in being the first example known to the writer of an uncrested ridge tile made in North Devon gravel tempered fabric. These sherds were found in contexts containing post medieval pottery. Gravel Tempered ridge tiles are common on Irish sites and usually date to the seventeenth and eighteenth centuries.

13 Sandy Red Earthenware (Pantiles)

13.1 There are 593 sherds are from pantiles. These are a post-medieval refinement of the curved and flanged tiles. Both tiles are combined in one and they are attached to the roof with their long edges overlapping. All the sherds are made in sandy red earthenware fabrics. They probably include examples of both locally made and imported tiles. Pantiles are also common on Irish sites and usually date to the seventeenth and eighteenth centuries. All of the sherds in this assemblage were found amongst post medieval material.

13.2 Finally there are four other tiles made in hard sandy red earthenware fabrics. These include three uncrested ridge tiles and on pantile made in a modern form. All four tiles are probably nineteenth or twentieth century in date.

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Appendix 4

Faunal Remains

Phoenix Street
Dublin 7

By
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3rd December 2002

1 Introduction

1.1 An assemblage of faunal bone was recovered during excavations carried out on this site and at Tram Street (see McQuade 2002). The majority of bone from Phoenix Street was recovered from features dating from the late seventeenth to the eighteenth century but a small sample was recovered from nineteenth century levels. All of the bone was recovered by manual digging, which, in the absence of sieving, probably resulted in some bias towards the collection of larger fragments. However, a number of small pieces and some fish bone (4) were recovered, the latter is currently awaiting analysis and is not discussed in this report.

2 Methodology

2.1 Material was identified with reference to the comparative skeletal collection at the Natural History Museum, Dublin. Attempts to differentiate between the post-cranial remains of sheep and goat were based on an examination of humerus and metapodial bones (after Boessneck 1969; Prummel and Frisch 1986). This indicated that sheep were definitely present, but none of the bone could be confidently identified as goat and it has been assumed, therefore, that the majority of remains are of sheep. Fragments of rib and vertebra were not identified to species and have not been included in fragment counts. Cranial bone was highly fragmented, often by modern breaks, which have been excluded from fragment counts.

2.2 The minimum number of individuals (MNI) was calculated on the most frequently occurring bone from each species, taking into account left and right sides. Aging data was based on stages of epiphyseal fusion and tooth eruption (after Silver 1971). Where relevant, stages of mandible wear were also recorded (after Grant 1984). Measurements were taken where possible, using the guidelines outlined by von den Driesch (1976) and these are presented in the supplementary tables (tables 8-14). Shoulder heights of animals were calculated where appropriate using the formulas published by von den Driesch and Boessneck (1974) and those devised for dog (Harcourt1974).

3 Analysis

3.1 *Phase One Mid – late seventeenth century*

The earliest phase of activity recorded on the site has been dated to the late seventeenth century, when the site probably functioned as a depot for sorting and dumping domestic waste (Myles 2002). Most of the faunal bone was recovered from dump deposits: (F512, F515. F538, F552, F558, F569), but a small amount came from a wall (F520) and a mettaled surface (F539). Analysis of this material suggests that it comprises not just domestic waste, but also that from other activity carried out in the area.

The condition of the bone was generally good, with only a few examples of gnawed (2), weathered (3), or charred (3) pieces.

Table 1 - Total fragments and minimum number of individuals identified in Phase one

Species	Cattle	Horse	Sheep/Goat	Pig	Dog	Cat	Rabbit
Antler/horn	4						
Cranium	15	1	2				
Mandible	16		18	3			
Atlas	4		1				
Axis	2		1				
Scapula	31	1	32				
Humerus	14		17	3	1	1	
Radius	14		25	1	1		
Ulna			21	1	1		
Metacarpal	15	1	8		4		
sacrum	2						
Pelvis	18		23	1			3
Femur	17		13				2
Patella	1	1					
Tibia	19		45	3			
Astragalus	7	1	4				
Calcaneus	9	1	3	1			
Naviculocuboid	2	1					
Metatarsal	20	1	19	1			
carpal/tarsal	1	3					

Species	Cattle	Horse	Sheep/Goat	Pig	Dog	Cat	Rabbit
Phalanx 1	21						
Phalanx 2	3			2			
Phalanx 3	4						
Total	239	11	232	16	7	1	5
MNI	7	1	11	2	1	1	2
Unid	47						

The remains of domestic mammals dominated the assemblage (table 1), but the bones of bird, fish (2) and a stray human phalange (F512) were also identified. The bird bones were identified to mallard duck (2 mni: 1), turkey (1), goose (7 mni: 2) and fowl (12 mni: 2). No remains of rat were recovered, but its presence, which would be expected on this type of site, is evident from gnawing on some of the bone.

Only one intact horn core was recovered from this phase and this was from a long horned breed of cattle (table 8). In the absence of complete bones, it was not possible to calculate shoulder heights for this species, but measurements on three metacarpals indicate that they were from females. A range of slaughter ages is apparent for cattle (table 2). Complementing the evidence from epiphyseal fusion, the presence of immature cattle under six and fifteen months respectively has been determined from mandibles in which the first (1) and second molars (3) had not erupted. Given the fragmented condition of the bone it was only possible to calculate the mandible wear stage for one animal (35).

Table 2 - Phase One Cattle ages (excluding phalanges, all of which were fused) (after Silver 1969)

Bone	Approx. age at Fusion	Unfused	Fused	%Fused
Scapula, pelvis	7 – 10 months	2	16	89
Radius p, humerus d.	12-18 months	4	8	67
Tibia d, metacarpal d.	24-30 months	5	4	44.4
metatarsal d	27-36 months	2	4	67
Calcaneus, femur p	36-42 months	8	3	27
Radius d., ulna, tibia p, femur d, humerus p.	42-48 months	5	10	67

Two sheep metacarpals allowed for the calculation of estimated withers' heights of 0.57m and 0.65m. Although the consumption of young lamb is evident from bone fusion data, it would appear that the majority of sheep/goat were over 28 months when slaughtered (table 3). This slaughter age pattern is confirmed by data from tooth eruption and mandible wear stages of 34-39.

Table 3 - Sheep ages in phase One, (after Silver 1969)

Bone	Approx. age at Fusion	Unfused	Fused	% Fused
Scapula, radius p.,humerus d., pelvis	8-10 months	3	10	77
Tibia d., metatpodia.	18-28 months	9	31	77.5
Calcaneum, femur p., ulna, radius d,	28-36 months	10	14	58.3
Humerus p., femur d., tibia p.	36-42 months	10	10	50

A small, unfused tibia was from a juvenile pig and a mandible with a partially erupted second molar was from an animal under 13 months of age, but the remaining bones were from older animals. A distally fused, but proximally unfused, humerus is from a pig between twelve and 36 months of age. None of the bones are from pigs over 36 months of age, and, with the exception of the juvenile bone, most may be described as meat waste.

The horse bones are butchered 2 and broken, with the result that little can be said about the size (table 11) and age of the animal/s from which they are derived. The dog bones were from a mature individual with an estimated shoulder height of 26cm.

3.2 *Phase Two*

The majority of bone from this period also comes from features identified as dumps (F508, F536, F537, F547, F553, F561, F562, F564). Some bone was incorporated into rubble deposits (F528, F575), the fills of construction cuts (F534, F554, F556, F568, F572) and the backfill of a cellar (F531) (Myles 2002). No distinct trends could be discerned from the analysis of bone from the latter features and, for purposes of discussion, all of the material from this phase has been grouped together.

Most of the bones in this assemblage were identified to cattle and sheep, which are present in almost equal numbers (table 4). In addition to the dominant species, small mammal, bird and fish bones were also present. These were identified to cat (1), hare (3 mni: 2), rabbit (1) fowl (13 mni: 4), goose (13 mni: 2), mallard (5 mni: 2) and turkey (3 mni: 1). The fish bones (2) have not been identified to species, but there were several oyster shells (16).

Table 4 - Total fragments and minimum number of mammals identified in Phase two

Species	**Cattle**	**Horse**	**Sheep/Goat**	**Pig**	**Dog**
Antler/horn	20				
Cranium	17		10	4	1
Mandible	8		21	2	
loose teeth				3	1
Atlas	4		2		
Axis	2		3		
sacrum	1		2		
Scapula	17		21		
Humerus	10	1	28	5	2
Radius	16		36		2
Ulna	4		2	2	2

Species	**Cattle**	**Horse**	**Sheep/Goat**	**Pig**	**Dog**
Metacarpal	16	1	16	1	
Pelvis	34	1	38		2
Femur	16		25	5	4
Tibia	24	2	33		1
Astragalus	2		1		
Calcaneus	21		6		
Naviculocuboid	1				
Metatarsal	29	1	21		
carpal/tarsal	2				
Phalanx 1	20		7	1	
Phalanx 2	5				
Total	269	6	272	23	15
MNI	12	2	13	3	2
Unid	40				

Few of the bones were complete and as a result it was only possible to determine withers' heights for three cattle, these ranged from 1.18m -1.24m. Measurements on intact horn cores indicate that they are from short horned cattle (table 8), however, there were many cut pieces of horn core, which may be from long horned breeds, since it is likely that longer horns were selected for working. Of the eight cattle metacarpals on which the distal breadth could be measured only one was from a male (table 8). There was little data for tooth eruption or mandible wear stages in the material from this level and consequently, age analysis is concentrated on stages of epiphyseal fusion (table 5). Despite the presence of immature cattle, fusion data suggests that most animals were over 24 months when slaughtered, with some being kept for over four years.

Table 5 - Cattle ages, in phase two

Bone	**Approx. age at Fusion**	**Unfused**	**Fused**	**%Fused**
Scapula, pelvis	7 – 10 months	3	26	89.6
Radius p., humerus d.	12-18 months	2	6	75
Tibia d, metacarpal d.	24-30 months	4	19	82.6
metatarsal d	27-36 months	1	15	93.7
Calcaneus, femur p	36-42 months	9	9	50
Radius d., ulna, tibia p, femur d, humerus p.	42-48 months	9	7	43.7

The age slaughter pattern indicates that although some lamb was eaten, most sheep were kept into maturity (table 6). A number (5) of intact tooth rows with the third molar in wear allowed for the calculation of manidble wear stages, which ranged from 36-49.

Table 6 - Sheep ages phase two

Bone	**Approx. age at Fusion**	**Unfused**	**Fused**	**% Fused**
Scapula, radius p,humerus d., pelvis	8-10 months	6	75	92.6
Tibia d., metatpodia.	18-28 months	7	41	85.4
Calcaneum, femur p., ulna, radius d,	28-36 months	10	24	70.6
Humerus p., femur d., tibia p.	36-42 months	8	18	69.2

All of the pig bones on which aging data was available were from animals of meat producing age, i.e.. between 12 and 36 months old. This is evident from unfused femora (3) and distally fused but proximally unfused humerii (3).

The horse remains on which the stages of fusion could be determined are from mature animal/s with a fused distal tibia representing an individual over 24 months of age.

With the exception of a small, unfused dog femur, the cat and dog bones are fused, indicating that they are from mature individuals. Shoulder heights of 31.2cm to 48.2cm have been calculated for the dogs.

3.3 ***Phase Three***

A comparatively small sample of bone was recovered from nineteenth century levels (table 7). This was recovered from deposits (F503, F506, F526 Pit fills F511, F516), and the fills of construction cuts (F545, F550).

Table 7 - Total fragments and minimum number of individuals, phase three

Species	**Cattle**	**Sheep/Goat**	*Hare*	**Goose**
Total	20	23	1	2
MNI	2	3	1	2
Unid	2			

Aging data for cattle is provided from an unfused scapula from a calf under ten months and a fused ulna, from a mature animal over 42 months. Sheep have been aged by a distally unfused humerus and a distally fused tibia and radius, which are from animals under ten months, and over eighteen and 28 months respectively. It must be stressed that this data is based on a very small sample and should therefore be interpreted with caution. No pathological bone was recovered from this phase.

4 *Butchery*

4.1 Butchery marks were frequently noted on bones of the three main domesticates. Despite the number of skull fragments recovered, most had been the result of modern breaks and few displayed butchery marks. However, a few sheep skulls had been cut longitudinally, presumably for removal of the brain.

4.2 Longitudinal chops present on many vertebrae indicate that some carcasses were suspended prior to disjointing. Chop marks had evidently been created by heavy knives, used to facilitate disarticulation and sectioning of carcasses. Such chops were executed on the major limb bones, the necks of scapulae and on the ascending ramus of mandibulae. In at least on instance a cattle mandible had been further divided by a cut through the diastema. Chop marks related to disarticulation were also noted on pelvis bones of cattle and sheep/goat.

4.3 Many rib fragments of large and medium sized mammals had been chopped or broken and many also bore knife marks created by the removal of meat from the bone. Some of the breaks and chops, for example those on cattle metapodia, were probably created to facilitate marrow extraction. Cuts made by a saw were occasionally noted, for example on sheep scapula. Fine knife marks indicative of filleting were noted on sheep/goat scapulae. Fine knife marks were also noted on the distal shaft of a hare humerus and on some of the goose and turkey bones. Other cuts, for example those on a number of proximal metapodia from sheep/goat, may have been created while skinning these animals.

4.4 Two of the horse bones showed butchery marks. A metacarpal with a series of chops on its proximal shaft was recovered from seventeenth century levels and a tibia with fine knife marks on its distal shaft came from eighteenth century levels. These marks indicate either that meat from these animals may have been eaten, or feed to dogs, or that horse hides may have been utelised **(reading).**

5 Bone and Horn working

5.1 Two worked bones were recovered from samples of seventeenth century date. A sheep metatarsal, the distal shaft of which was flattened and smoothed had been pared on the midshaft, suggesting that it may have served as handle. A shaft fragment of longitudinally split cattle metatarsal, with a series of knife marks on its proximal and distal ends, is probably a waste piece from bone working. Another two worked fragments of cattle metatarsal were recovered from eighteenth century levels. One with had been sawn in a longitudinal direction and the second had had a circular piece sawn from its anterior midshaft.

5.2 Sawn fragments of cattle horn core indicate that horn was being worked in the area during the seventeenth and eighteenth century. Horn-working waste has also been recorded from contemporary levels at Tram Street and the nearby site of Inns Quay (Butler 1988, 315).

6 Pathology

6.1 Four pathological bones were recovered from the first phase. Two cattle metatarsals showed anomalies. The first displayed pitting on the proximal articulation and on the second exostosis was evident along the lateral side of the proximal articulation. Exostosis was also noted on the proximal end of a first phalange. A sheep/goat tibia with an anomaly on its distal right shaft may be a healed fracture. A single anomaly was noted on bone from the eighteenth century, this was a *dog* tibia with exostosis and eburnation, symptoms of joint disease such as arthritis, on its proximal articulation.

7 Discussion and Conclusions

7.1 This assemblage comprises waste created during the seventeenth-nineteenth centuries and provides information on the species of value to the occupants of this area. The majority of bone fragments were identified to the main meat producing species. Of these, cattle and sheep far out numbered pig, and are present in almost equal numbers, but with slightly more sheep represented (tables 1 and 4). Similarly low numbers of pig were recovered from late seventeenth/early eighteenth century bone assemblages recovered from Tram Street (McQuade 2002), Inns Quay, Dublin (Butler 1988) and Charlotte's Quay, Limerick (McCormick 1984). The skeletal representation of the main meat producing species (tables 1,4,7) and the presence of butchery marks on many of their bones indicates that these were discarded at various stages from primary butchery through to food consumption. Butchered horse bones (2) may indicate that this species was eaten on occasion. The presence of hare, rabbit, bird and fish bones, some of which showed evidence for butchery, indicates that these species contributed to the meat diet. Fish are likely to be underrepresented, given the retrieval methods employed on site.

7.2 Fragments of chopped horn and worked bone indicate that animal products were being processed in the vicinity and it is likely, that the remains of bird, rabbit and hare may constitute waste from processing of feather down and pelts. The remains of cats and dogs consist of articulated and isolated examples, indicating that at least some had been or re-deposited from their primary contexts, as might be expected in the types of fills and dumps identified on this site.

7.3 Metrical data is limited, but attainable measurements are comparable to those recorded from contemporary sites (McCormick 1984; Butler 1988; McCormick and Murphy 1997). These reflect the general increase in the size of domestic animals resulting from improved breeding in the post-medieval period.

7.4 The remains of immature cattle and sheep are present in each of the periods identified on site, but are outnumbered by those of mature individuals. However, data is too limited to provide a more detailed profile of the age or sex of the animals represented in each phase.

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Key to abbreviated metrical terms (after von den Driesch 1976)

Bd: Breadth of distal

BFd: Breadth of Facies articularis distalis

BFp: Breadth of Facies articularis proximalis

BG: Breadth of glenoid cavity

BP: Breadth of proximal

BT: Breadth of trochlea

CD: Circumference of diaphysis

Dd: Depth of distal

Dp: Depth of proximal

GB: Greatest breadth

GH: Greatest height

GL: Greatest Length

GLl: Greatest length lateral

GLC: Greatest length from caput

GLm: Greatest length, medial

GLP: Greatest length of glenoid process

Glpe: Greatest length of peripheral half

LA: Length of acetabulum

LAR: Length of acetabulum on the rim

LG: Length of glenoid cavity

SD: smallest breadth of diaphysis

Table 8 - Measurements of Cattle bone in mm (after von den Driesch 1976)

Bone	Date	Measurement	Min	Max	Mean	Number
cranium	18C	GB occip condyles	93	108	100.5	2
cranium	18C	GB paraoccipital process			147	1
cranium	18C	GB foramen magnum	37.7	38.2	38.2	2
cranium	18C	H foramen magnum	36.8	39.4	39.4	2
horncore	L17C	outer curvature			343	1
horncore	18C	outer curvature	110	152	131	2
horncore	L17C	max diam	52.4	67.5	59.5	3
horncore	18C	max diam	44	65.5	54.8	11
horncore	19C	max diam			61.5	1
horncore	L17C	least diam	46	53	49.5	3
horncore	18C	least diam	34.4	57.3	45.14	11
horncore	19C	least diam			47.7	1
horncore	L17C	basal circum	160	232	184.4	6
horncore	18C	basal circum	133	193	160.9	11
horncore	19C	basal circum			178	1
scapula	L17C	GLP	62	77.5	66.9	6
scapula	18C	GLP	55.2	82	63.04	5
scapula	19C	GLP			75	1
scapula	L17C	LG	50.8	65.4	56.7	6
scapula	18C	LG	49.9	70	54.9	5
scapula	19C	LG			66.1	1
scapula	L17C	BG	39.3	55	46.2	6
scapula	18C	BG	40.6	49.5	46.9	4
scapula	19C	BG			50	1
humerus	18C	Bd	68.3	71.3	69.8	2
humerus	18C	BT	62	67	64.5	2
radius	L17C	Bp	66.6	77	72.1	4
radius	18C	Bp	71.8	85.4	76.6	4
radius	L17C	BFp	60.5	72	66.3	3
radius	18C	BFp	66.8	80.1	70.4	4
radius	L17C	Bd			67.5	1
radius	18C	Bd			74	1

Bone	Date	Measurement	Min	Max	Mean	Number
radius	L17C	BFd			63.4	1
radius	18C	BFd			69.4	1
ulna	L17C	BPC			41.7	1
metacarpal	L17C	Bp	63	54.1	58.55	2
metacarpal	18C	Bp	50.4	70.9	59.4	3
metacarpal	L17C	Bd	54.6	57	55.2	3
metacarpal	18C	Bd	48.9	68	54.5	10
pelvis	L17C	LA			67.3	1
pelvis	18C	LA	59	67.5	63.1	3
pelvis	18C	LAR	43.6	54.3	50.2	3
tibia	18C	Bp			79.3	1
tibia	L17C	Bd			61.8	1
tibia	18C	Bd	53.3	61.4	58	7
tibia	19C	Bd			53.8	1
austragulus	L17C	GLl	60.7	76	68.35	2
austragulus	19C	GLl			65.3	1
austragulus	L17C	GLm	56.7	69.5	63.1	2
austragulus	19C	GLm			61.7	1
austragulus	L17C	Bd	37	47	42	2
austragulus	19C	Bd			36.9	1
austragulus	L17C	Dm	33.6	41	37.3	2
austragulus	19C	Dl			36.5	1
calcaneus	L17C	GB	30	41	34.3	4
calcaneus	18C	GB			38	1
calcaneus	L17C	GL	113.8	131.8	119.5	4
calcaneus	18C	GL			117.2	1
naviculocuboid	L17C	GB	54.7	50.4	52.55	2
naviculocuboid	18C	GB			55.6	1
naviculocuboid	19C	GB			52.8	1
metatarsal	L17C	Bp	39.8	55.2	46.46	5
metatarsal	18C	Bp	39.4	56.9	45.5	8
metatarsal	19C	Bp			45.5	1
metatarsal	18C	GL	218	224	223.3	3
metatarsal	18C	SD	23	33.1	26.4	4

Bone	Date	Measurement	Min	Max	Mean	Number
metatarsal	L17C	Bd	46.8	49.8	48.4	4
metatarsal	18C	Bd	44.9	63.4	52.16	15
phalange 1	L17C	Bp	25	34.2	28.2	17
phalange 1	18C	Bp	23.7	33.2	28.8	21
phalange 1	19C	Bp			31.7	1
phalange 1	L17C	Glpe	47.5	71.3	55	17
phalange 1	18C	Glpe	49.7	66	57.7	21
phalange 1	19C	Glpe			68.7	1
phalange 1	L17C	SD	21	28.7	24.2	17
phalange 1	18C	SD	20.8	31	24.5	21
phalange 1	19C	SD			27.2	1
phalange 1	L17C	Bd	23.1	33	26.9	17
phalange 1	18C	Bd	23.4	32.5	27.3	21
phalange 1	19C	Bd	21.4	30.5	25.95	2
phalange 2	L17C	Bp	27	32.4	29	3
phalange 2	18C	Bp	26.4	33.2	29.9	5
phalange 2	L17C	GL	36.2	41.5	38.8	2
phalange 2	18C	GL	38	44.3	42.1	5
phalange 2	L17C	Bd	21.8	29.6	25.7	2
phalange 2	18C	Bd	21.3	26	24.12	5
phalange 3	L17C	Ld	49	50.3	49.7	3
phalange 3	L17C	DLS	72.6	65	68.8	2
phalange 3	L17C	MBS	19.3	20.4	20.5	4

Table 9 - Measurements of sheep/goat bone in mm (after von den Driesch 1976)

Bone	Date	Measurement	min	max	Mean	Number
cranium	18C	GB occipital condyles	42	47.8	44.9	2
cranium	18C	GB foramen magnum	19.8	24.3	21.9	3
cranium	18C	H foramen magnun	16.9	17.8	36.25	2
scapula	17C	GLP	28.8	28.5	34.3	18
scapula	18C	GLP	29.6	39.7	35.6	17
scapula	19C	GLP			39.5	1
scapula	17C	LG	21.6	21	26.9	18
scapula	18C	LG	22.7	32	27.8	16
scapula	19C	LG			30.4	1
scapula	17C	BG	17.3	17.8	21.1	18
scapula	18C	BG	18.7	28.8	22.9	16
scapula	19C	BG			24.2	1
scapula	17C	DHA			149	1
scapula	18C	SLC	17.4	25.1	24.3	14
scapula	19C	SLC			25.2	1
humerus	18C	Bp	40.5	44.1	42.4	3
humerus	18C	GL	151.5	143.5	147.5	2
humerus	18C	SD	12	15.8	13.8	4
humerus	17C	BT	25.7	33.6	29.31	10
humerus	18C	BT	24	36.7	30.3	19
humerus	19C	BT	25.7	28.5	30.35	2
humerus	17C	Bd	26	26.8	30.5	10
humerus	18C	Bd	24.4	38.6	30.9	19
humerus	19C	Bd	25.7	30.4	28.05	2
radius	17C	Bp	27.2	25	23.3	4
radius	18C	Bp	24.7	23.8	23.5	2
radius	19C	Bp	26.5	35.2	31.4	10
radius	17C	BFp	28	34.7	28.2	15
radius	18C	BFp	23	38.2	31.1	15
radius	19C	BFp	24.4	35.5	26.5	2
radius	18C	SD	15.9	33.6	29	2
radius	18C	GL	139.5	155	152.5	5

Bone	Date	Measurement	Min	Max	Mean	Number
radius	17C	BFd	20.8	29.8	25.4	6
radius	18C	BFd	21	28	25.3	13
radius	17C	Bd	23.7	32.4	25.7	6
radius	18C	Bd	23.2	33.1	27.8	12
ulna	17C	SDO	21.8	25	23.3	4
ulna	18C	SDO	23.2	23.8	23.5	2
ulna	17C	LO	41.7	45.8	42.7	3
ulna	18C	LO	42.2	42.2	40.4	2
ulna	17C	BPC	19.8	19.4	19.6	3
ulna	18C	BPC	21.2	15.4	18.3	2
metacarpal	17C	Bp	20.9	24.1	22.5	2
metacarpal	18C	Bp	32.3	38.2	31.1	15
metacarpal	17C	GL	118.5	136.8	127.65	2
metacarpal	17C	SD			12	1
metacarpal	18C	SD	15.3	16.2	15.6	3
metacarpal	17C	Bd	23.1	29.5	27.5	5
metacarpal	18C	Bd	24.1	33.2	27.8	11
metacarpal	19C	Bd			31.4	1
pelvis	17C	LA	26	35	30.5	16
pelvis	18C	LA	26.3	35.2	30.9	12
pelvis	19C	LA			28.5	1
pelvis	17C	LAR	21	34.3	24.6	15
pelvis	18C	LAR	21.4	29.9	24.8	13
pelvis	19C	LAR			21.8	1
pelvis	17C	LFO	35.1	37.9	36.5	2
pelvis	18C	LFO	37.7	37.1	38.1	4
pelvis	19C	LFO			35.5	1
pelvis	17C	SB	11.3	11.4	11.35	2
pelvis	18C	SB	9.8	11.2	10.6	3
pelvis	18C	SH	16	17.7	16.5	3
femur	17C	Bp	47.8	53	50.4	2
femur	18C	Bp	52.3	46.6	48.1	3
femur	18C	GL			197.8	1
femur	18C	GLC			191.6	1

Bone	Date	Measurement	Min	Max	Mean	Number
femur	18C	SD			19	1
femur	17C	Bd	36	43	37.3	5
femur	18C	Bd	29.3	44	39.1	9
tibia	17C	Bp	39	45.7	42.1	3
tibia	18C	Bp	43.3	47.7	42.1	3
tibia	18C	SD	16.2	17.2	16.5	3
tibia	17C	Bd	21.7	33.7	26.9	18
tibia	17C	SD	13.6	17	15.7	3
tibia	19C	SD			12.7	1
tibia	18C	Bd	21.5	34.3	27.5	16
tibia	19C	Bd	22.2	30	26.1	4
austragulus	18C	GLl	33		33	1
austragulus	19C	GLm	30.5		30.5	1
austragulus	17C	Bd	21.8		21.8	1
austragulus	17C	Dm	19.6		19.6	1
austragulus	19C	Dl	18		18	1
calcaneus	18C	GB	18.9	24.8	20.9	5
calcaneus	18C	GL	53.4	72	62.1	5
naviculocuboid	17C	GB			22.7	1
phalange 1	18C	Bp	12	14.9	13.4	6
phalange 1	18C	Glpe	38.7	46	41.2	6
phalange 1	18C	SD	10.2	10.7	10.9	6
phalange 1	18C	BD	12.6	12.2	12.6	6
phalange 2	17C	Bp			11.3	1
phalange 2	17C	GL			22	1
phalange 2	17C	BD			24.6	1

Table 10 - Measurements on Pig bone in mm (after von den Driesch 1976)

Bone	Date	Measurement	min	max	Mean	Number
humerus	17C	Bd	34.8	35	34.9	2
humerus	18C	SD			14.8	1
humerus	18C	Bd	33.5	37.7	35.9	3
radius	17C	BP			31.5	1
ulna	17C	SDO			25.6	1
ulna	17C	BPC			19.7	1
ulna	18C	BPC	18.8	20.8	19.8	2
radius	17C	BP			31.5	1
metacarpal	18C	Bp			16.7	1
pelvis	17C	LA			29.6	1
pelvis	17C	LAR			24.2	1
pelvis	17C	SH			18.3	1
pelvis	17C	SB			10	1
pelvis	17C	SC			48	1
metacarpal	18C	Bp			16.7	1
calcaneus	17C	GL			90	1
calcaneus	17C	BG			24.7	1
phalange 2	17C	Bp			12.8	1
phalange 2	17C	GL			22	1
phalange 2	17C	Bd			14.7	1

Table 11 - Measurements on horse bone, in mm (after von den Driesch 1976)

Bone	Date	Measurement	min	max	Mean	Number
humerus	18C	BT			76.8	1
humerus	18C	BD			81	1
metacarpal	18C	Bd			43.8	1
metacarpal	18C	Dd			26.8	1
tibia	18C	Bd	60.9	69.8	65.4	2
tibia	18C	Dd	36.2	42.8	39.5	2
austragulus	L17C	GH			68.5	1
austragulus	L17C	GB			75	1
austragulus	L17C	LmT			67.8	1
austragulus	L17C	BFd			62	1
os tarsi centrale	L17C	GB			56	1
os tarsale 3	L17C	GB			52.6	1
metatarsal	L17C	Bp			54.3	1
metatarsal	18C	Bp			51	1
metatarsal	L17C	Dp			49.6	1
metatarsal	18C	Dp			48.7	1

Table 12 - Measurements on dog bone, in mm (after von den Driesch 1976)

Bone	Date	Measurement	Min	Max	Mean	Number
humerus	17C	Dp			26	1
	17C	GL			84.9	1
	17C	GLC			79	1
	17C	SD			7	1
	17C	Bd	21.9	25.2	23.5	2
radius	18C	Bp	11.8	16	13.9	2
		GL	74.5	99.8	87.1	2
		SD	8	12.3	10.2	2
		Bd	5.2	18.7	23.9	2
ulna	17C	SDO			11.5	1
		DPA	13.8	15.1	14.3	1
		BPC	4.2	5.1	4.6	2
pelvis	18C	LAR			16.3	1
pelvis	18C	SB			7.2	1
pelvis	18C	SH			13	1
pelvis	18C	GL			116.3	1
femur	18C	Bp	23	28.3	25.6	3
femur	18C	DC	11.6	20.1	14.9	4
femur	18C	GL	103.5	195	136.8	4
femur	18C	GLC	127	196.9	150.5	2
femur	18C	SD	7.6	15	10.3	4
femur	18C	Bd	19	34.3	25	4
4tibia	18C	BP			25	1
tibia	18C	GL			13.1	1
tibia	18C	SD			9.7	1
tibia	18C	Bd			16	1

Table 13 - Measurements on cat bones, in mm (after von den Driesch 1976)

Bone	Date	Measurement	mm	mm
scapula	19C		12.8	
		SLC	11.8	
humerus		Bp	15	
		GL	92.8	
		SD	6	
humerus	17C	Bd	17.4	16.5
radius	19C	Bp	11	
		GL	89.3	
		SD	5	
		Bd	10.8	
ulna	19C	SDO		
		DPA		
		BPC		
pelvis	19C	LFO	18.7	
	19C	LAR	14.8	
	19C	GL	73.6	
	19C	SB	5.7	
	19C	SH	12	
femur	18C	Bp	18.3	
femur	18C	Dp	9.3	
femur	18C	SD	7	
tibia	19C	Bp	20	
tibia	19C	GL	11.8	
tibia	19C	SD	7.5	
tibia	19C	BD	14	

Table 14 - Measurement on bones of other species, in mm (after von den Driesch 1976)

Species	Bone	Date	Measurement	mm
hare	femur	18C	Bp	24
	femur	18C	BTr	21.5
rabbit	femur	18C	Bp	15.6
	femur	18C	BTr	13
	femur	18C	GL	79.5
	femur	18C	SD	6.4
	femur	18C	Bd	12.9

Appendix 5

Clay Pipes
Tram Street/Phoenix Street
Dublin 7

By
Margaret Gowen & Co. Ltd
Rebecca Boyde

1 Introduction

1.1 Excavations along the route of the proposed Luas line at the Phoenix St. site recovered a total of 248 clay pipe bowls, and 1103 clay pipe stem fragments. Out of the bowls, 183 were spurred and 32 were flat heeled. A further 3 spurred pipes and 4 flat-heeled pipes were decorated. Of the stems, there was one mouthpiece, which was decorated, and 5 other decorated stem fragments. None of the pipes were complete. There were also seven pipes without heel or spur, three of these were marked with the same stamp. The bowls were dated using Oswald's 1975 typology, and the date range of the majority of the pipes runs from the mid 17th century to the early 18th century. The earliest pipe identified is a small flat-heeled pipe dating from c.1580-1610 (562:251), and the latest are two spurred bowls dated to c.1810-1840 (562:30 & :32).

1.2 In the catalogue the bowls have been divided into six categories: plain spurred pipes, plain flat heeled pipes, decorated spurred pipes, decorated flat heeled pipes, pipes without spur or flat heel, and unknowns. The main division is between spurred and flat-heeled pipes. This refers to the protrusion on the base of the bowl, just where the bowl joins to the stem. A heel (a flat base) acts as a rest for the pipe when it is not being smoked, while a spur helps to balance the pipe while it is in the mouth (Lane, no date). This is further subdivided into plain and decorated pipes, in total there are seven decorated pipes. Also there are a number of pipes without spur or heel, pipes of this type were made for export to North America and Canada, and so are more common there than here (Oswald, 1975). A total of 6 decorated stem fragments were also recovered, one of which (559:48) was a mouthpiece.

2 Plain Spurred pipes

2.1 There are 183 pipes in this category. All are incomplete, and undecorated. Having identified the bowl types using Oswald's typology, a total of seven different bowl types can be identified within the assemblage. They range in date mainly across the mid-late 17th and early 18th centuries, with four bowls dated from after c.1740. Spurred pipe bowls similar to the pipes recovered from Phoenix St. were found during excavations in Longford St. Little, Dublin City (00E137), Davis Place, Dublin City (99E452), Temple Bar West, Dublin City (96E245), Waterford, and Cork.

2.2 The earliest bowl dates from c.1640-1660 (type G17), and is small and bulbous in shape. It can also be rouletted, this refers to the dotted line that is sometimes left on the lip of the mouth when it is removed from the mould, later on this feature became popular, and was deliberately added to the rim of the bowl. The second type is type G18, dating c.1660-1680. The size of the bowl increases from G17, but still is quite bulbous, and the spur also is slightly longer. G19 is the third type found in this assemblage, dating from c.1690-1710. The bowl here is longer still, and the sides are straighter. Type G19 and G20 overlap slightly chronologically, with G20 type bowls dating c.1690-1730, but G20 type bowls are slightly flared at the mouth, with thinner walls. Also the lip no longer slants downwards but is on a parallel line to the stem. Type G21 is the fourth type, and this is characterised by a thick stem and thick walls. The bowl also curves more in a forward direction than before. This type can be dated at c.1700-1740. Type G22 as well is represented in this assemblage, and dates from c.1730-1780. The bowl in this type is more elongated, and has finer, thinner walls. The final spurred type found at Phoenix St. is G24, this bowl type is smaller and thinner in regards to bowl size, stem thickness and spur size and dates to c.1810-1840. There are a further seven pipes which have been identified as spurred pipes, but which are too fragmentary to be dated using the typology.

3 Flat-heeled bowls

3.1 Considerably fewer flat-heeled bowls were found at Phoenix St., a total of 32 plain flat-heeled bowls were discovered, twelve of which were rouletted, with only another 3 decorated bowls. Still, there is a good variety in the assemblage, with 8 of Oswald's flat-heeled types identified. Similar pipes were recovered from excavations at Temple Bar West, Dublin City (96E245), Davis Place, Dublin City (99E452), Waterford, and Cork.

3.2 The earliest flat-heeled pipe dates from c.1580-1610, and is a bowl of type G3. This type has a small bowl which projects forward along with the foot, and has a thick stem. There are 3 bowls of type G4, dating from c.1600-1640. Typically, G4 bowls are quite small, with a pedestal type foot, and a narrow stem. The back of the bowl can be swollen, resulting in a bulbous appearance. The third type is G5, this is the most common type in the assemblage, and is an elongated, relatively large bowl shape with a moderately thick stem (c.1640-1660). There often tends to be rouletting on the lip of the bowl. The bowl type G7 is the second most common, with 5 pipes put in this category. It varies in size from small to large, and tends to have straight sides. It dates from around 1660-1680. Types G8 and G9 both date from c.1680-1710, and share an elongated bowl form. The sides of the G8 type however are straight, while the G9 type curves. 4 bowls of type G10 were discovered, this type has a narrow bowl, with thick, straight, upright walls, which are quite thick. The stem of this bowl type, which dates to c.1700-1740, is thicker than before. The final type in the assemblage is the G12 type. This dates to the mid 18th century, c.1730-1780, and has a wide mouth, tall, thin walls, a thinner stem, and a smaller, squarer base. There is only one example of this type in the assemblage.

4 Decorated bowls

4.1 There are 7 decorated bowls in the assemblage. All are incomplete, three are spurred, and four are flat heeled. Of the spurred pipes, one is just a stem fragment with no bowl and the other two are full bowls. As regards the flat-heeled pipes, one is a stem fragment with the heel, on which is stamped a crowned star, one is a half bowl, and the other two are complete bowls.

4.2 The bowl, 500:104, is the heeled half bowl. On the spur the coat of arms of the city of Gouda in Holland is faintly visible, and even more faintly, just above the Arms is the letter "S" in relief. On the base of the spur part of a stamp is evident, it is clearly the initial of the maker, but it is not possible to make out what the initial is, it may be a "P", "B" or a "T". The rim of the bowl is rouletted. This "S" mark also occurs on a pipe found during excavations in Waterford, and the letter "S" signifies that the pipe is *slegte*, or ordinary. This was a means of quality control imposed on the pipe makers of Gouda, so that standards of manufacturing quality were maintained in the industry. Some pipes were ordinary, some were better and some were worse. It is dated to c.1730-1780, and the Waterford pipe also dates to the 18th century.

4.3 All that remains of the pipe 561:197 is a small portion of the stem, with the flat heel and most importantly, its stamp. The stamp is a crowned star, enclosed in a circle, and the pipe is dated to between c.1640-1660. This is possibly Dutch influenced, as the crown is a very common component of Dutch makers stamps, for example the crowned L, or a crown above the makers initials, and was adopted by many pipe manufacturers in Britain and Ireland.

4.4 The bowl 572:9 is very small, bulbous, and flat heeled. There is also a line of milling on the rim. On the heel is stamped a flower motif – probably a marigold, and this also is a Dutch mark common in the 17th century. Typologically this was dated to the 1600-1640 period, and so fits well into the category.

4.5 The final flat-heeled bowl is 537:48. This is another small bowl, dating on the basis of its shape to 1660-1680. On the back of the bowl, facing towards the smoker, where it is most likely to be seen, are the makers initials – "N L" – enclosed in a semicircle. This may be an English stamp.

4.6 The first of the marked spurred pipes is a stem fragment (531:60), with just the spur remaining. On each side of the spur a small fleur-de-lys is stamped in relief. The fleur-de-lys is a common and popular motif on pipes in the 17th century, and can be incorporated into the makers stamp or it can occur on its own. It can be either on the spur, as with this stamp, on the stem, as it is on some pipes from Waterford, or it can also occur on the bowl.

4.7 The second spurred pipe is 575:41. It has a small spur, and is quite a small bulbous bowl. Stamped onto the back of the bowl is the number "18" enclosed in a semicircular medallion, with a small crown on the top of it.

4.8 The final decorated bowl is a large spurred bowl with a milled rim. The letters "RAOB" are stamped in relief above a pair of bull's horns. It is dated to the mid 1800's.

5 Pipes without base or spur

5.1 In all there are seven pipes, which have neither a spur nor a flat-heeled base. This type of pipe was fairly uncommon in Europe, and more likely to be found in North America and Canada. In form these pipes are similar to the basic shapes of the spurred pipes, the obvious difference being that there is no spur on the base of the pipe. Four of these pipes are unmarked, and date to the seventeenth, eighteenth and nineteenth centuries. 500:102 is a large, straight-sided bowl, dated to the 19th century and there is a similar example from the Christ Church and Skiddy's Castle excavations in Cork, which is also dated to the post-1800 period. It is dated to the 19th century. The pipe 500:111 also bears a superficial similarity to a pipe from the North Gate in Cork, though the Cork pipe is decorated while the Dublin pipe is not. The Cork pipe is dated to the late eighteenth century, and the Dublin pipe is typologically dated to 1780-1820, and so fits in with this date. There are another two plain unspurred bowls, both dating to 1640-1670.

5.2 Finally there are three marked pipes in this category. They are all large bowled, with straight sides, and one has a line of rouletting around the rim. They are all marked with the same stamp, implying they all come from the same manufacturer. It is a circular stamp, reading "PARNELL-PIPE-" around the inside circumference of the circle. There may also be a mark in the centre of the stamp, but it is too faint to make out if it is definitely a mark, or not. Because of the large bowl size, and walls, the pipes are dated to the mid to late 1700's.

6 Decorated stems

6.1 There are also six decorated stem fragments in the assemblage. Out of 1102 stem fragments in all, this is a surprisingly small proportion. Of the 6, one (559:48) is a mouthpiece, this fragment is highly decorated with a pattern of flowers and leaves in relief all the way up the stem. There is also a stem fragment, which is decorated, in the same pattern, which implies that the two fragments came from the same pipe. However the two pieces do not join together, and there is no other fragment to provide a missing link. Three of the stems are decorated with incised lines of dots and circles. One has two simple relief lines enclosing a slightly raised portion of the stem.

7 Wig curlers

7.1 Five wig curler fragments were recovered from the site at Phoenix St. Wig curlers were a by-product of the clay pipe industry and, as the name suggests, they were used to curl the hair on wigs. Sometimes, the ends of the curlers could be stamped with the makers mark, as a pipe would be, but this is not the case with the Phoenix St. curlers.

8 Contexts

8.1 The pipes were recovered from various contexts on the site: clearance rubble (F500), deposits (F512, F537, F559, etc.), fills (F531), dump layers (F547, F552), surfaces (F553, F576). The contexts, which yielded the highest number of pipes, were F537, F553 and F569. These, respectively, were a deposit, a metalled surface, and a dump layer. The area is depicted on Rocque's map of 1756, as an open space. It appears that over a period of time from the 17th century onwards the site was used as a dumping ground, and gradually the level of the land rose and levelled out, before it was built upon. This is corroborated by the dates of the pipes, which are mainly from the mid to late 17th century to early 18th century.

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Totals:	Plain spurred pipes	- 90
	Plain flat heeled pipes	- 63
	Decorated spurred pipes	- 7
	Decorated flat heeled pipes	- 9
	Unidentified	- 22
	Total Number of Bowls	- 191
	Decorated stem fragments	- 33
	Total stem fragments	- 682

Spurred pipes

F1 – Clearance rubble, Area A, PHASE V

1:1132 – Clearance rubble, Area A, Incomplete, bowl with stem fragment, spurred, G21, 1700-1740

1:1133 – Clearance rubble, Area A, Incomplete, bowl with stem fragment, spurred, milling, G16, 1610-1640

1:1139 – Clearance rubble, Area A, Incomplete, bowl, spurred, G19, 1690-1710

1:1140 – Clearance rubble, Area A, Incomplete, bowl with stem fragment, spurred, G16, 1610-1640

1:1142 – Clearance rubble, Area A, Incomplete, bowl, milling around rim, spurred, G17, 1640-1670

1:1146 – Clearance rubble, Area A, Incomplete, bowl sherd, spurred, G1690-1710

1:1147 – Clearance rubble, Area A, Incomplete, bowl with stem fragment, spurred, G21, 1700-1740

1:1149 – Clearance rubble, Area A, Incomplete, bowl with stem fragment, spurred, G17, 1640-1710

1:1150 – Clearance rubble, Area A, Incomplete, base of bowl, spurred, G22, 1730-1780

1:1151 – Clearance rubble, Area A, Incomplete, bowl with stem fragment, spurred, G17, 1640-1670

1:1154 – Clearance rubble, Area A, Incomplete, bowl, spurred, G22, 1730-1780

1:1156 – Clearance rubble, Area A, Incomplete, bowl, probably spurred, G16, 1610-1640

1:1157 – Clearance rubble, Area A, Incomplete, bowl sherd, spurred, early – mid 17th century

1:1158 – Clearance rubble, Area A, Incomplete, bowl, spurred, G16, 1610-1640

1:1159 – Clearance rubble, Area A, Incomplete, bowl with stem fragment, spurred, G18, 1660-1680

1:1161 – Clearance rubble, Area A, Incomplete, bowl, spurred, slightly bulbous, G16, 1610-1640

1:1163 – Clearance rubble, Area A, Incomplete, base of bowl with stem fragment, spurred, POSSIBLY G19, 1690-1710

1:1166 – Clearance rubble, Area A, Incomplete, bowl, spurred, G17, 1640-1670

1:1167 – Clearance rubble, Area A, Incomplete, bowl, spurred, G21, 1700-1740

1:1169 – Clearance rubble, Area A, Incomplete, bowl with stem fragment, spurred, G17, 1640-1670

1:1170 - Clearance rubble, Area A, Incomplete, bowl, spurred, G21, 1700-1740

1:1171 – Clearance rubble, Area A, Incomplete, bowl, spurred, G21, 1700-1740

1:1175 – Clearance rubble, Area A, Incomplete, bowl with stem fragment, spurred, G18, 1660-1680

1:1177 – Clearance rubble, Area A, Incomplete, bowl, spurred, G20, 1690-1730

1:1179 – Clearance rubble, Area A, Incomplete, bowl sherd, spurred, G21, 1700-1740

1:1180 – Clearance rubble, Area A, Incomplete, bowl with stem fragment, spurred, milling, G17, 1640-1670

1:1181 – Clearance rubble, Area A, Incomplete, bowl sherd, spurred, POSSIBLY G20, 1690-1730

1:1182 – Clearance rubble, Area A, Incomplete, bowl with stem fragment, spurred, milling, G16, 1610-1640

1:1190 – Clearance rubble, Area A, Incomplete, spurred stem fragment

1:1191 – Clearance rubble, Area A, Incomplete, spurred stem fragment

1:1192 – Clearance rubble, Area A, Incomplete, spurred stem fragment

F7 – Fill of F14, Area A, PHASE III

7:337 –Pit, Area A, Incomplete, bowl, flat spur, G21, 1700-1740

7:338 –Pit, Area A, Incomplete, bowl with stem fragment, spur projects forward, G18, 1660-1680

7:339 – Pit, Area A, Incomplete, bowl, flat spur, 1680-1710

7:345 – Pit, Area A, Incomplete, bowl, flat spur, G12, 1730-1780

7:346 – Pit, Area A, Incomplete, bowl sherd, spurred, 1690-1730

7:347 – Pit, Area A, Incomplete, bowl, spurred, G22, 1730-1780

7:349 – Pit, Area A, Incomplete, bowl sherd, flat spur, G12, 1730-1780

7:592 – Pit, Area A, Incomplete, spurred stem fragment

7:593 – Pit, Area A, Incomplete, spurred stem fragment

F8 – Organic/ashy deposit, north of F4, Area A, PHASE II / III (=F24)

8:85 – Layer, Area A, Incomplete, bowl with stem fragment, spurred, bulbous, G17, 1640-1670

8:86 – Layer, Area A, Incomplete, bowl with stem fragment, spurred, G19, 1690-1710

8:87 – Layer, Area A, Incomplete, bowl, spurred, line of milling, G22, 1730-1780

8:89 – Layer, Area A, Incomplete, bowl with stem fragment, spurred, G20, 1690-1730

8:90 – Layer, Area A, Incomplete, bowl with stem fragment, spurred, G17, 1640-1670

8:91 – Layer, Area A, Incomplete, bowl with stem fragment, spurred, G17, 1640-1670

8:92 – Layer, Area A, Incomplete, bowl with stem fragment, spurred, G17, 1640-1670

8:94 – Layer, Area A, Incomplete, bowl spurred, milling, G16, 1610-1640

8:95 – Layer, Area A, Incomplete, bowl with stem fragment, spurred, milling, G17, 1640-1670

8:96 – Layer, Area A, Incomplete, bowl with stem fragment, spurred, G18, 1660-1680

8:97 – Layer, Area A, Incomplete, bowl with stem fragment, spurred, G21, 1700-1740

8:98 – Layer, Area A, Incomplete, bowl with stem fragment, spurred, G18, 1660-1680

8:99 – Layer, Area A, Incomplete, bowl with stem fragment, spurred, G20, 1690-1730

8:100 – Layer, Area A, Incomplete, bowl with stem fragment, spurred, G21, 1700-1740

8:103 – Layer, Area A, Incomplete, bowl, spurred, G21, 1700-1740

8:104 – Layer, Area A, Incomplete, bowl, spurred, G21, 1700-1740

8:105 – Layer, Area A, Incomplete, bowl with stem fragment, spurred, G21, 1700-1740

8:106 – Layer, Area A, Incomplete, bowl with stem fragment, spurred, G21, 1700-1740

8:107 – Layer, Area A, Incomplete, bowl with stem fragment, spurred, G21, 1700-1740

8:108 – Layer, Area A, Incomplete, bowl with stem fragment, spurred, G19, 1690-1710

8:521 – Layer, Area A, Incomplete, spurred stem fragment

8:522 – Layer, Area A, Incomplete, spurred stem fragment

8:523 – Layer, Area A, Incomplete, spurred stem fragment

8:524 – Layer, Area A, Incomplete, spurred stem fragment

8:525 – Layer, Area A, Incomplete, spurred stem fragment

8:526 – Layer, Area A, Incomplete, spurred stem fragment

8:528 – Layer, Area A, Incomplete, spurred stem fragment

8:529 – Layer, Area A, Incomplete, spurred stem fragment

F20 – Fill of wall cut, Area A PHASE III

20:8 – Fill of wall cut, Area A, Incomplete, bowl with stem fragment, spurred, G18, 1660-1680

F24 – Organic/ashy deposit, sub F1, Area A, PHASE II / III (=F8)

24:156 – Layer, Area A, Incomplete, bowl, probably spurred, G21, 1700-1740

24:157 – Layer, Area A, Incomplete, bowl, spurred, G17, 1640-1670

24:158 – Layer, Area A, Incomplete, bowl, spurred, G21, 1700-1740

24:159 – Layer, Area A, Incomplete, bowl, spurred, G21, 1700-1740

24:160 – Layer, Area A, Incomplete, base of bowl, spurred, G21, 1700-1740

24:162 – Layer, Area A, Incomplete, bowl, spurred, bulbous, G16, 1610-1640

24:163 – Layer, Area A, Incomplete, bowl, spurred, bulbous, line of milling, G17, 1640-1670

F25 – Demolition rubble, Area A, PHASE III

25:315 – Demolition rubble, Area A, Incomplete, bowl, spurred, incomplete, G21, 1700-1740

25:318 – Demolition rubble, Area A, Incomplete, bowl with stem fragment, bulbous, spurred, milling, G17, 1640-1670

25:324 – Demolition rubble, Area A, Incomplete, bowl, spurred, G18, 1660-1680

25:333 – Demolition rubble, Area A, Incomplete, spurred stem fragment

F28 – Backfill of Cellar F58, Area A, PHASE III

28:139 – Fill of cellar, Area A, Incomplete, bowl with stem fragment, spurred

28:143 – Fill of cellar, Area A, Incomplete, spurred stem fragment

F42 – Upper fill of cellar F45, Area A, PHASE II / III

42:99 – Fill of cellar, Area A, Incomplete, bowl with stem fragment, spurred, G19 – 1690-1710

F93 – Gravel deposit, sub F6, Area A

93:31 – Layer, Area A, Incomplete, bowl, spurred, G19, 1690-1710

93:32 – Layer, Area A, Incomplete, bowl, spurred, G18, 1660-1680

F94 – Gravel deposit over F9 / F95, Area A,

94:40 – Layer, Area A, Incomplete, bowl, spurred, G21, 1700-1740

F102 – Fill of F10, Area A, PHASE I

102:7 – Fill, Area A, Incomplete, bowl, spurred, milling under rim, G16, 1610-1640

F108 – Fill of F107, Area A, PHASE IV

108:34 – Fill, Area A, Incomplete, bowl, spurred, G18, 1660-1680

F119 – Metalled surface, Area A, PHASE I

119:22 – Surface layer, Area A, Incomplete, bowl, spurred, G17/18?, 1640-1678 ISH

F122 – Clay deposit with brick and stone, Area A

122:38 – Layer, Area A, Incomplete, bowl with stem fragment, spurred, G17, 1640-1670

1 Heeled pipes

F1 – Clearance rubble, Area A, PHASE V

1:1131 – Clearance rubble, Area A, Incomplete, bowl, flat heeled, G10, 1700-1740

1:1135 – Clearance rubble, Area A, Incomplete, bowl, flat heeled, line of milling, G5, 1640-1660

1:1137 – Clearance rubble, Area A, Incomplete, bowl sherd, flat heeled, milling under rim, G3, 1580-1610

1:1143 – Clearance rubble, Area A, Incomplete, bowl, milling around rim, flat heeled, G4, 1600-1640

1:1148 – Clearance rubble, Area A, Incomplete, bowl, flat heeled, G5, 1640-1660

1:1153 – Clearance rubble, Area A, Incomplete, bowl with stem fragment, flat heeled, milling around rim, G5, 1640-1660

1:1160 – Clearance rubble, Area A, Incomplete, bowl, flat heeled, line of milling, G5, 1640-1660

1:1162 – Clearance rubble, Area A, Incomplete, bowl, flat heeled, G6, 1660-1680

1:1164 – Clearance rubble, Area A, Incomplete, bowl, flat heeled, G10, 1700-1740

1:1165 – Clearance rubble, Area A, Incomplete, bowl, incomplete, flat heeled, G10, 1700-1740

1:1172 – Clearance rubble, Area A, Incomplete, bowl, flat heeled, G8, 1680-1710

1:1173 – Clearance rubble, Area A, Incomplete, bowl sherd, flat heeled, G9, 1680-1710

1:1174 – Clearance rubble, Area A, Incomplete, bowl, flat heeled, G4, 1600-1640

1:1178 – Clearance rubble, Area A, Incomplete, bowl, flat heeled, milling, G6, 1660-1680

1:1185 – Clearance rubble, Area A, Incomplete, bowl, flat heeled, milling, G5, 1640-1660

1:1195 – Clearance rubble, Area A, Incomplete, flat heeled stem fragment

F7 – Fill of F14, Area A, PHASE III

7:341 – Fill of pit, Area A, Incomplete, bowl, flat heeled, G12, 1730-1780

7:591 – Fill of pit, Area A, Incomplete, flat heeled stem fragment

F8 – Organic/ashy deposit, north of F4, Area A PHASE II / III (=F24)

8:93 – Layer, Area A, Incomplete, bowl with stem fragment, flat heeled, G19, 1690-1710

8:527 – Layer, Area A, Incomplete, flat heeled stem fragment

F24 – Organic/ashy deposit, sub F1, Area A, PHASE II / III (=F8)

24:155 – Layer, Area A, Incomplete, bowl, flat heeled, bulbous, G5, 1640-1660

24:161 – Layer, sub F1, Area A, Incomplete, bowl with stem fragment, bulbous, flat heeled, line of milling, G5, 1640-1660

F25 – Demolition rubble, Area A, PHASE III 14 PIPE STEMS,

25:321 – Demolition rubble, Area A, Incomplete, bowl sherd, flat heeled, glued to 319 & 320, G5, 1640-1660

25:325 – Demolition rubble, Area A, Incomplete, bowl, flat heeled, line of milling, G5, 1640-1660

25:326 – Demolition rubble, Area A, Incomplete, bowl, flat heeled, line of milling, G6, 1660-1680

F28 – Backfill of Cellar F58, Area A, PHASE III

28:140 – Fill of cellar, Area A, Incomplete, bowl, flat heeled, rouletting, G12, 1730-1780

28:141 – Fill of cellar, Area A, Incomplete, bowl, flat heeled, bulbous, rouletting, G6 –1660-1680

F42 – Upper fill of cellar F45, Area A, PHASE II / III

42:96 – Fill of cellar, Area A, Incomplete, bowl with stem fragment, flat heeled, G8 – 1680-1710

42:97 – Fill of cellar, Area A, Incomplete, bowl, flat heeled, G8 – 1680-1710

42:100 – Fill of cellar, Area A, Incomplete, bowl with stem fragment, flat heeled, G10 – 1700-1740

42:227 – Fill of cellar, Area A, Incomplete, bowl, flat heeled, G9, 1680-1710

F43 Middle fill of cellar F45, Area A, PHASE II / III

43:164 – Fill of cellar, Area A, Incomplete, bowl with stem fragment, flat heeled, G10, 1700-1740

43:165 – Fill of cellar, Area A, Incomplete, bowl with stem fragment, flat heeled, G10, 1700-1740

43:166 – Fill of cellar, Area A, Incomplete, bowl with stem fragment, flat heeled, G10, 1700-1740

43:167 – Fill of cellar, Area A, Incomplete, bowl with stem fragment, flat heeled, G10, 1700-1740

43:168 – Fill of cellar, Area A, Incomplete, bowl with stem fragment, flat heeled, G10, 1700-1740

43:169 – Fill of cellar, Area A, Incomplete, bowl with stem fragment, flat heeled, G10, 1700-1740

43:171 - Fill of cellar, Area A, Incomplete, bowl with stem fragment, flat heeled, G10, 1700-1740

43:172 - Fill of cellar, Area A, Incomplete, bowl with stem fragment, flat heeled, G10, 1700-1740

43:173 - Fill of cellar, Area A, Incomplete, bowl with stem fragment, flat heeled, G10, 1700-1740

43:174 - Fill of cellar, Area A, Incomplete, bowl with stem fragment, flat heeled, G10, 1700-1740

43:424 – Fill of cellar, Area A, Incomplete, flat heeled stem fragment

F44 – Lower fill of F45, Area A, PHASE II / III

44:16 – Lower fill of F45, Area A, Incomplete, bowl with stem fragment, incomplete, flat heeled, G10, 1700-1740

44:17 – Lower fill of F45, Area A, Incomplete, bowl with stem fragment, incomplete, flat heeled, G10, 1700-1740

44:18 – Lower fill of F45, Area A, Incomplete, bowl, flat heeled, G10, 1700-1740

44:19 – Lower fill of F45, Area A, Incomplete, bowl with stem fragment, flat heeled, G10, 1700-1740

44:20 – Lower fill of F45, Area A, Incomplete, bowl with stem fragment, flat heeled, G10, 1700-1740

44:21 – Lower fill of F45, Area A, Incomplete, bowl with stem fragment, flat heeled, incomplete, G10, 1700-1740

44:22 – Lower fill of F45, Area A, Incomplete, bowl with stem fragment, flat heeled, G10, 1700-1740

44:23 – Lower fill of F45, Area A, Incomplete, bowl, flat heeled, G9, 1680-1710

44:24 - Lower fill of F45, Area A, Incomplete, bowl, flat heeled, G10, 1700-1740

44:25 - Lower fill of F45, Area A, Incomplete, bowl, flat heeled, G9, 1680-1710

44:26 - Lower fill of F45, Area A, Incomplete, bowl, flat heeled, G10, 1700-1740

44:27 - Lower fill of F45, Area A, Incomplete, bowl, flat heeled, G9, 1680-1710

44:31 – Lower fill of F45, Area A, Incomplete, flat heeled stem fragment

F57 – Fill, test trench

57:52 – Fill, test trench, Incomplete, flat heeled stem fragment

F87 – Fill of posthole F86

87:4 –Fill of posthole, Area A, Incomplete, bowl, flat heeled, milling under rim, G5, 1640-1660

F102 – Fill of F110, Area A, PHASE I

102:6 – Fill of pit, Area A, Incomplete, bowl, bulbous, flat heeled, milling under rim, G4, 1600-1640

102:8 – Fill of pit, Area A, Incomplete, bowl, bulbous, flat heeled, 1640-1660

F113 – Lower fill of F107, Area A, PHASE IV

113:45 – Fill of pit, Area A, Incomplete, bowl, flat heeled, G5, 1640-1660

F118 – Layer between F10 & F119, Area A, PHASE I / II

118:8 – Layer, Area A, Incomplete, bowl with stem fragment, incomplete, flat heeled, bulbous, G4, 1600-1640

118:9 – Layer, Area A, Incomplete, bowl with stem fragment, incomplete, flat heeled, G4, 1600-1640

F122 – Clay deposit with brick and stone, Area A

122:37 – Layer, Area A, Incomplete, bowl, flat heeled, bulbous, milling, G5, 1640-1660

Decorated spurred pipes

F1 – Clearance rubble, Area A, PHASE V

1:1168 – Clearance rubble, Area A, Incomplete, bowl, flat spur, stamp reads "R. McLoghlin, 20 Poole St", 17th – 18th ce, See TBW

F7 – *Fill of F14, Area A PHASE III*

7:340 – Fill of pit F14, Area A, Incomplete, bowl, spurred, maker's stamp, a crown over a "B" enclosed in a circle, 1680-1710

7:342 – Fill of pit F14, Area A, Incomplete, bowl, spurred, maker's stamp "GR" enclosed in circle, G22, 1730-1780

7:343 – Fill of pit F14, Area A, Incomplete, bowl, flat spur, maker's stamp "GL" enclosed in semicircle, G17, 1640-1670

F42 – Upper fill of cellar F45, Area A, PHASE II / III

42:101 – Fill of cellar, Area A, Incomplete, bowl, spurred, milling on rim, stamp on back, OAK LEAF SYMBOL SEE PAGE 1 OF NEWFOUNDLAND UNIV. PIPE WEB SITE, G19 – 1690-1710

F43 – Middle fill of cellar F45, Area A, PHASE II / III

43:170 – Fill of cellar, Area A, Incomplete, bowl, spurred, ornate decoration – column with flower decoration, initials "VR" to left hand side of spur

F72 – Fill of F71, Area A, PHASE III

72:1 – Fill of cut, Area A, Incomplete, bowl, spurred, picture of plough, sheaf of wheat and ? lots of little shamrocks, inscriptions read "Prosperity to Ireland" and "God speed the plough", G22, 1730-1780

Decorated heeled pipes

F1 – Clearance rubble, Area A, PHASE V

1:1145 – Clearance rubble, Area A, Incomplete, bowl with stem fragment, milling around rim, flat heeled, stamp on base, "AI", enclosed in circle, G5, 1640-1660

1:1152 – Clearance rubble, Area A, Incomplete, bowl, flat heeled, stamp "WC", partially enclosed in circle, G6, 1660-1680

1:1134 – Clearance rubble, Area A, Incomplete, bowl, flat heeled, stamp on base, "IB" or "81"/"18"???, G8/9, 1680-1710

1:1144 – Clearance rubble, Area A, Incomplete, bowl, milling around rim, flat heeled, stamp on base, not clear, motif enclosed in circle of dots, G5, 1640-1660

1:1155 – Clearance rubble, Area A, Incomplete, bowl, flat heeled, stamp illegible, G5, 1640-1660

1:1184 – Clearance rubble, Area A, Incomplete, bowl, large, maker's stamp, reads "DUBLIN . . .", enclosed in circle

F7 – Fill of F14, Area A, PHASE III

7:336 – Fill of pit, Area A, Incomplete, bowl, flat heeled, decorated with a coat of arms, (see W'ford report for comparison), inscription on shield "D/O? W/N? S O I T . . ." G12, 1730-1780

F27 – Fill of F26, Area A, PHASE III

27:9 – Fill of cut, Area A, Incomplete, bowl, flat spur, milling, shamrock on base, G22, 1730-1780

F42

42:98 – Fill of cellar, Area A, Incomplete, bowl with stem fragment, flat heeled, "OLD ALLEN" stamp on stem, G8 – 1680-1710

Decorated Stem Fragments

F1 – Clearance rubble, Area A, PHASE V

1:1193 – Clearance rubble, Area A, Incomplete, decorated stem fragment

1:1194 – Clearance rubble, Area A, Incomplete, decorated stem fragment

F7 – Fill of pit F14, Area A, PHASE III

7:590 – Fill, Area A, Incomplete, decorated stem fragment

7:595 – Fill, Area A, Incomplete, decorated stem fragment

7:596 – Fill, Area A, Incomplete, decorated stem fragment

7:597 – Fill, Area A, Incomplete, decorated stem fragment

7:598 – Fill, Area A, Incomplete, decorated stem fragment

7:599 – Fill, Area A, Incomplete, decorated stem fragment

7:600 – Fill, Area A, Incomplete, decorated stem fragment

7:601 – Fill, Area A, Incomplete, decorated stem fragment

7:602 – Fill, Area A, Incomplete, decorated stem fragment

7:603 – Fill, Area A, Incomplete, decorated stem fragment

7:604 – Fill, Area A, Incomplete, decorated stem fragment

7:605 – Fill, Area A, Incomplete, decorated stem fragment

7:606 – Fill, Area A, Incomplete, decorated stem fragment

7:607 – Fill, Area A, Incomplete, decorated stem fragment

7:608 – Fill, Area A, Incomplete, decorated stem fragment

7:609 – Fill, Area A, Incomplete, decorated stem fragment

7:610 – Fill, Area A, Incomplete, decorated stem fragment

7:611 – Fill, Area A, Incomplete, decorated stem fragment

7:612 – Fill, Area A, Incomplete, decorated stem fragment

7:613 – Fill, Area A, Incomplete, decorated stem fragment

7:614 – Fill, Area A, Incomplete, decorated stem fragment

7:615 – Fill, Area A, Incomplete, decorated stem fragment

7:616 – Fill, Area A, Incomplete, decorated stem fragment

F42 – Upper fill of cellar F45, Area A, PHASE II / III

42:477 – Fill, Area A, Incomplete, decorated stem fragment

42:478 – Fill, Area A, Incomplete, decorated stem fragment

42:479 – Fill, Area A, Incomplete, decorated stem fragment

F43 – Middle fill of cellar F45, Area A, PHASE II / III

43:420 – Fill, Area A, Incomplete, decorated stem fragment

43:421 – Fill, Area A, Incomplete, decorated stem fragment

43:422 – Fill, Area A, Incomplete, decorated stem fragment

43:423 – Fill, Area A, Incomplete, decorated stem fragment

F63 – Deposit, sub F8, Area A, PHASE I

63:1 – Deposit, Area A, Incomplete, decorated stem fragment

Unidentified

F1 – Clearance rubble, Area A, PHASE V

1:1138 – Clearance rubble, Area A, Incomplete, bowl sherd

1:1136 – Clearance rubble, Area A, Incomplete, bowl sherd, probably flat heeled

1:1141 – Clearance rubble, Area A, Incomplete, bowl sherd, early-mid 16th century

1:1176 – Clearance rubble, Area A, Incomplete, bowl sherd

F7 – Fill of pit F14, Area A, PHASE III

7:350 – Fill of pit, Area A, Incomplete, bowl sherd

7:348 – Fill of pit, Area A, Incomplete, bowl sherd

7:344 – Fill of pit, Area A, Incomplete, bowl sherd with stem fragment, 1730-1780

7:594 – Fill of pit, Area A, Incomplete, stem fragment

F8 – Organic/ashy deposit, north of F4, Area A, PHASE II / III (=F24)

8:88 – Layer, Area A, Incomplete, bowl, possibly spurred

8:101 - Layer, north of F4, Area A, Incomplete, bowl

8:102 - Layer, Area A, Incomplete, bowl sherd

8:109 – Layer, Area A, Incomplete, bowl sherd

F20 – Fill of wall cut, PHASE III

20:9 – Fill of wall cut, Area A, Incomplete, bowl sherd,

F24 – Organic/ashy deposit, sub F1, Area A, PHASE II / III (=F8)

24:185 – Layer, Area A, Incomplete, stem fragment, possibly spurred

F25 – Demolition rubble, Area A, PHASE III

25:316 – Demolition rubble, Area A, Incomplete, bowl, possibly spurred,

25:317 – Demolition rubble, Area A, Incomplete, bowl sherd, milling around rim

25:322 – Demolition rubble, Area A, Incomplete, bowl with stem fragment,

25:323 - Demolition rubble, Area A, Incomplete, bowl sherd, line of milling

F43 – Middle fill of cellar F45, Area A, PHASE II / III

43:175 – Fill of cellar, Area A, Incomplete, bowl sherd

F44 – Lower fill of F45, Area A, PHASE II / III

44:28 – Fill, Area A, Incomplete, bowl sherd

44:29 – Fill, Area A, Incomplete, bowl sherd

44:30 – Fill, Area A, Incomplete, bowl sherd

Pipe stems

F1 – 175 stems + 2 decorated

F7 – 127 stems + 23 decorated

F8 – 110 stems

F16 – 3 stems

F23 – 1 stem

F24 – 37 stems

F25 – 47 stems

F28 – 8 stems

F32 – 1 stem

F36 – 1 stem

F42 – 18 stems + 3 decorated

F43 – 34 stems + 4 decorated

F44 – 20 stems

F52 – 1 stem

F55 – 1 stem

F57 – 10 stems

F62 – 3 stems

F63 – 1 stem + 1 decorated

F64 – 4 stems

F80 – 8 stems

F87 – 4 stems

F93 – 6 stems

F94 – 11 stems

F103 – 2 stems

F108 – 8 stems

F113 – 5 stems

F118 – 2 stems

F122 – 1 stems

Appendix 6

Wood Identifications
Tram Street / Phoenix Street
Dublin 7

By

Margaret Gowen & Co. Ltd
Dr. Ingelise Stuijts

1 Introduction

1.1 Wooden remains from Tram Street and Phoenix Street were collected by archaeologist Franc Myles for species analysis. The wood remains were fragmentary and probably date from post-medieval context.

2 Methods

2.1 The timbers were checked for woodworking. Because of the fragmentary state, however, only the wood piece from Phoenix Street showed some indication for woodworking.

2.2 A low-powered stereo-microscope was used (Nikon) for the identification of the timbers. Small slivers were analysed using a high-powered microscope with magnification up to 200-400 times (Olympus). It was not possible to establish the age of the timbers nor the original dimensions, because of the rotten state of the fragments.

2.3 The identification followed the keys provided by F.H Schweingruber (1978).

2.4 The wooden fragments were stored in plastic bags without further adding of moisture, because the wood was already dry. The remains will be stored temporarily in Parliament Street.

3 Results

3.1 *Wood species*

3.1.1 The results are compiled in table 1. All pieces were from coniferous wood: 4 pieces were of *Picea* (spruce) and 2 pieces were of *Pinus sylvestris* (Scots pine). Most pieces were heavily encrusted with iron, from iron nails going through them or even iron plates.

3.2 *Condition of the wood*

3.2.1 The wood was without exception in bad condition. The fragments were dried out and had lost most of their recognisable tissues. In the cells many fungal hyphae were present, indicating somewhat moist conditions above water level. Modern insects were adding to the older damage. It is not useful to keep these samples.

3.2.2 The plank fragment from Tram street (sample 3) showed a distinct form of rot that is often associated with waterlogged conditions. It was rotten like a sponge, and almost all wood characteristic features had disappeared.

3.3 *Origin*

3.3.1 *Picea* was only planted on a large scale in Ireland in the last few centuries. The origin of this wood species is therefore either European (Baltic or Scandinavian) or Irish plantations, and not from natural woodland. Apart from the absence of *Picea* from the indigenous vegetation of Ireland after the Ice Age, another indication for this assumption is the fact that most wood shows very regular relatively fast growth. The presence of *Picea* indicates a rather young age for the finds.

3.3.2 Two pieces were made of Pinus sylvestris. For the piece interpreted as a fragment of a capillary pump it may be assumed, that the wood was imported based on the regular growth of the piece. It was not possible to establish this with the fragmentary piece from Tram Street.

4 Woodworking

4.1 The fragment of a capillary pump from Phoenix Street was made of a large roundwood with a diameter of 16 cm. It was hollowed, and only 2,5-3 cm, including 22 annual rings, remained. The growth pattern was regular, with few knots. The wood fragment must have come from a tree at least 50 years old. The object was in two pieces, but it could not be established whether this was intentional.

4.2 Sample 12 from Tram Street consisted of two fragments of squared beams joined together with several iron nails in a perpendicular position. On the contact area between the two pieces there seemed to be an iron sheet. One side of the best preserved section was completely encrusted with iron, and must have been in contact with another section of iron. The wood was of very regular growth. It must have formed part of a heavy construction, considering the length of the nails and the use of at least 3 nails on this short section. Both wood pieces were of *Picea*.

4.3 Sample 3 from Tram Street was extremely rotten, and could well have been subject to running water. In excavations in Derryville bog, Co. Tipperary, such very rotten pieces were often related to bog bursts and redepositioning of material. The fragment most likely derived from a plank with diagonal annual rings.

4.4 The other samples from Tram Street also show signs of contact with iron. Sample 10, made of *Picea*, has diagonal annual rings and traces of iron all around. Maybe this was a stick inside an iron object.

Sample 11, made of *Pinus sylvestris*, was too rotten for further observations.

5 Conclusion

5.1 The wooden fragments from Tram Street and Phoenix Street are from a relatively young date. Most of the fragments were from worked pieces, with indications of direct contact with iron nails and/or sheets. It is very likely that the wood was not from local origin, but imported. This is based on the fact that only *Picea* (spruce) and *Pinus sylvestris* (Scots pine) were present, and the regular growth pattern.

Literature

Schweingruber, F.H. 1978: Mikroskopische Holzanatomie, Birmensdorf.

Appendix 7

Pottery
Tram Street / Phoenix Street
Dublin 8

By

Margaret Gowen & Co. Ltd
Clare McCutcheon

1 Introduction

1.1 A total of 3,026 sherds were recovered from the Tram Street site (features 1-195). Following some reassembly between and within contexts, this was reduced to 2,740 sherds. A total of 2,721 sherds were recovered from the Phoenix Street site (features 500-587), reduced to 2,540 sherds.

1.2 The material was identified visually and the information is presented in a series of six tables. The total sherd quantity in each fabric type is listed along with the absolute minimum number of vessels (MNV). The minimum number of vessels represented (MVR) by the variations in rim form, number of handles etc is also listed. The form of vessels present and the date range of the distribution of the fabric type in Ireland are listed. As the majority of the information acquired from the pottery is contained in these tables, very little further discussion will be attached as this is now somewhat repetitious, considerable study and publication having taken place of similar assemblages.

1.3 The information on each site is listed in a series of tables with Tram Street listed first in each case. Tables 1 and 2 cover the medieval material, Tables 3 and 4 the late medieval continental and Table 5 and 6 the post-medieval and modern pottery.

2 Sherd links

1+7

1+8

1+25

1+62

1+95

1+119

16+25

32+42

42+43

57+103

119+142

500+569

506+559

545+559

553+569

3 Medieval pottery

3.1 The 55 sherds from Tram Street and 11 sherds from Phoenix Street represent 2%and 0.43% respectively of their overall assemblages.

Table 1: Medieval pottery, Tram Street

Fabric type	Sherds	MNV	MVR	Form	Date
Ham Green A	1	1	1	Jug	E-L12th
Ham Green B	1	-	1	Jug	L12th-M13th
Ham Green cooking ware	1	-	1	Cooking pot	12th-M13th
Leinster Cooking Ware	2	-	1	Cooking pot	L12th-M14th
Dublin-type	30	-	4	Baking dish, 2 jugs, storage pot	13th
Dublin-type fine ware	9	-	1	Jug	L13th-14th
Saintonge green glazed	10	-	1	Jug	13th-14th
Saintonge green painted	1	-	1	Jug	13th-14th
Total medieval	**55**	**2**	**7**		

Table 2: Medieval pottery, Phoenix Street

Fabric type	**Sherds**	**MNV**	**MVR**	**Form**	**Date**
Ham Green B	1	-	1	Jug	L12th-M13th
Leinster Cooking Ware	2	-	1	Cooking pot	L12th-M14th
Dublin-type	4	2	2	Jugs	13th
Dublin-type fine ware	2	-	1	Jug	L13th-14th
Saintonge green glazed	1	-	1	Jug	13th-14th
Saintonge unglazed	1	-	1	Jug	13th-14th
Total medieval	**11**	**2**	**7**		

4 Late medieval continental pottery

4.1 The 110 sherds from Tram Street and 134 sherds from Phoenix Street represent 4%and 5.27% respectively of their overall assemblages.

Table 3: Late medieval continental pottery, Tram Street

Fabric type	Sherds	MNV	MVR	Form	Date
Beauvais	1				16th-17th
Beauvais double sgraffito	2				17th
Miscellaneous French	9				16th-17th
Rouen faience	5	-	2	Plates	M18th
Faenza	7	-	1	bowl	
Malling?	2	-	1	jar	
Faenza	7	-	1	bowl	
Montelupo	1	-	1	Oil jar	19th
Merida-type	4	-	1	Costrel?	17th
Seville coarseware	7	-	>	Olive jars	17th
Raeren?	2	-	1	Jug?	17th
Frechen	39	2	>4	Jugs	17th
Westerwald	24	-	>3	2 jugs, chamber pot	17th
Total late medieval continental	**110**				

Table 4: Late medieval continental pottery, Phoenix Street

Fabric type	Sherds	MNV	MVR	Form	Date
Saintonge	6	1	4	2 chafing dishes, bowl, plate	16th-17th
Beauvais	7	-	3	Jug, plate, chafing dish	16th-17th
Miscellaneous French	3	1	2	Jug, bowl	16th-17th
Martincamp-type	1	-	1	Flask type I	L15th-16th
Merida-type	1	-	1	Costrel?	17th
Seville coarseware	13	1	2	Olive jars	17th
Liguria: berretino	2	-	1	Plate	L16th-17th
Faenza	3	-	1	Jar	
Anglo-Netherlands delftware	11	-	>4	Plates, bowl	
North Holland slipware	1	-	1	Cockerel bowl	17th
Malling?	5	1	2	Cup/jug	c.1550-1600
Raeren?	1	-	1	Jug?	17th
Siegburg	1	1	1	Jug	17th
Frechen	44	3	7	Jugs	17th
Westerwald	35	-	>4	>3 jugs, chamber pot	17th
Total late medieval continental	**134**	**8**	**30**		

5 Post- medieval pottery

5.1 The 2,575 sherds from Tram Street and 2,395 sherds from Phoenix Street represent 94%and 94.3% respectively of their overall assemblages.

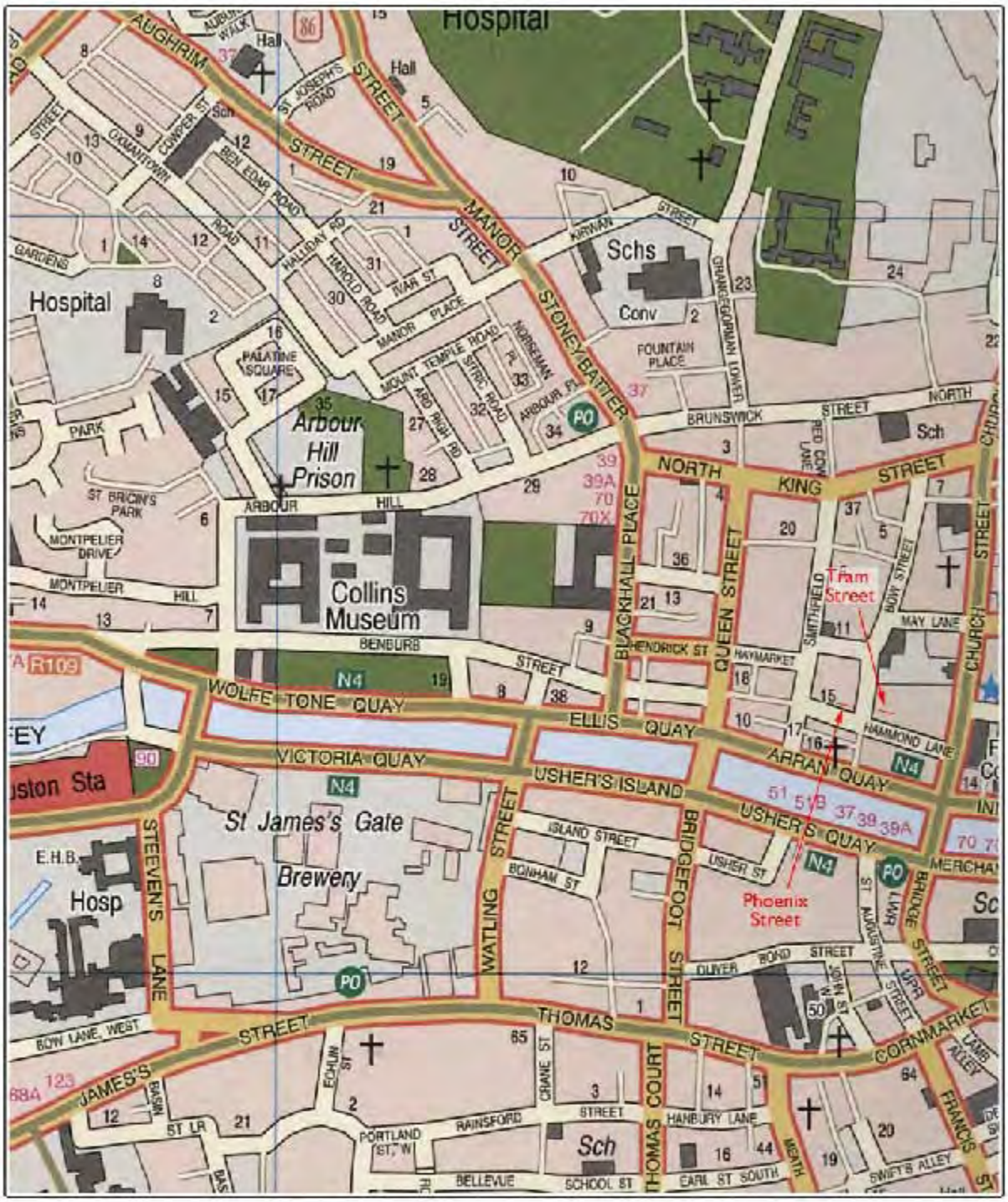
Table 5: Post-medieval pottery, Tram Street

Fabric type	Sherds	MNV		Form	Date
Anglo-Netherlands glazed red earthenware	22	-	3	plates	17th /18th?
North Devon gravel free	51	-	3	Jug, 2 storage jars	17th
North Devon gravel tempered	368	14	>24	2 baking dishes, 8 jugs, >1 chamber pot, 2 tripod pots, bowl with straight handle, large pancheon with handle	17th
North Devon sgraffito	207	-	>23	>20 plates, jug, 2 chamber pots	1630-1700
North Devon slipware	29	-	>3	2 plates, chamber pot	18th
Tin glazed earthenware: decorated	123	3	29	Gaming counter, 3 saucers, 9 bowls, 7 plates, candlestick, 8 wall tile	L17th/18th
Tin glazed earthenware: undecorated	97	2	12	Gaming counter, 2 wall tile, candlestick, 2 chamber pot, 3 ointment jars, bowl, 2 lugged bowls	18th
Creamware	28	-	1	Plate, bowl, cup, jar	18th
White salt glazed stoneware	120	5	>17	>10 saucers, 2 tea bowls, 2 jugs, tankard, plate, bowl with lug handle	18th
Scratch blue	1	-	1	Bowl	18th
Bristol/Staffordshire slipware	154	5	12	5 cups, 4 ointment jars, lid, candlestick, bowl, 5 press moulded plates	18th
Mottled ware	155	-	>5	7 tankards, 3 cups	18th
Agate ware	6	-	2	2 bowls	18th
Red slip-coated ware	10	2	4	2 tankard, 2 cups	18th
Porcelain	37	-	14	7 tea bowls, large bowl, >3 saucers, eggup, candlestick?, lid	18th
Black glazed ware	521	4	44	21 jars, shallow dish, lid, 4 chamber pots, 6 pancheons, 10 small tygs,	18th/19th

				thin-walled bowl	
Glazed red earthenware	317	3	8	Jug, chamber pot, 2 cups, 3 jars, dish	18th/19th
Glazed red earthenware: slip trailed	24	-	>8	Dishes	18th/19th
Glazed red earthenware: slipped	1	-	1	plate	18th/19th
Unglazed red earthenware	15	-	3	Sugar cone, flower pot, shallow dish	18th/19th
Montelupo	1	-	1	Oil jar	19th
Mocha ware	4	-	2	Lid, cup	19th-20th
Shell-edged ware	20	-	7	3 green, 3 blue, 1 dark brown	19th
Transfer printed ware	78	-	>13	Lid, teapot, jug, straight-sided jar, >4 plates, 2 saucers, 3 cups	
Pearlware/Chinaware	71			Plates, saucers, cups	
Sponge ware	1	-	1	cup	
Lustre ware	1	-	1	jug	
Stoneware	86	2	>8	2 large pedestal bowls, jug, small pedestal bowl, 6 tankards, 5 small jars	19th-20th
Unidentified	15	-	>3		Post-medieval
Modern?	11	1	1	Yellow glazed overpainted	20th
Drainpipe	1				19th-20th
Total post-medieval	**2,575**				

Table 6: Post-medieval pottery, Phoenix Street

Fabric type	Sherds	MNV	MVR	Form	Date
Anglo-Netherlands glazed red earthenware	10	-	2	plates	
North Devon gravel free	90	1	>4	>2 chamber pots, jug, bowl	17th
North Devon gravel tempered	428	-	>12	2 chamber pots, chafing dish, jug, baking dish, lid, 2 cooking pots, 4 large basins	17th
North Devon sgraffito	161				
North Devon slipware	45	-	>4	3 plates, jug	18th
Tin glazed earthenware: decorated	102				
Tin glazed earthenware: undecorated	100				
Creamware	107	-	>7	Plate, dish, cup, biscuit barrel, 2 jugs, teapot	18th
White salt glazed stoneware	16	-	>5	4 bowls, plate	18th
Scratch blue	1	-	1	Cup?	18th
Bristol/Staffordshire slipware	191	3	>25	5 ointment pots, 3 biscuit barrels, 3 lobed vessels, >2 cups (dots), >3 cups (feathered), 3 handled bowls, 6 plates	18th
Mottled ware	56	-	>10	Cups/tankard	18th
Black glazed ware	625		>13	>10 storage, 2 cups, cistern	18th-19th
Glazed red earthenware	236		>8		18th-19th
Glazed red earthenware: slip trailed	26	-	7	Plates	18th-19th
Glazed red earthenware: slipped	3	-	1	Bowl	18th-19th
Shell-edged	14	1	>2	1 blue/1 green plate	19th
Transfer printed ware	107			Plates, jar, cups, lid	19th`
Porcelain	8		>3	Tea bowl, saucers	
Stoneware	69	2	>8	>2 tankards, 4 blacking bottled, >2 marmalade jars	19th-20th
Total post-medieval	**2,395**				



Job LUAS, Line A,Tram Street / Phoenix Street, Dublin 7
Ref. 01057
Date 23.01.03
Client LRT/CIE
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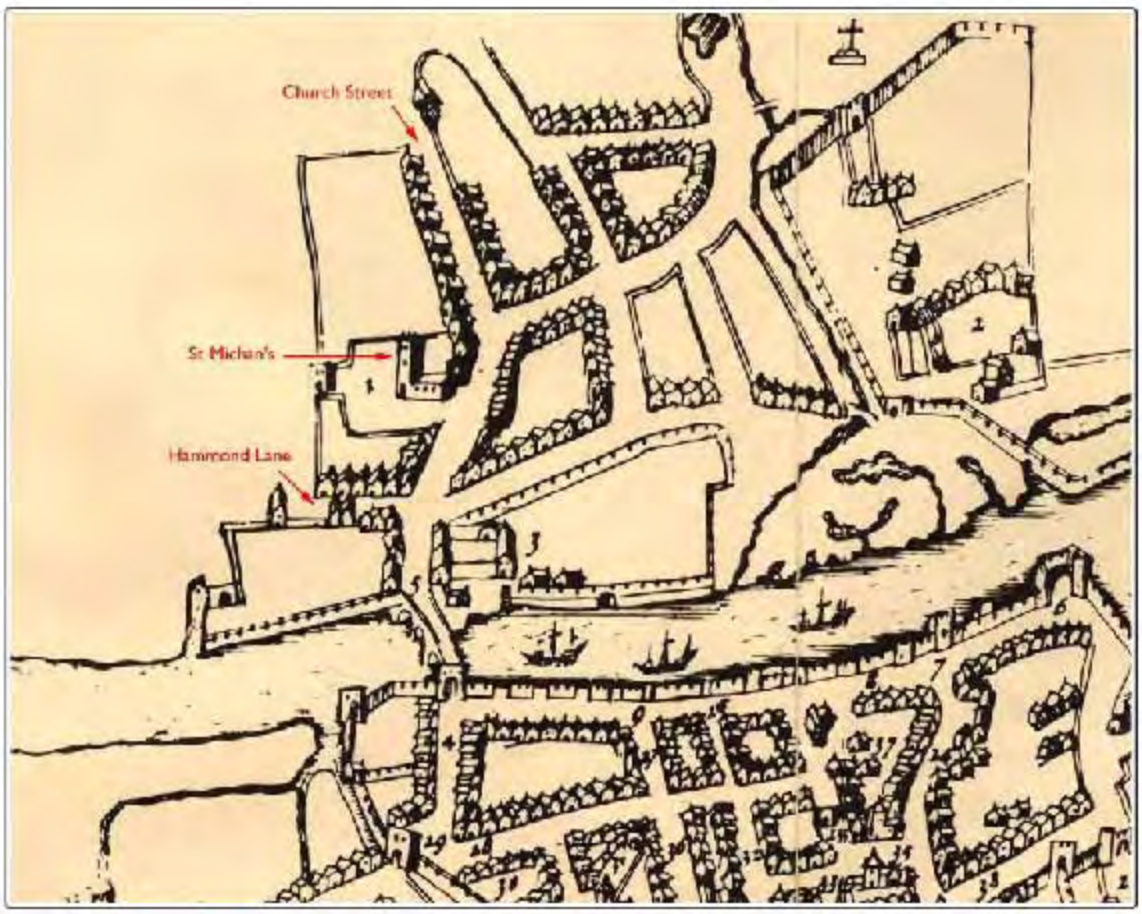
Fig. 1 Site location map



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Job	LUAS, Line A,Tram Street / Phoenix Street, Dublin 7
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Date	23.01.03
Client	LRT/CIE
Scale	Not applicable
Fig. 2	Speed, Dublinia, 1610

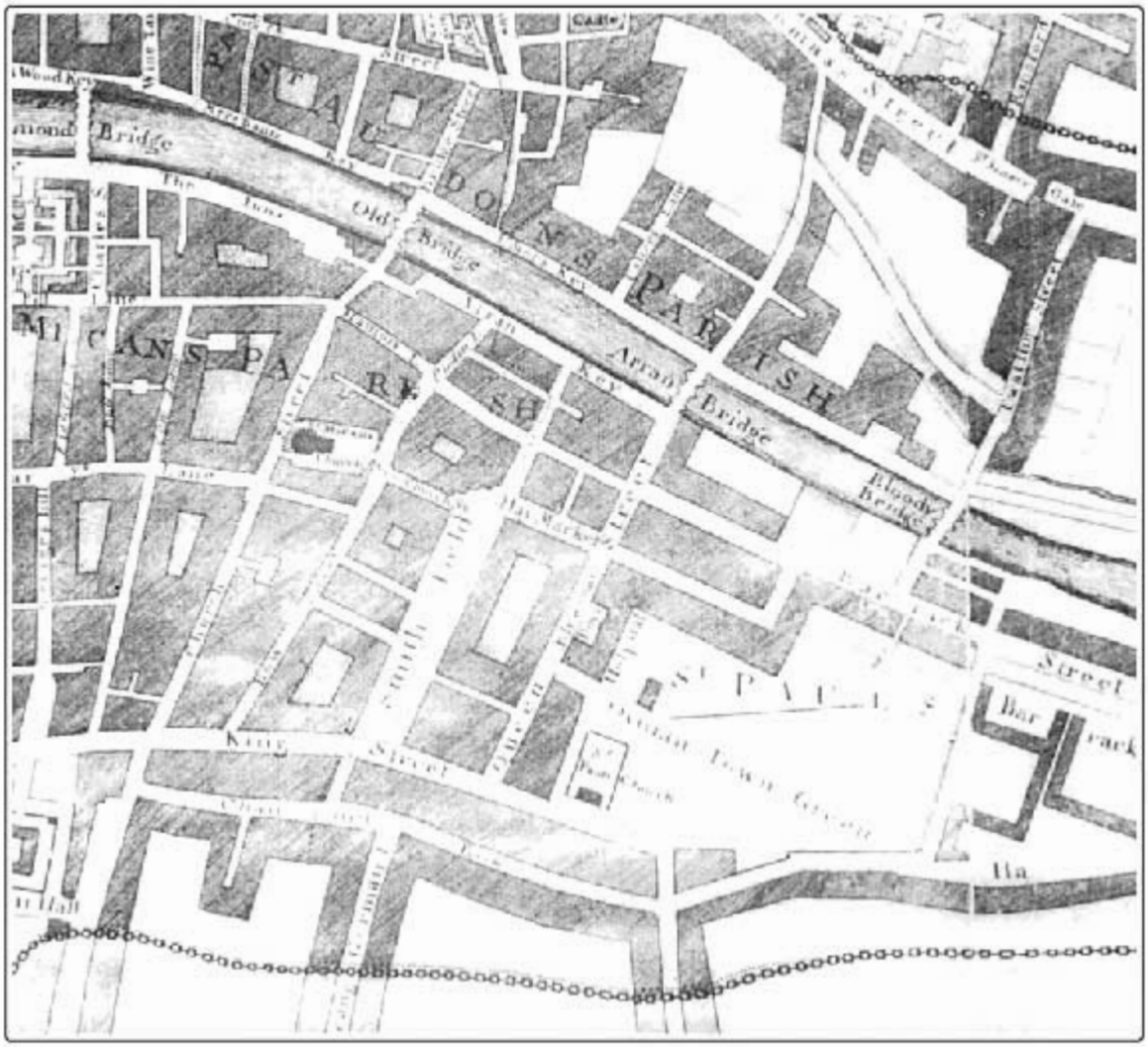

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Fig. 4	Brooking, 1728

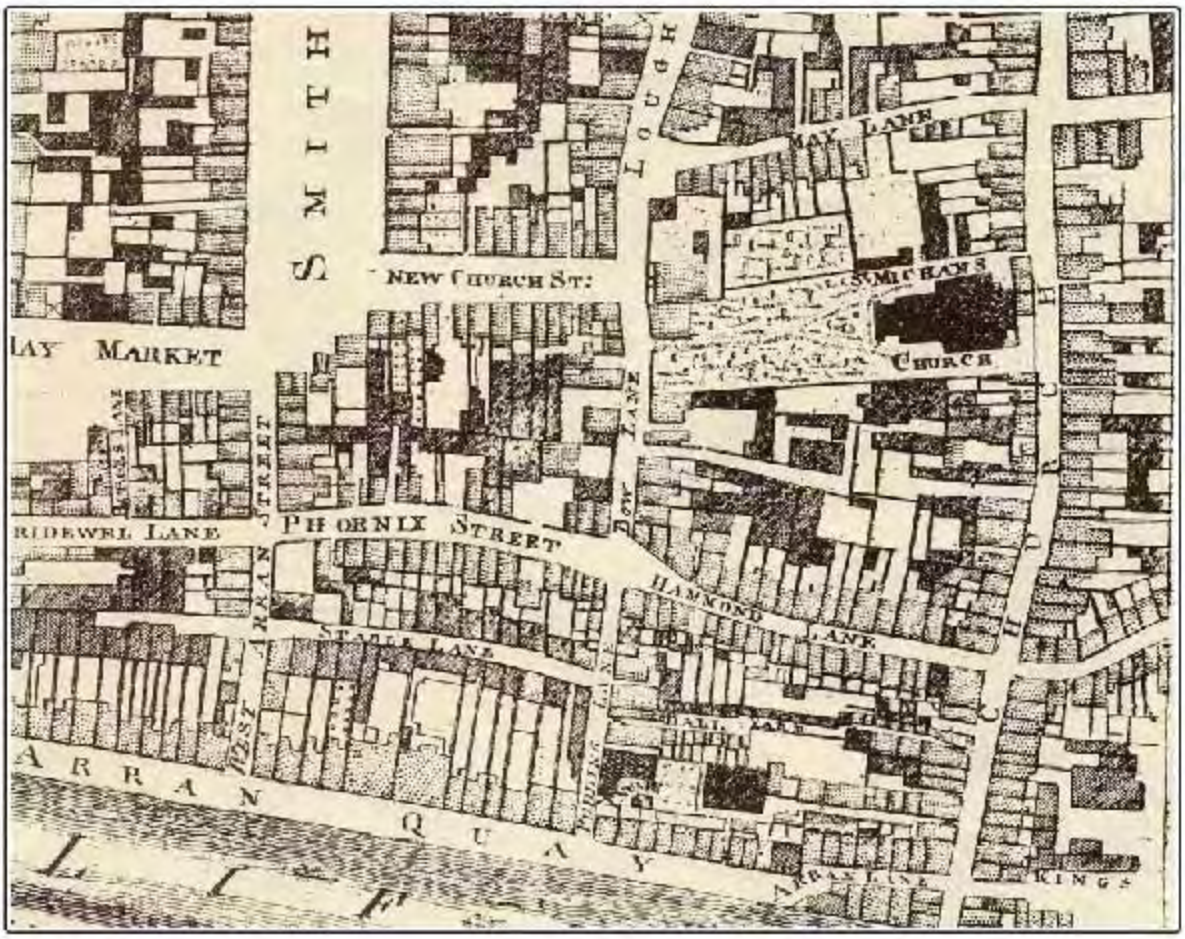

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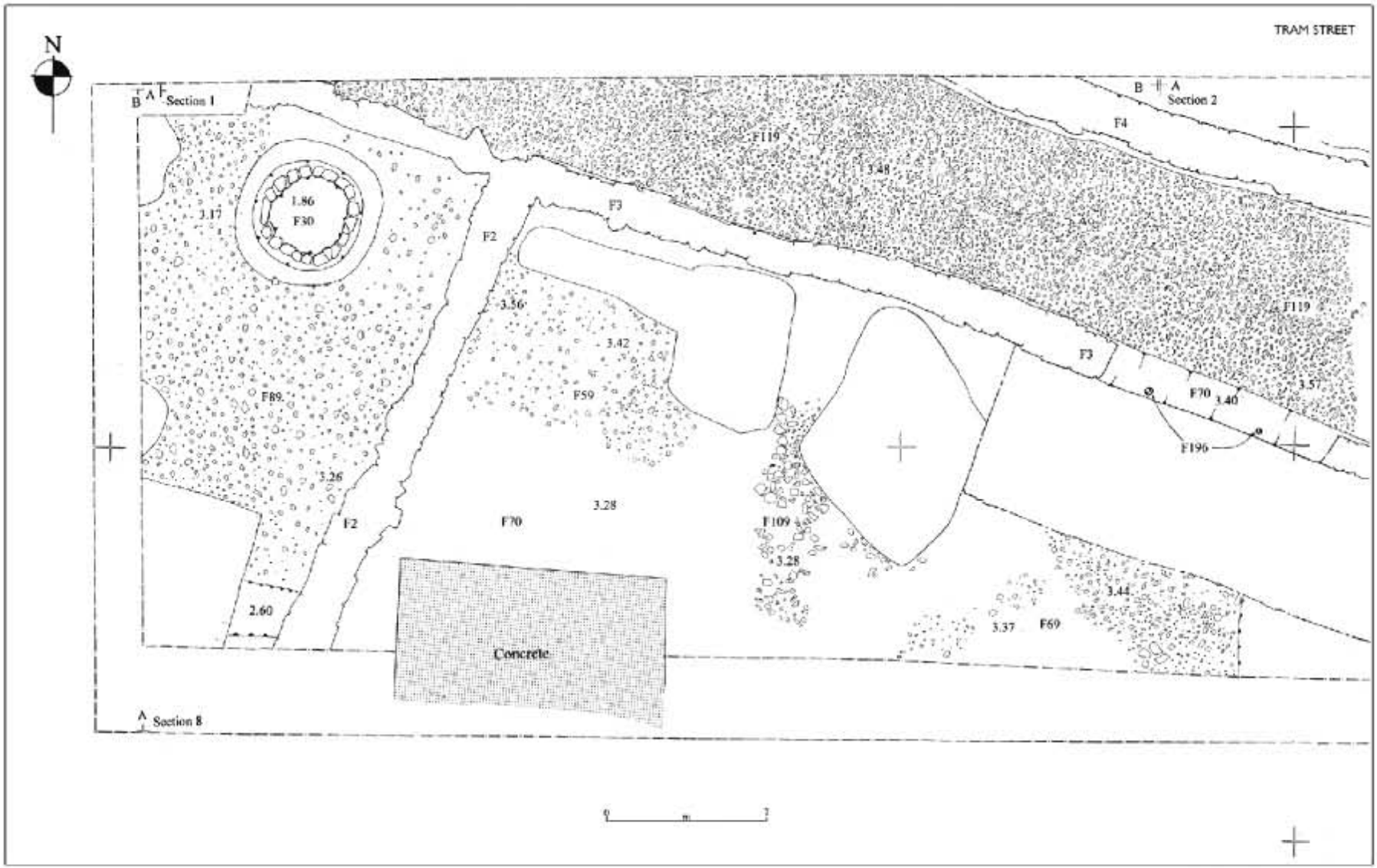
Fig. 5	John Rocque, 1756



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Client	ARTICLE
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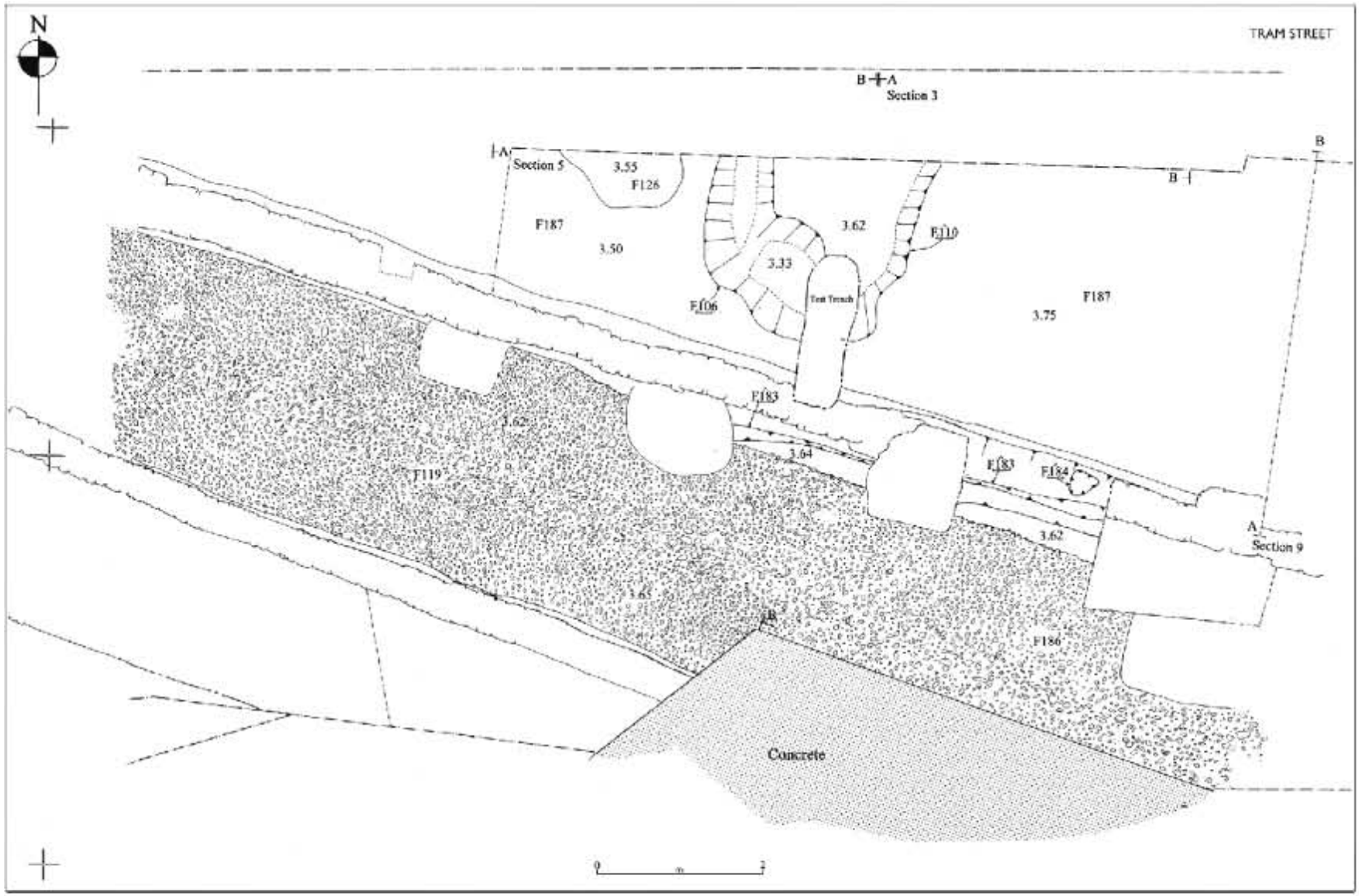
Fig. 6	Plan 1, Trench A



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Date 23.01.03
Client LRTA/CIE
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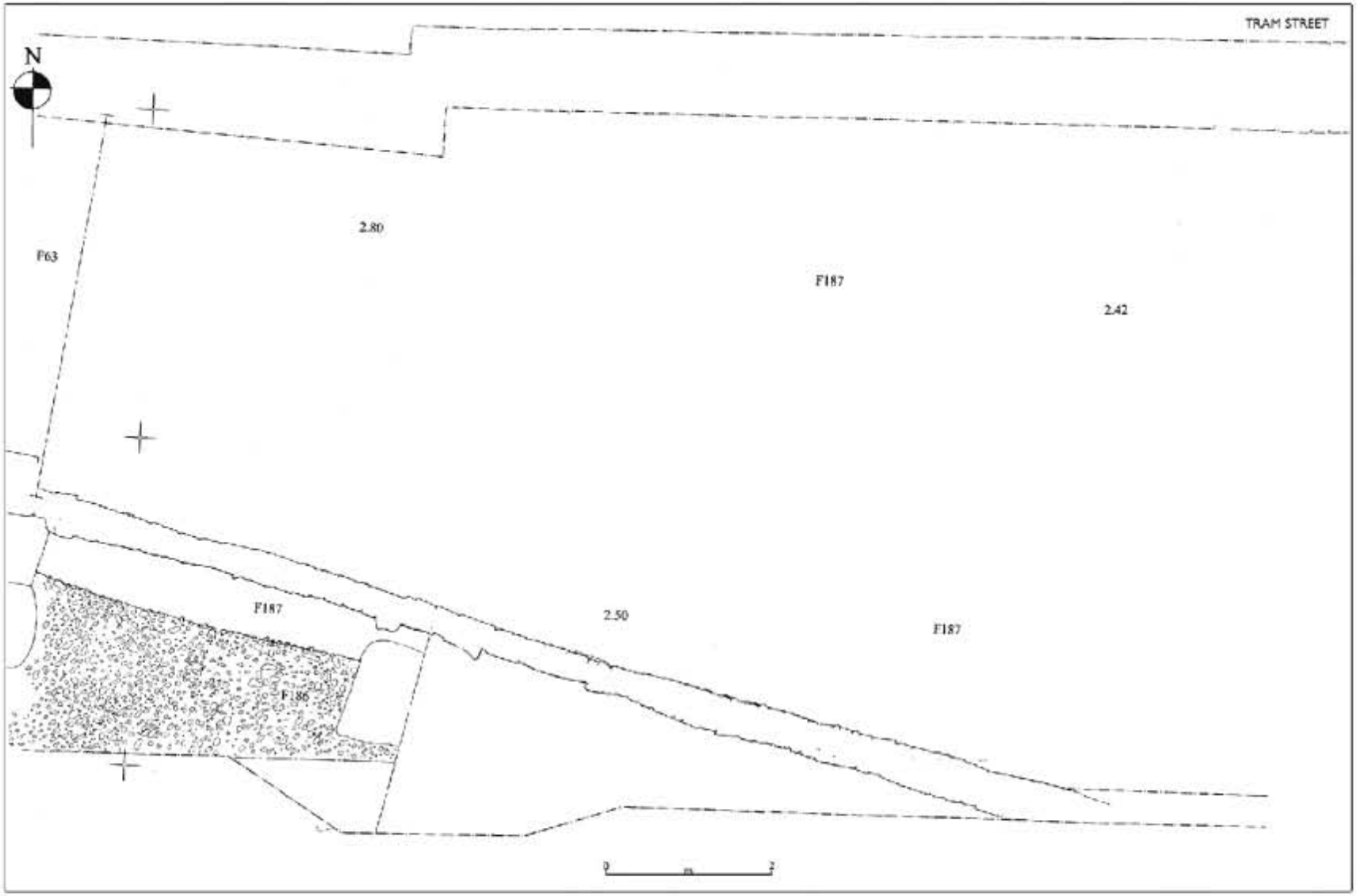
Fig. 7 Plan 2, Trench A



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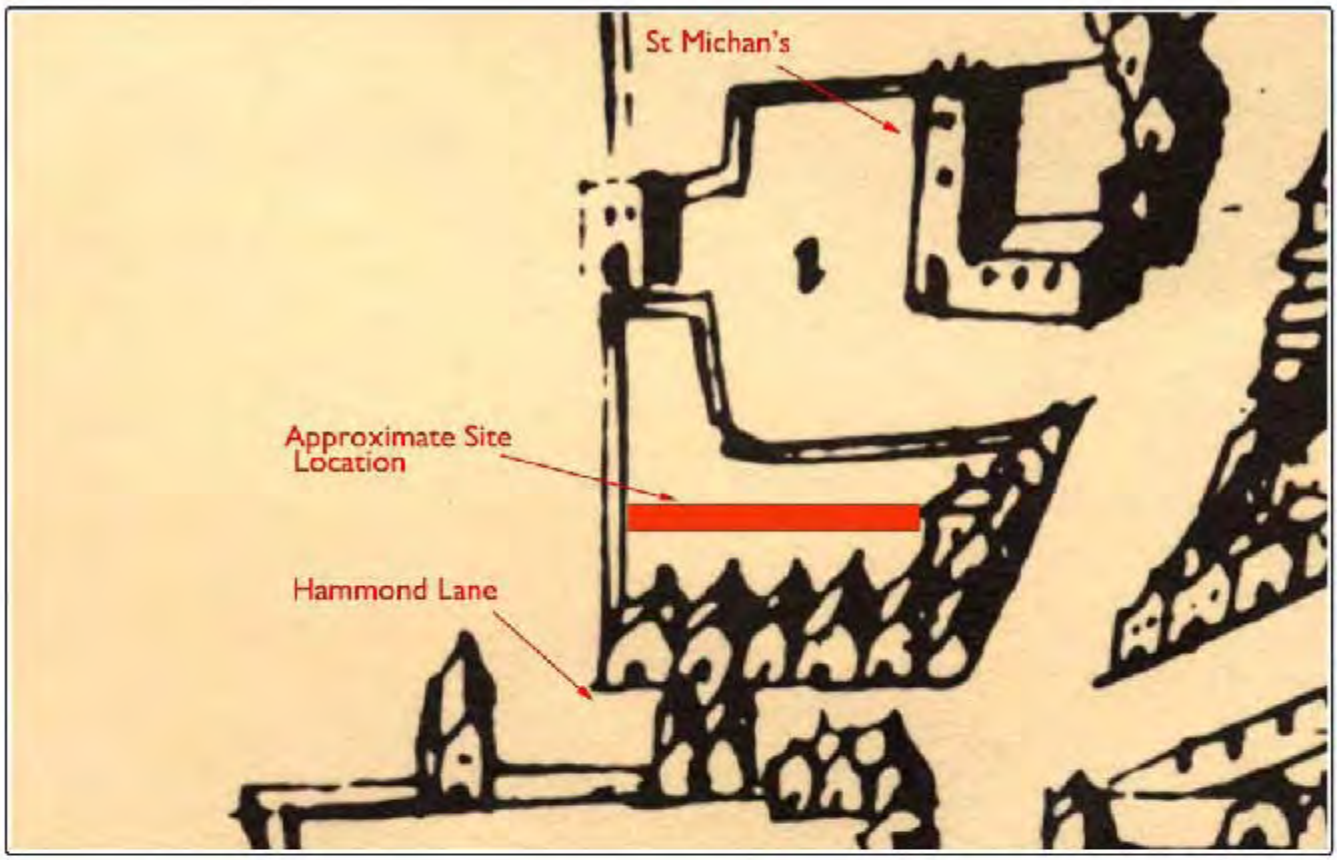
Date	23.01.03
Client	LUTACIE
Scale	As indicated
Fig. 8	Plan 3, Trench A



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Job	LUAS, Line A, Tram Street/ Phoenix Street, Dublin 7
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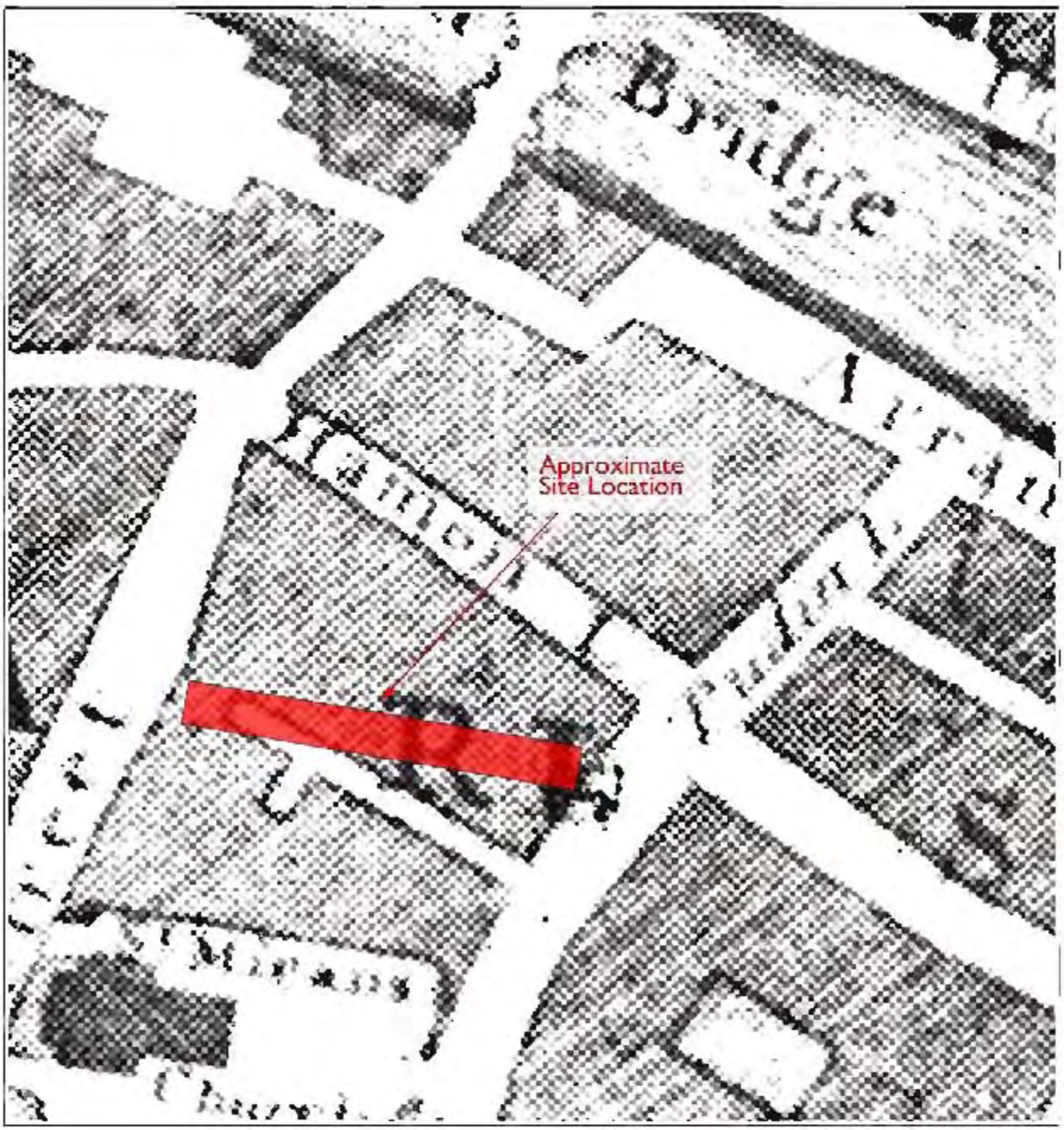
Client	LRT/CIE
Scale	Not applicable
Fig. 9	Speed, 1610



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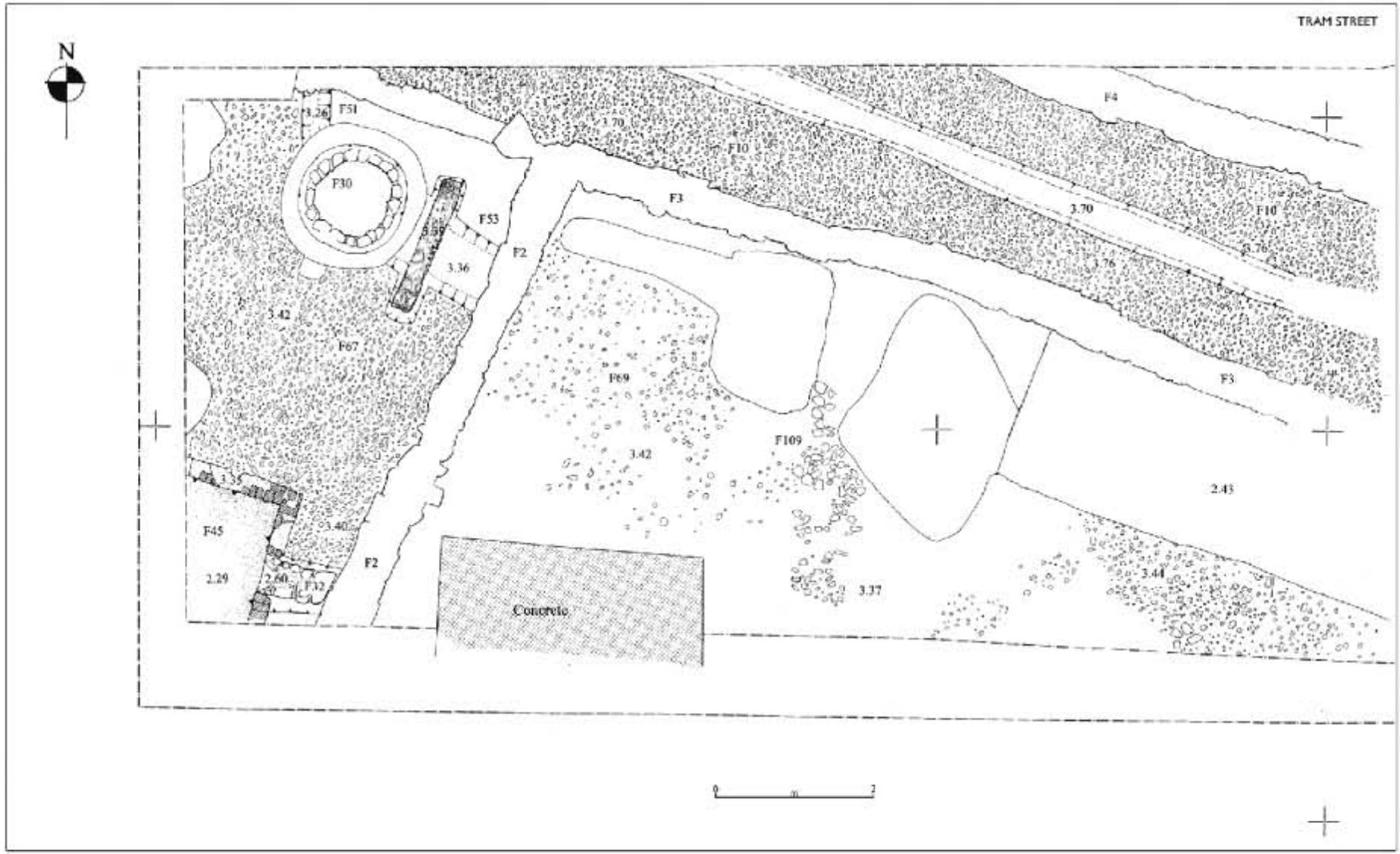
Job I.U.A.S. Line A, Tram Street/
Phoenix Street, Dublin 7
Ref. 01057
Date 16.04.03
Client LRT/CIE
Scale Not applicable
Fig. 10 Brooking, 1728



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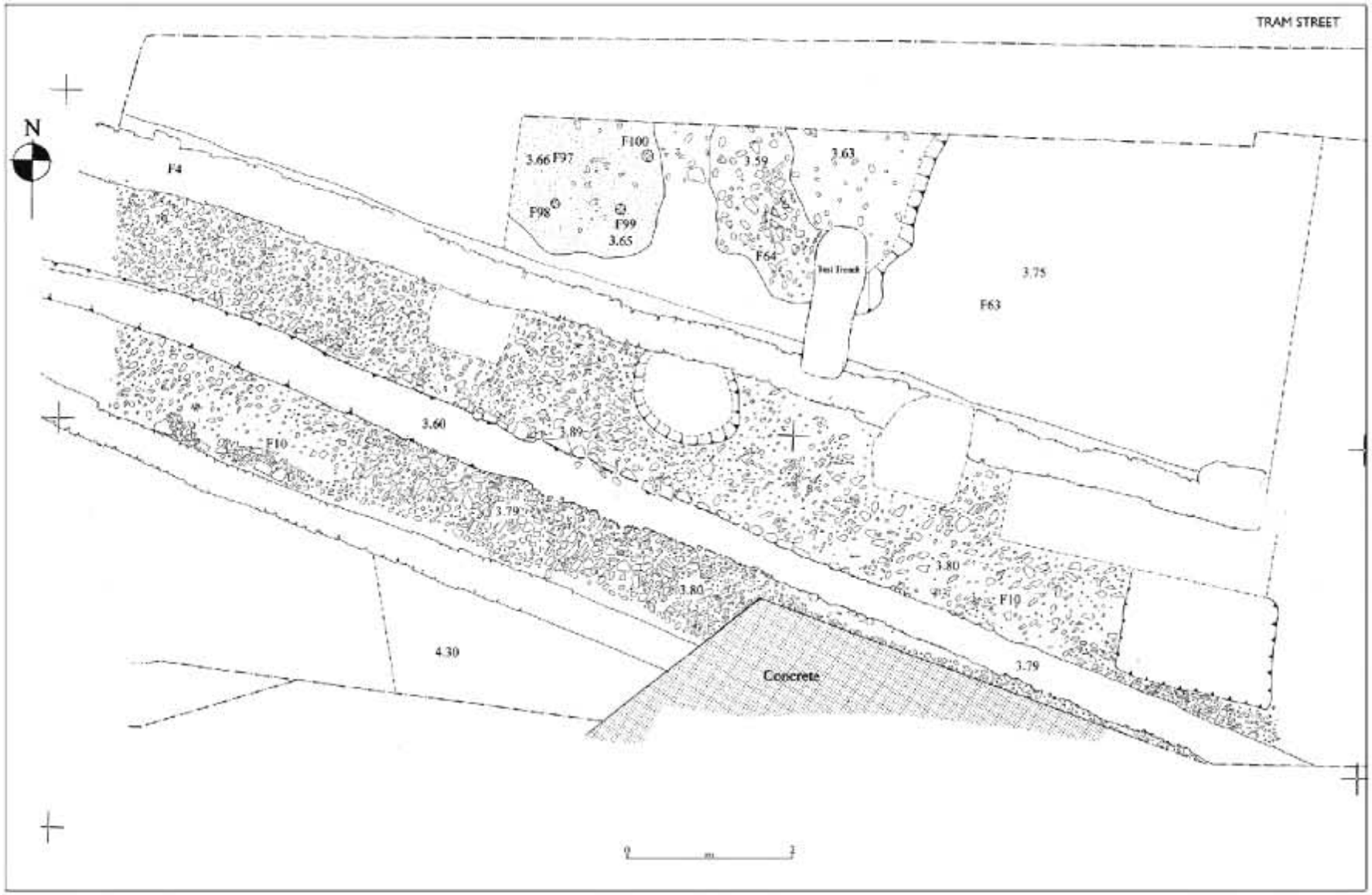
Date	23.01.03
Client	LRT/CIE
Scale	As indicated
Fig.11	Plan 4, Trench A



Job LOAS, Line A,Tram Street / Phoenix Street, Dublin 7
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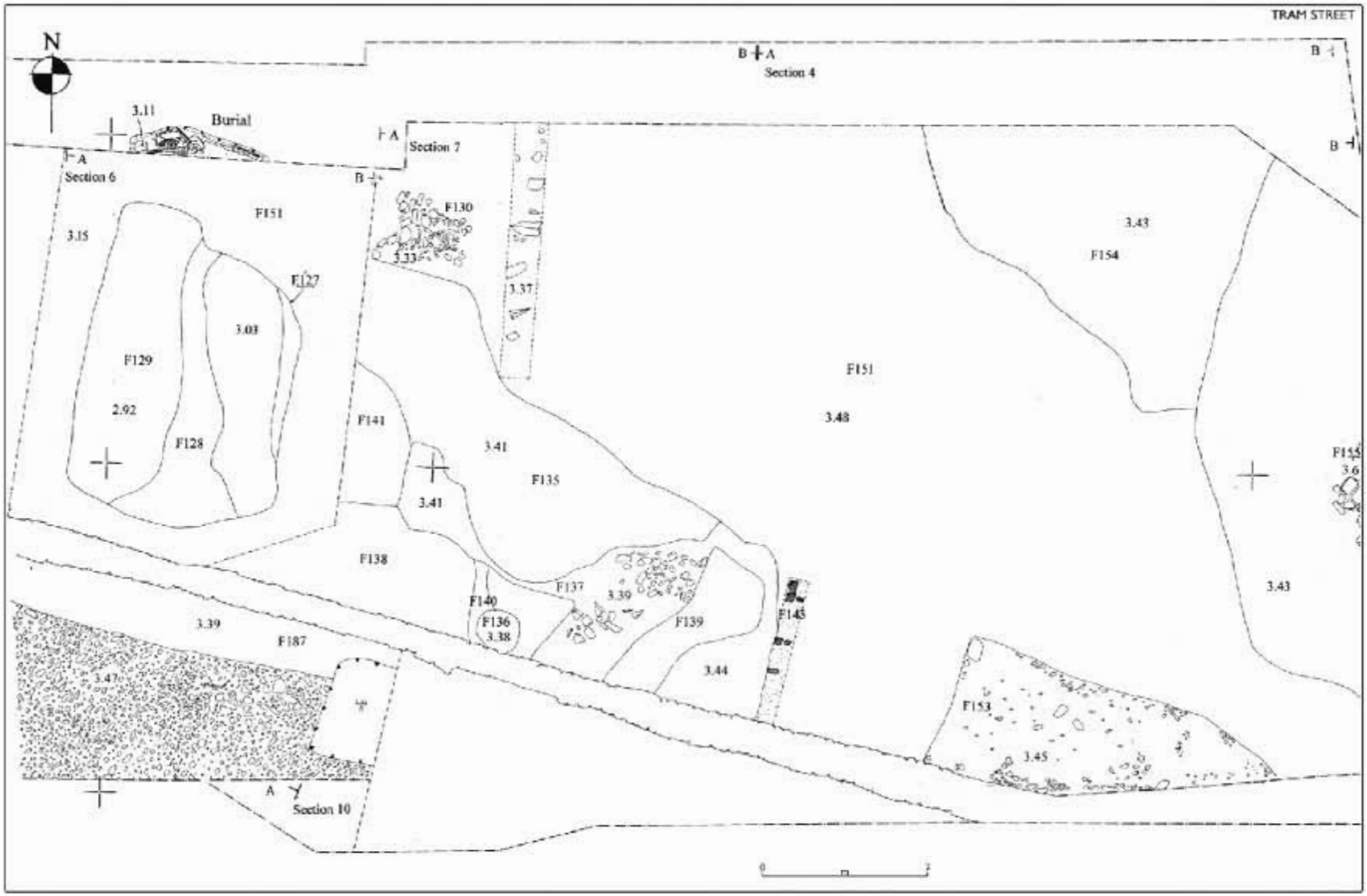
Scale As indicated
Fig. 12 Plan 5, Trench A



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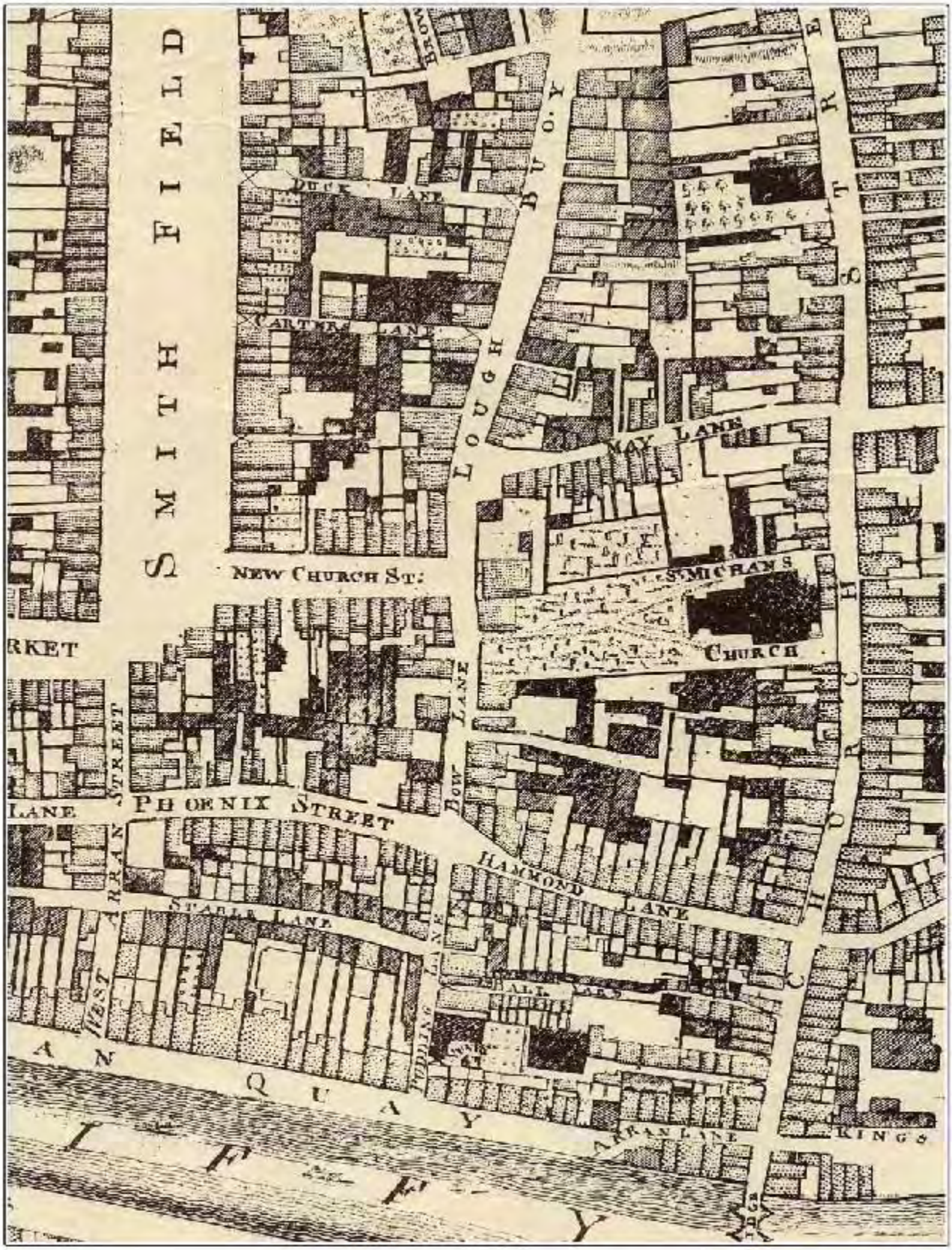
Scale	As indicated
Fig. 13	Plan 6, Trench A



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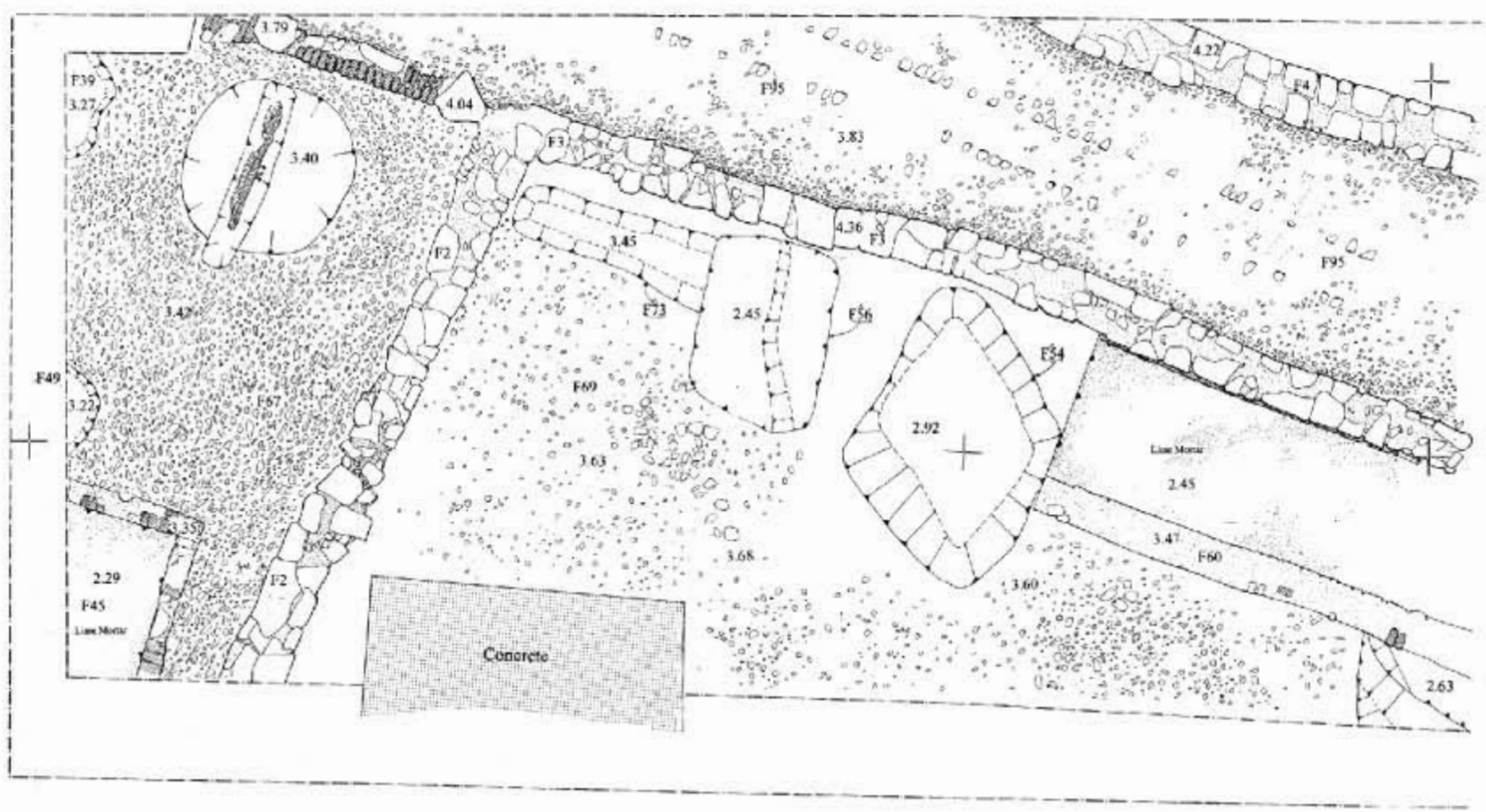
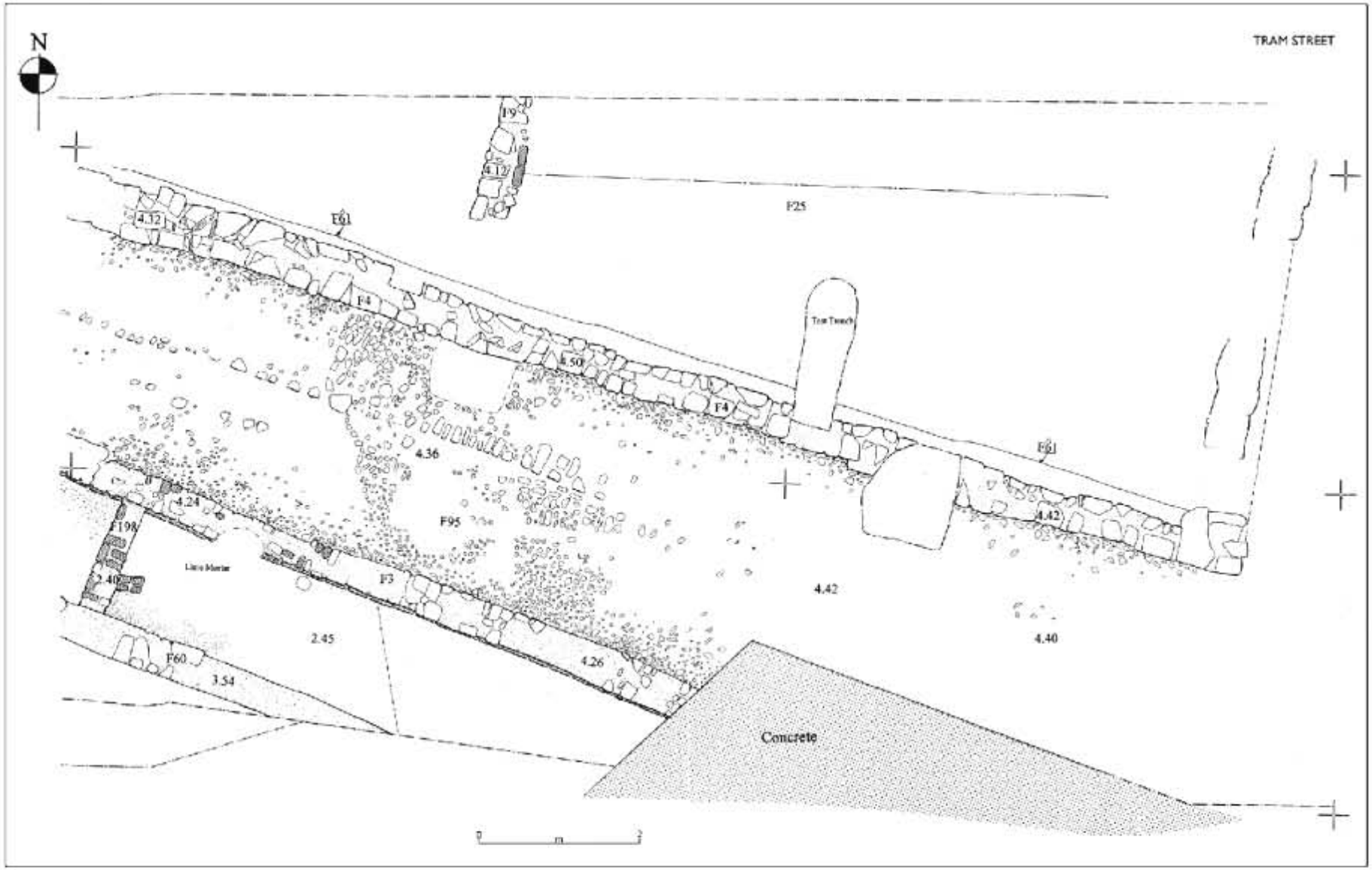
Client	LRT/CIE
Scale	Not applicable
Fig. 14	Rocque, 1756

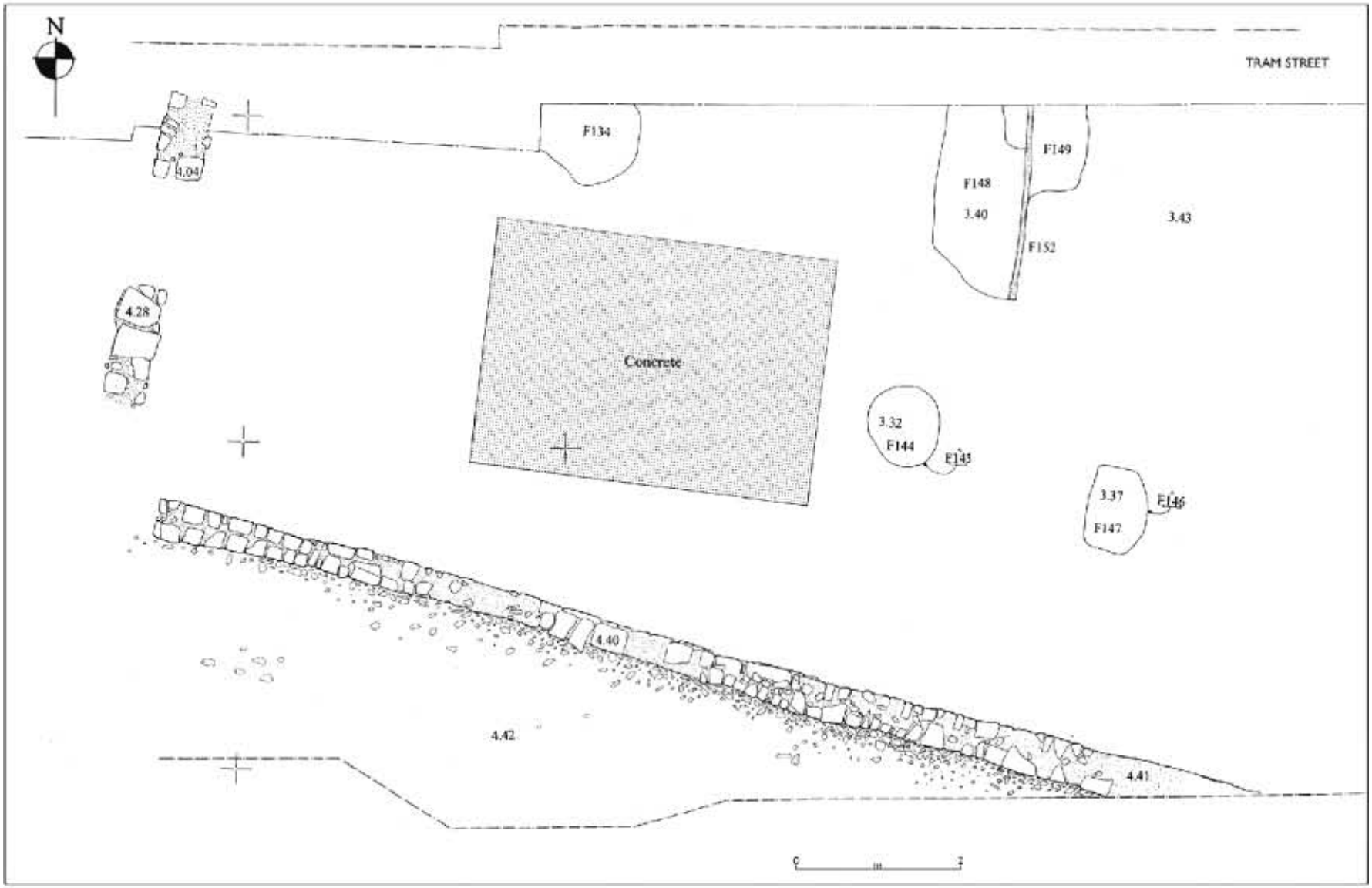
TRAM STREET



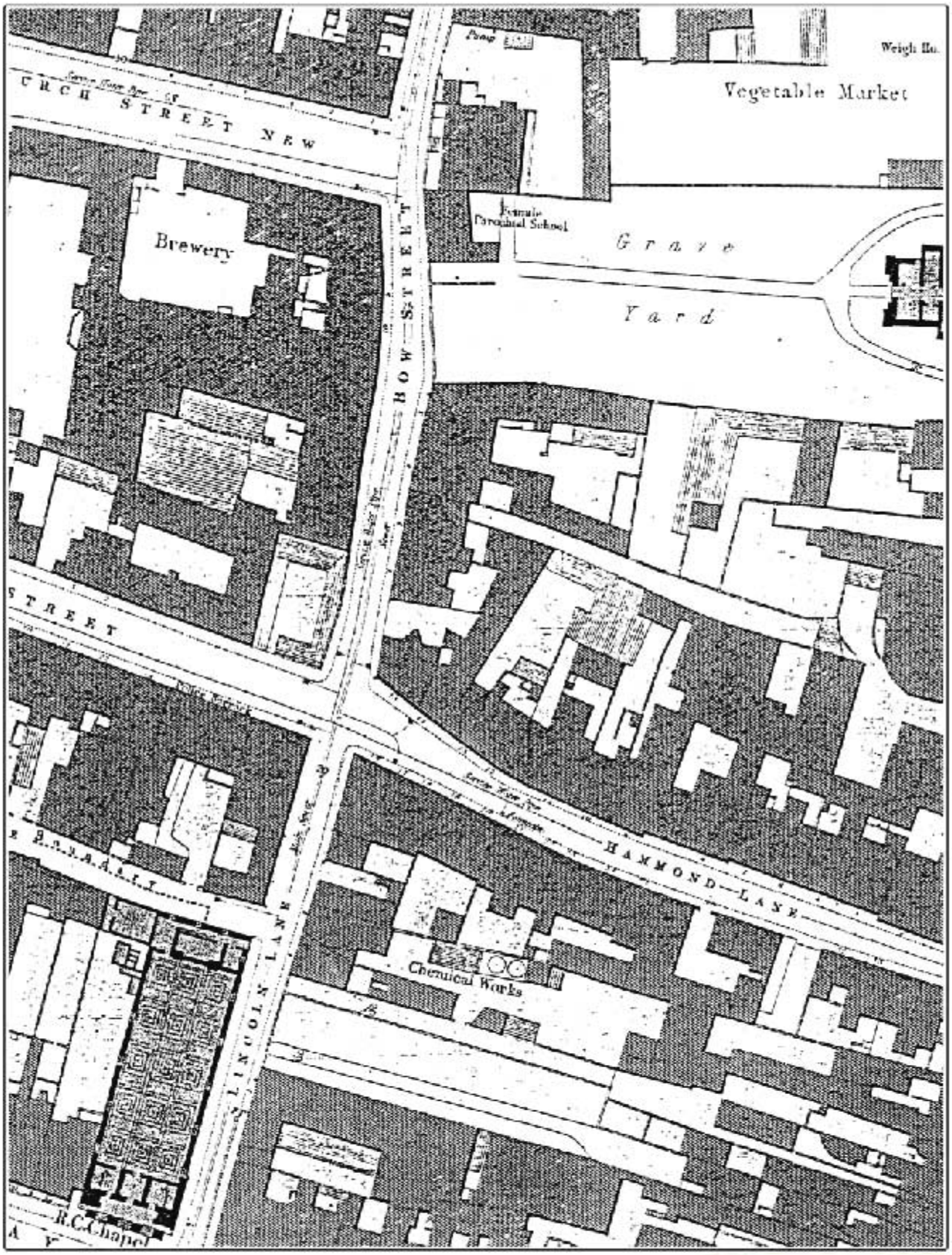
Job	LUAS, Line A,Tram Street / Phoenix Street, Dublin 7
Ref.	01057
Date	23.01.03
Client	URT/CIE
Scale	As indicated
Fig. 15	Plan 7, Trench A



Job	LUAS, Line A,Tram Street / Phoenix Street, Dublin 7
Ref.	01057
Date	23.01.03
Client	IAT/CIE
Scale	As Indicated
Fig. 14	Plan B Trench A



Job	LUAS. Line A.Tram Street / Phoenix Street, Dublin 7
Ref.	01057
Date	23.01.03
Client	IRT/CIE
Scale	As indicated
Fig. 17	Plan 9, Trench A



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Date	16.04.03
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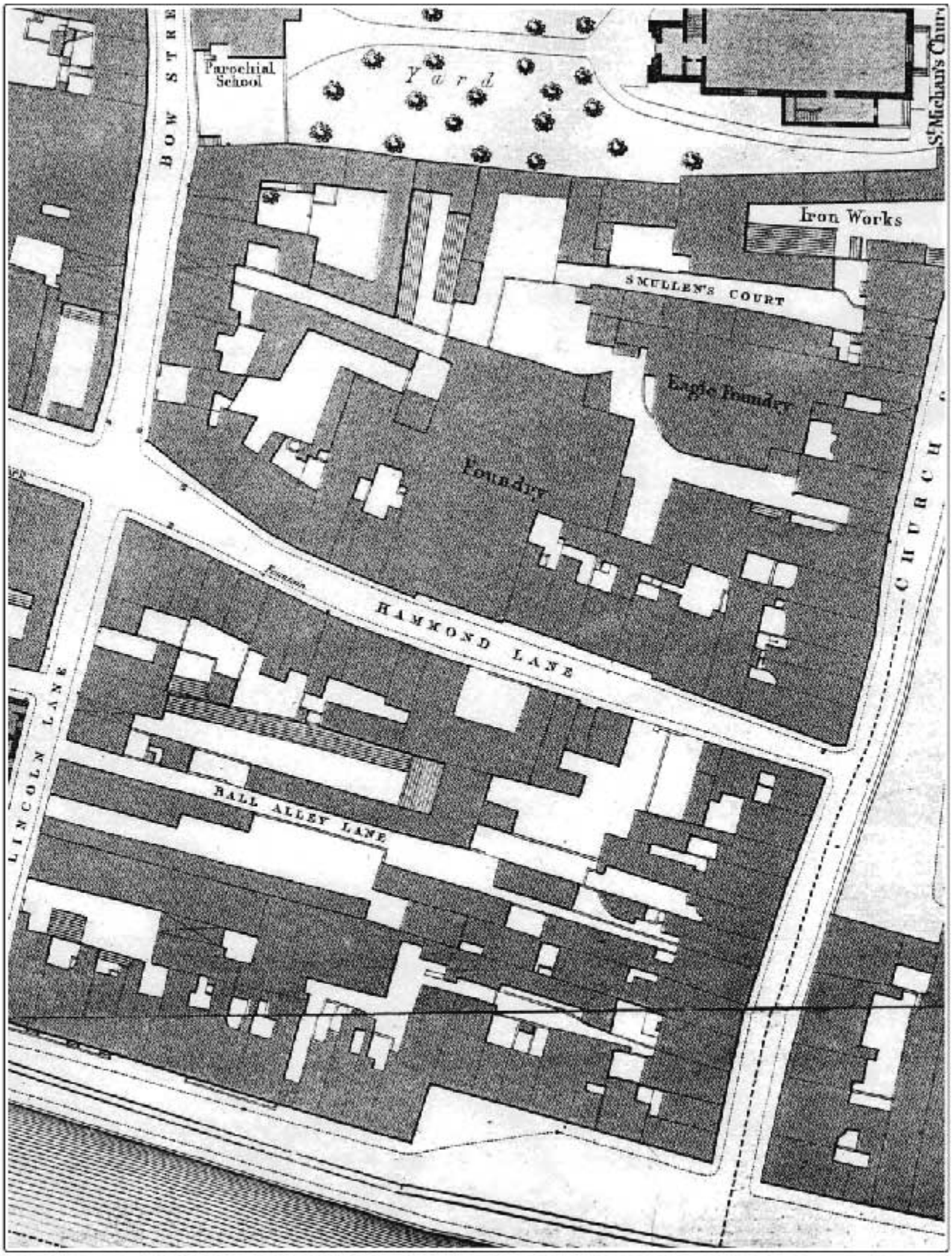
Scale	1:1,056 (enlarged)
Fig.18	1st OS edition



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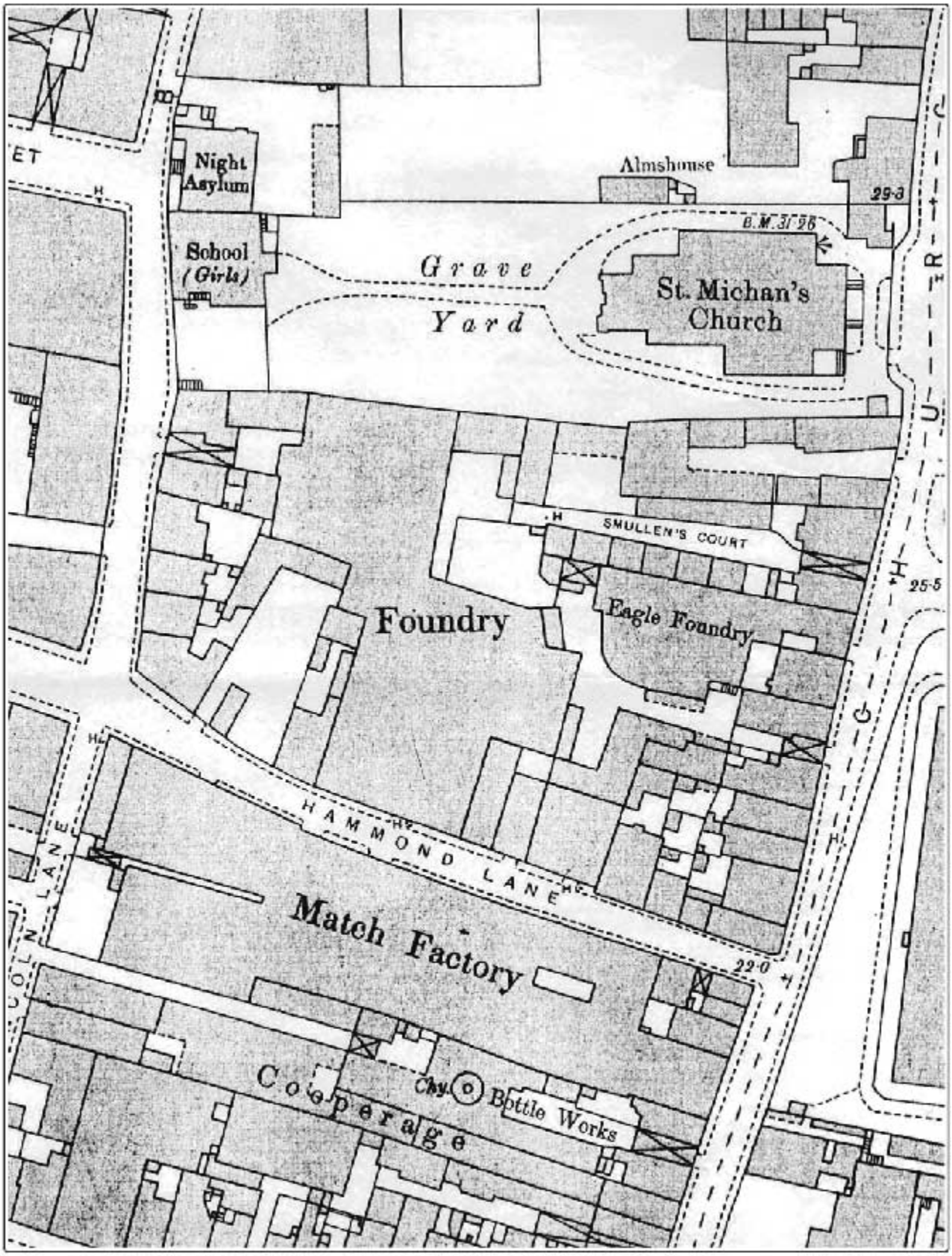
Ref.	01057
Date	16.04.03
Client	LRT/CIE
Scale	1:1,056 (enlarged)
Fig.19	2nd OS edition



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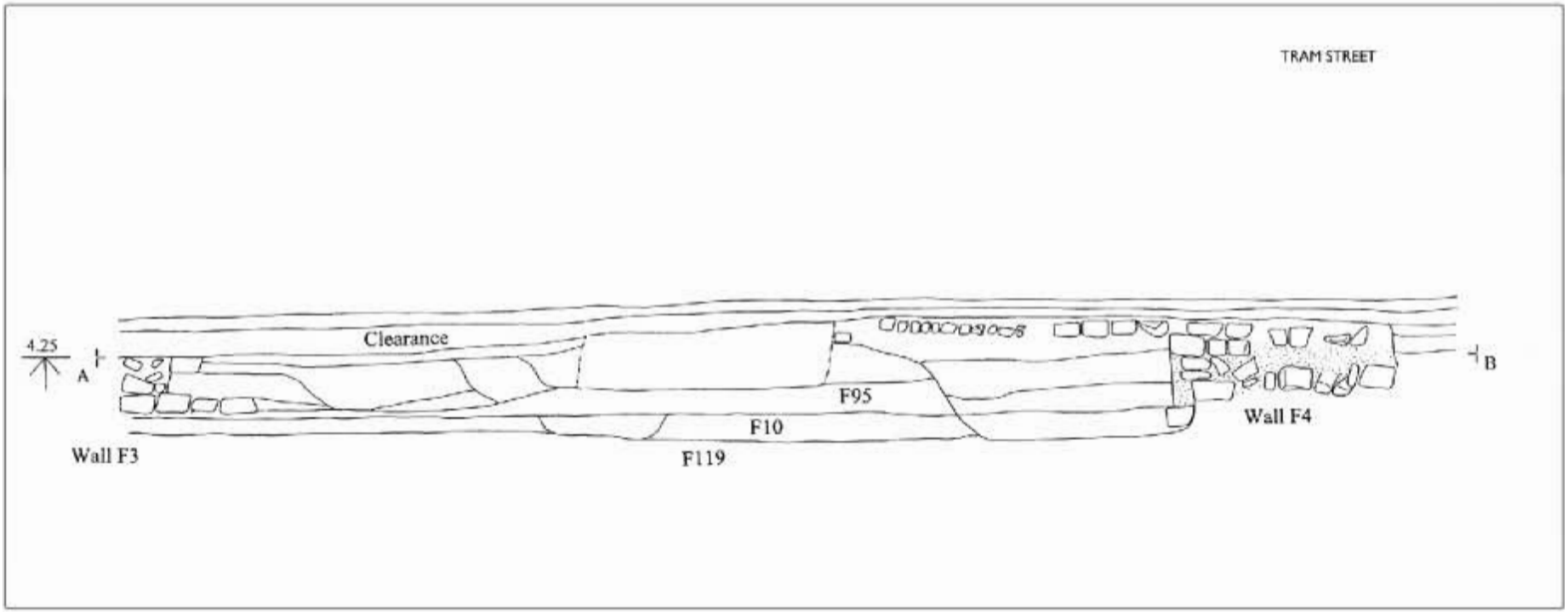
Ref.	01057
Date	16.04.03
Client	LRT/CIE
Scale	1:1,056 (enlarged)
Fig.20	3rd OS edition



Job	LUAS, Line A, Tram Street / Phoenix Street, Dublin 7
Ref.	01057
Date	23.01.03
Client	LRT/CIE
Scale	Not applicable
Fig. 21	Section 1

Fig. 22 Section 2

Fig. 23 Section 3

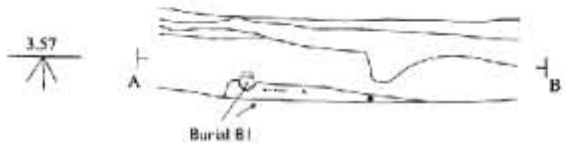


Fig. 24 Section 4

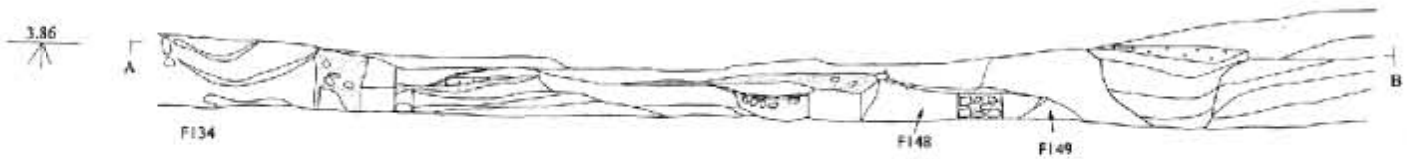
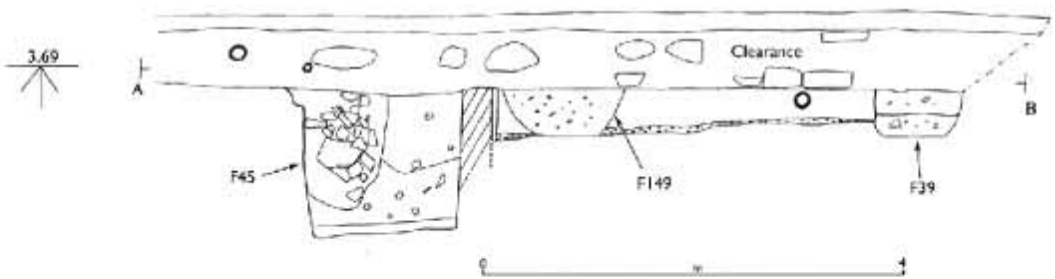


Fig. 25 Section 5



Job EIAS, Line A,Tram Street / Phoenix Street, Dublin 7
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Date 23.01.03
Client LRT/CIE
Scale As Indicated
Fig. 22-25 Sections 2-5

Fig. 26 Section 6

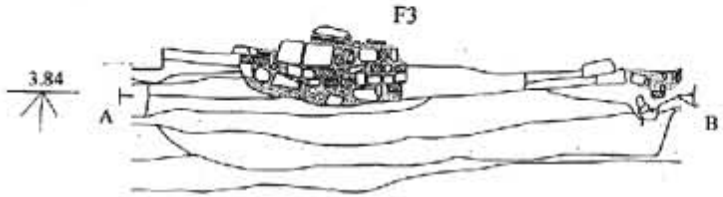
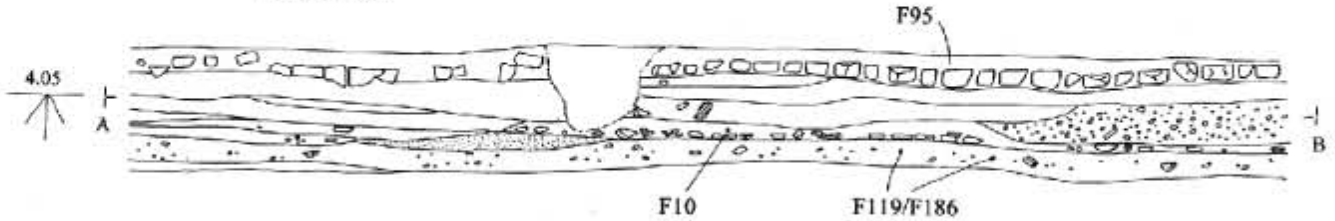
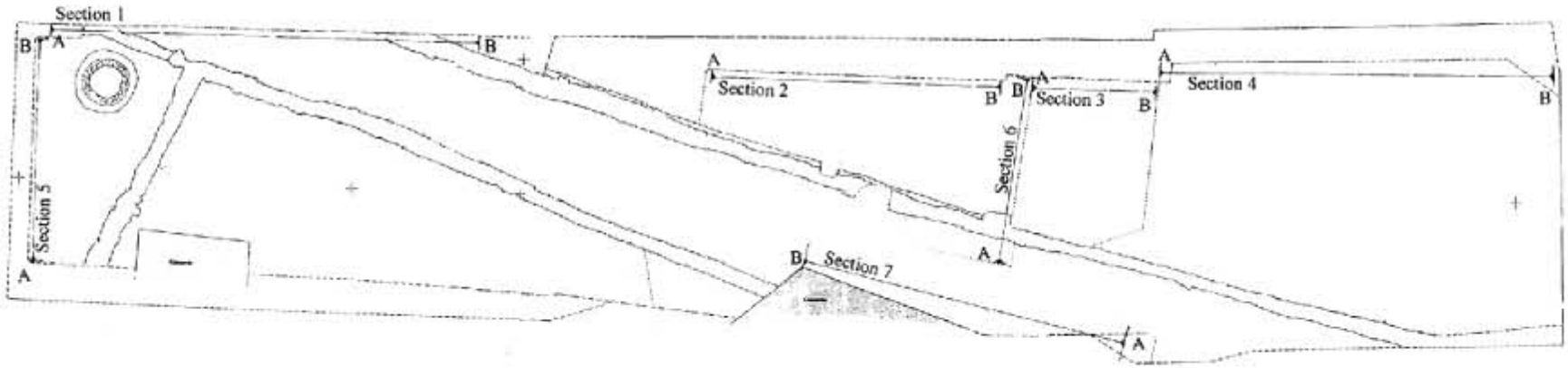


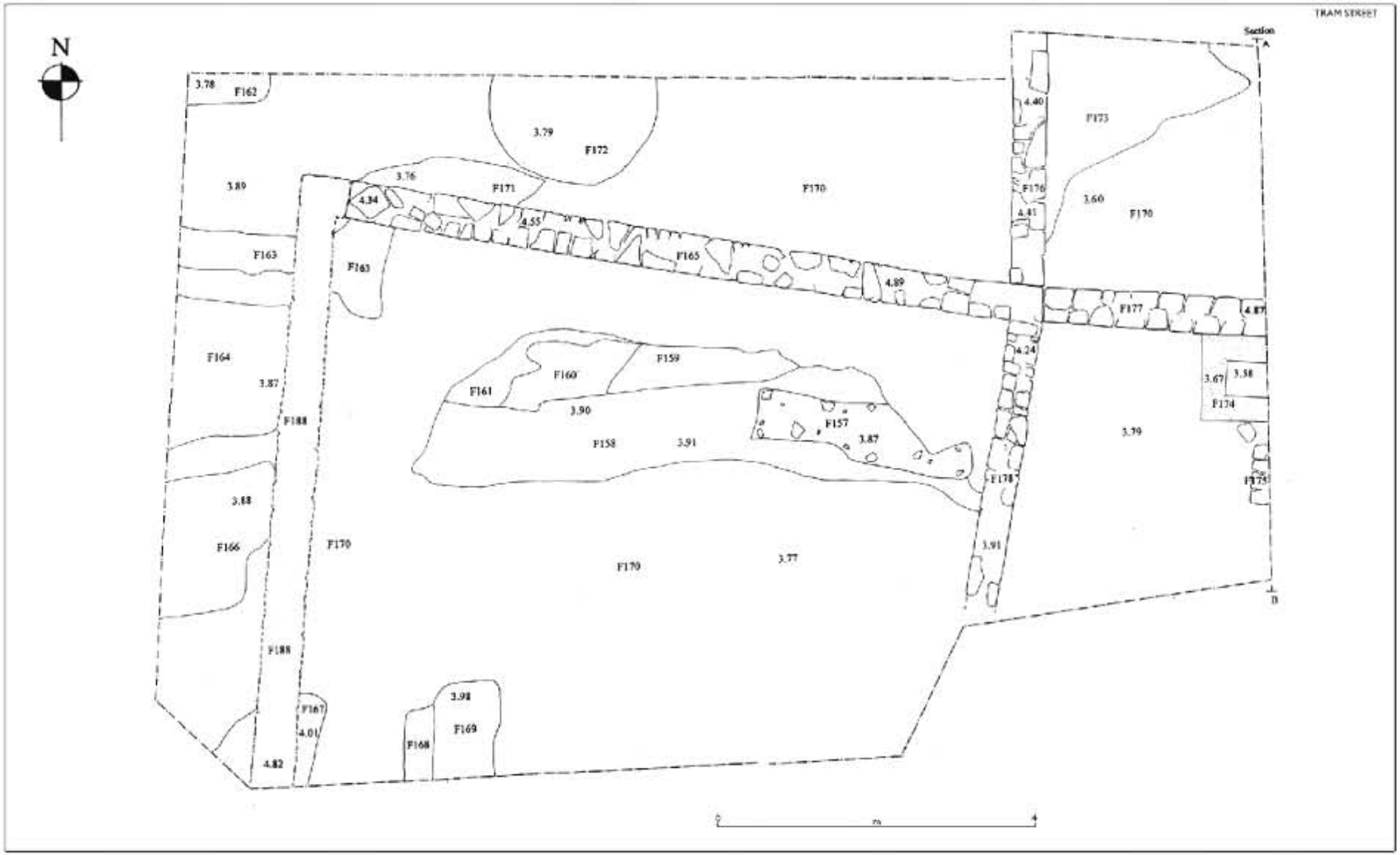
Fig. 27 Section 7



Job ELIAS, Line A, Tram Street/ Phoenix Street, Dublin 7
Ref. 0105/7
Date 16.04.03
Client LRT/CIE
Scale As indicated
Fig.25-27 Sections 6 & 7

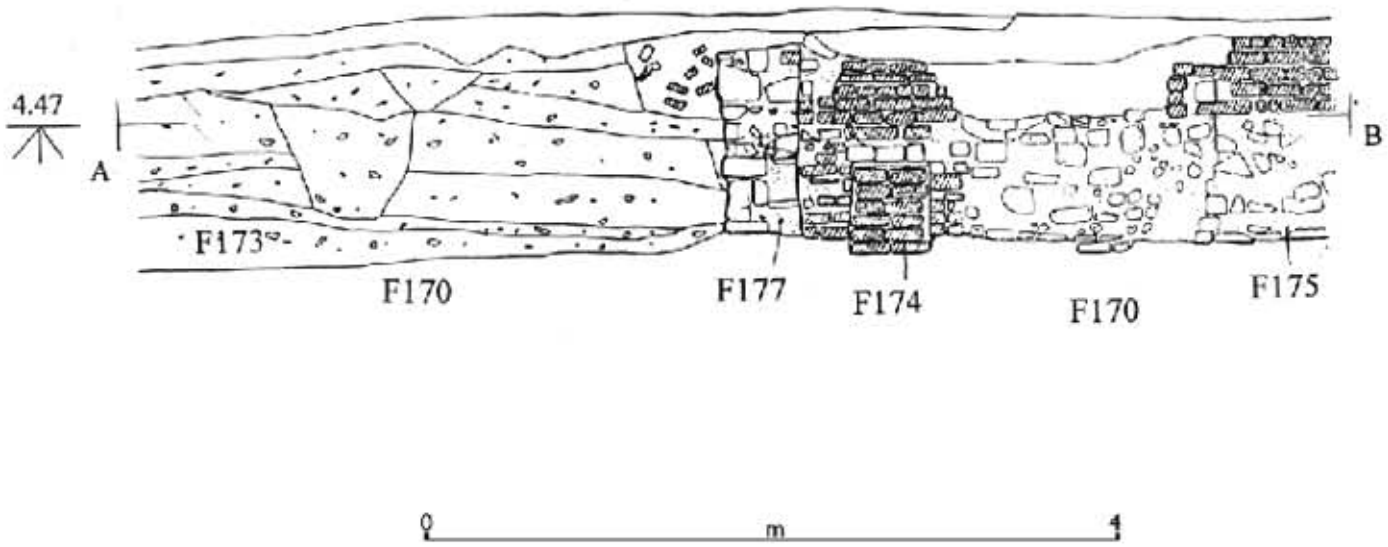


Job	LUAS, Line A,Tram Street / Phoenix Street, Dublin 7
Ref.	01057
Date	23.01.03
Client	IBTA/CIE
Scale	Not applicable
Fig. 28	Section location map for Trench a

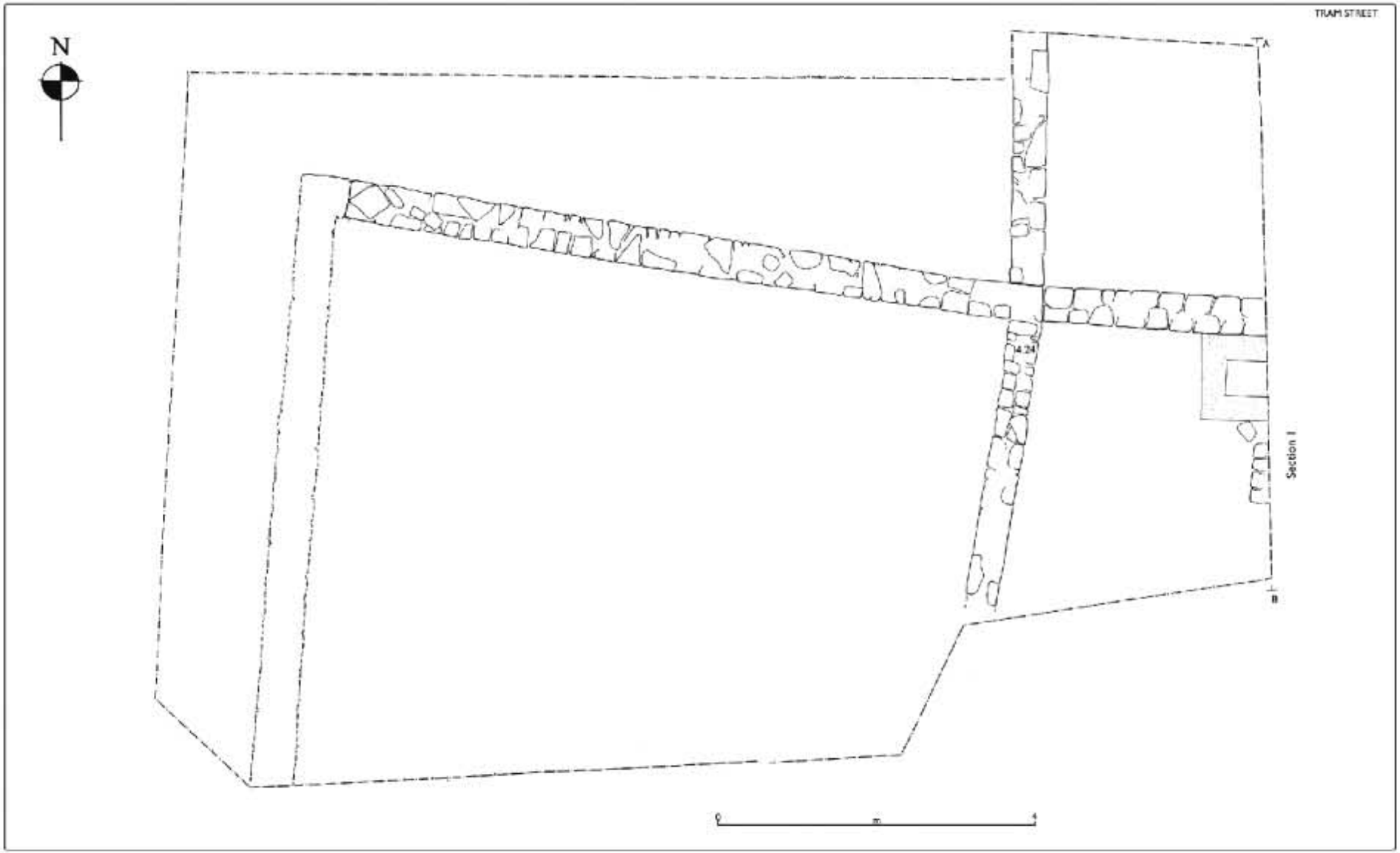


Job LIAS, Line A, Tram Street / Phoenix Street, Dublin 7
Ref 01057
Date 23.01.03
Client LRT/CIE
Scale As indicated
Fig. 29 Trench B Plan

TRAM STREET



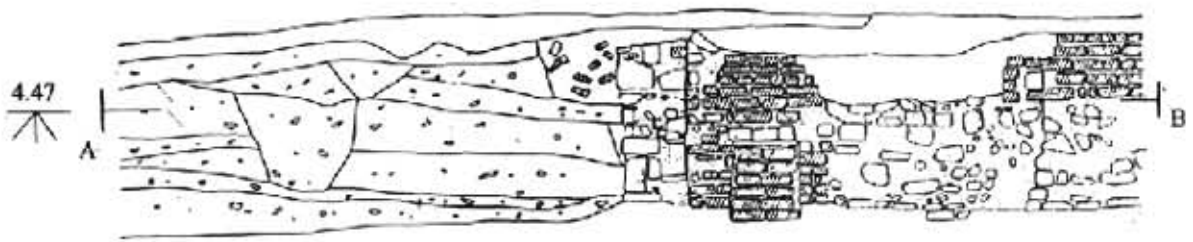
Job	LUAS, Line A, Tram Street / Phoenix Street, Dublin 7
Ref.	01057
Date	23.01.03
Client	LRT/CIE
Scale	As indicated
Fig. 30	Trench B, Section 1

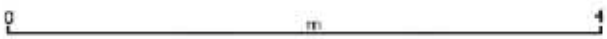


Job LUAS, Line A,Tram Street / Phoenix Street, Dublin 7
Ref. 01057
Date 23.01.03
Client IRT/CIE
Scale As indicated
Fig. 31 Section location map for Trench 8

TRAM STREET

Section 1





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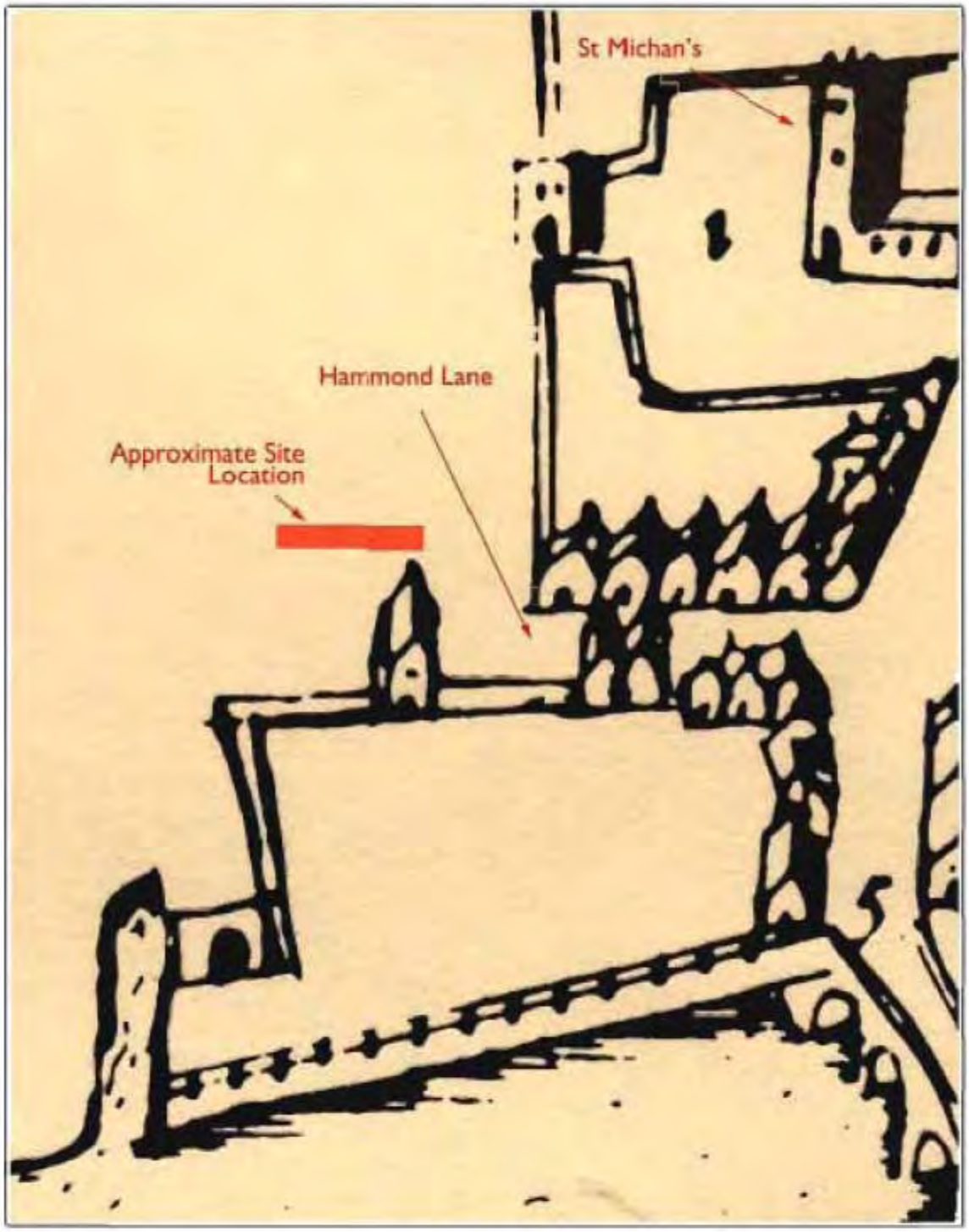
Date	23.01.03
Client	LRT/CIE
Scale	As indicated
Fig. 32	Section 1, Trench B



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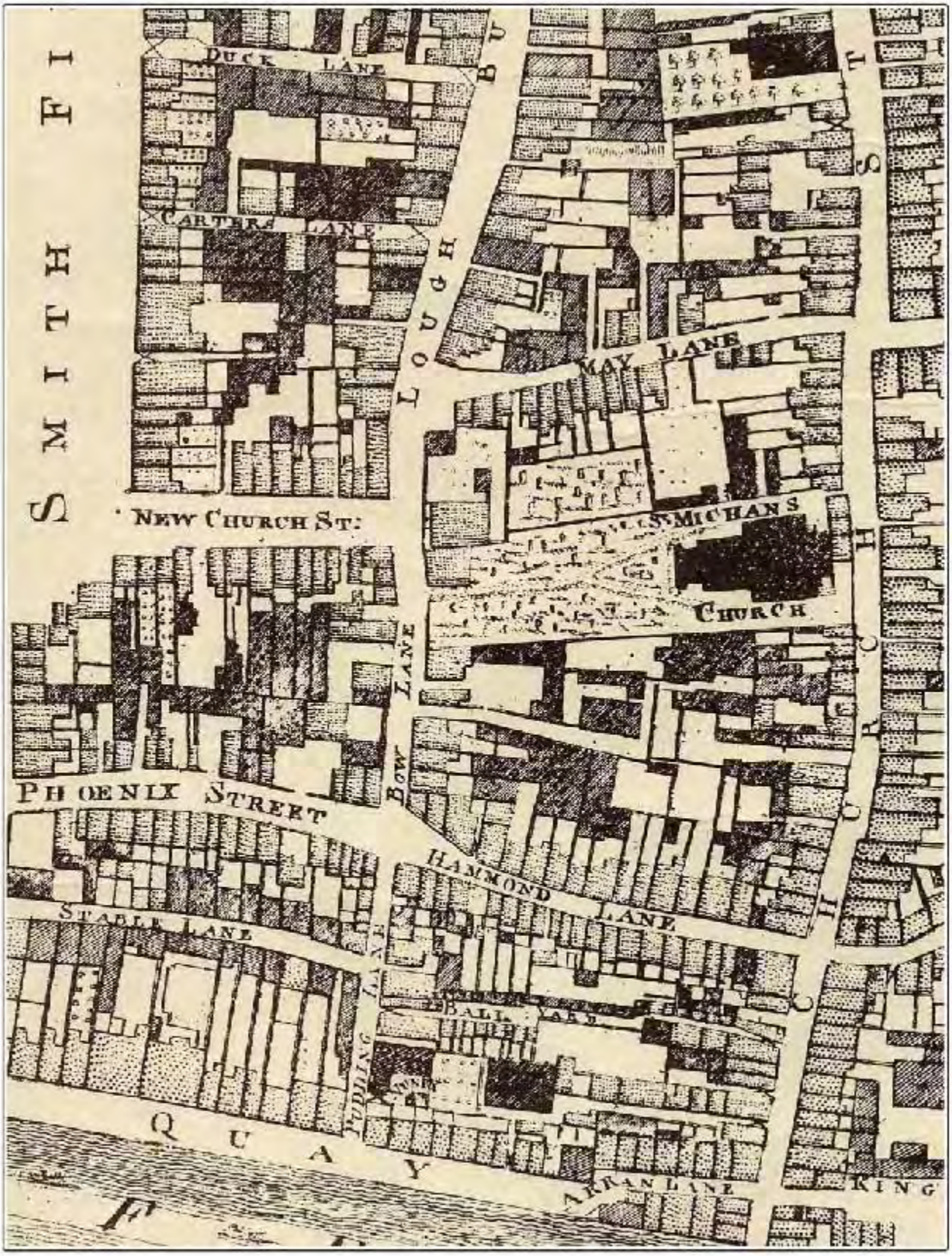
Ref.	01057
Date	16.04.03
Client	LRT/CIE
Scale	Not applicable
Fig. 33	Speed, 1610



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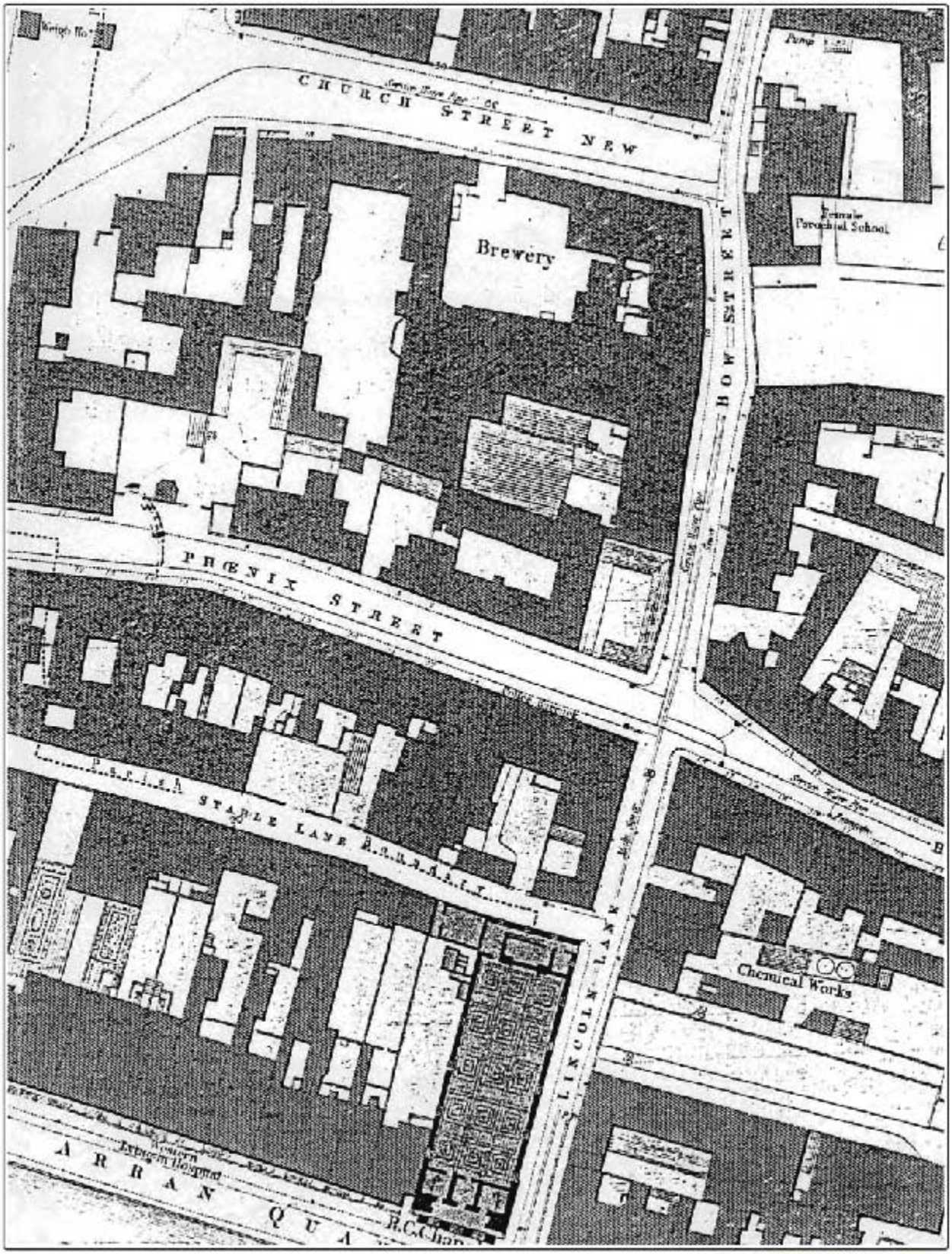
Ref.	01057
Date	16.04.03
Client	LRT/CIE
Scale	Not applicable
Fig. 34	Rocque, 1756



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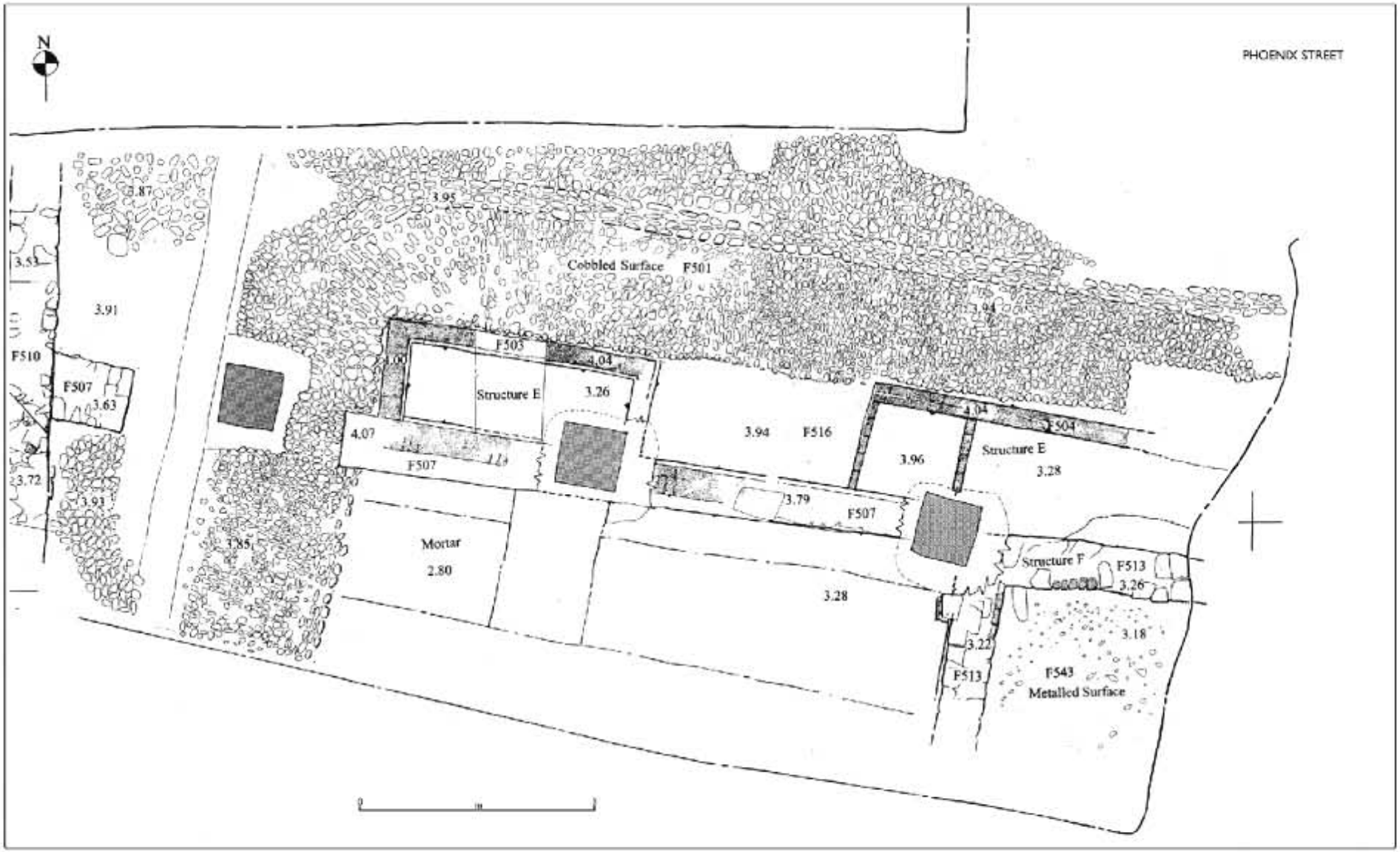
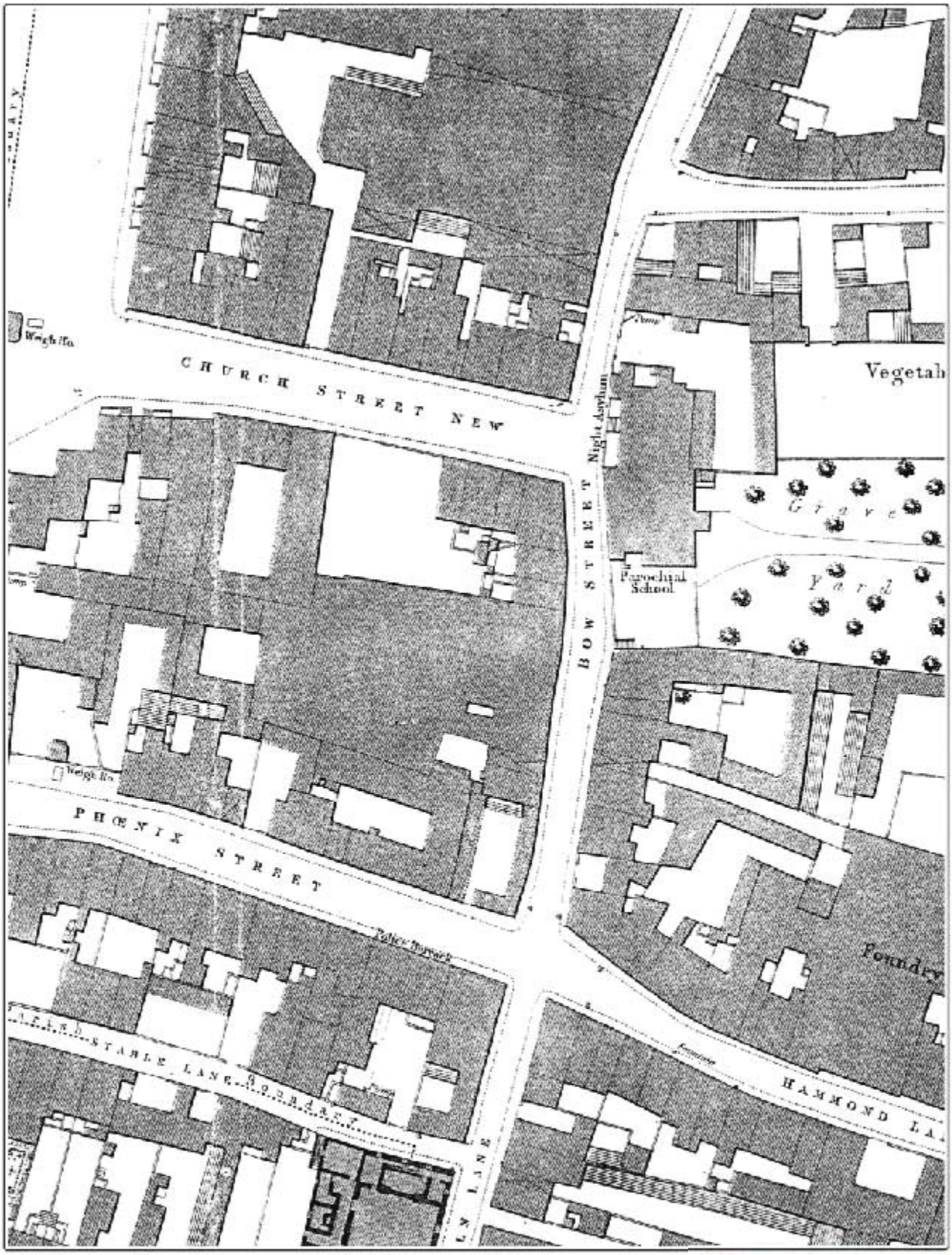
Ref.	01057
Date	16.04.03
Client	LRT/CIE
Scale	1:1,056 (enlarged)
Fig.35	1st OS edition



Job EIAS, Line A,Tram Street / Phoenix Street, Dublin 7
Ref. 01057
Date 23.01.03
Client LRT/CIE
Scale As Indicated
Fig. 16 Phase III plan



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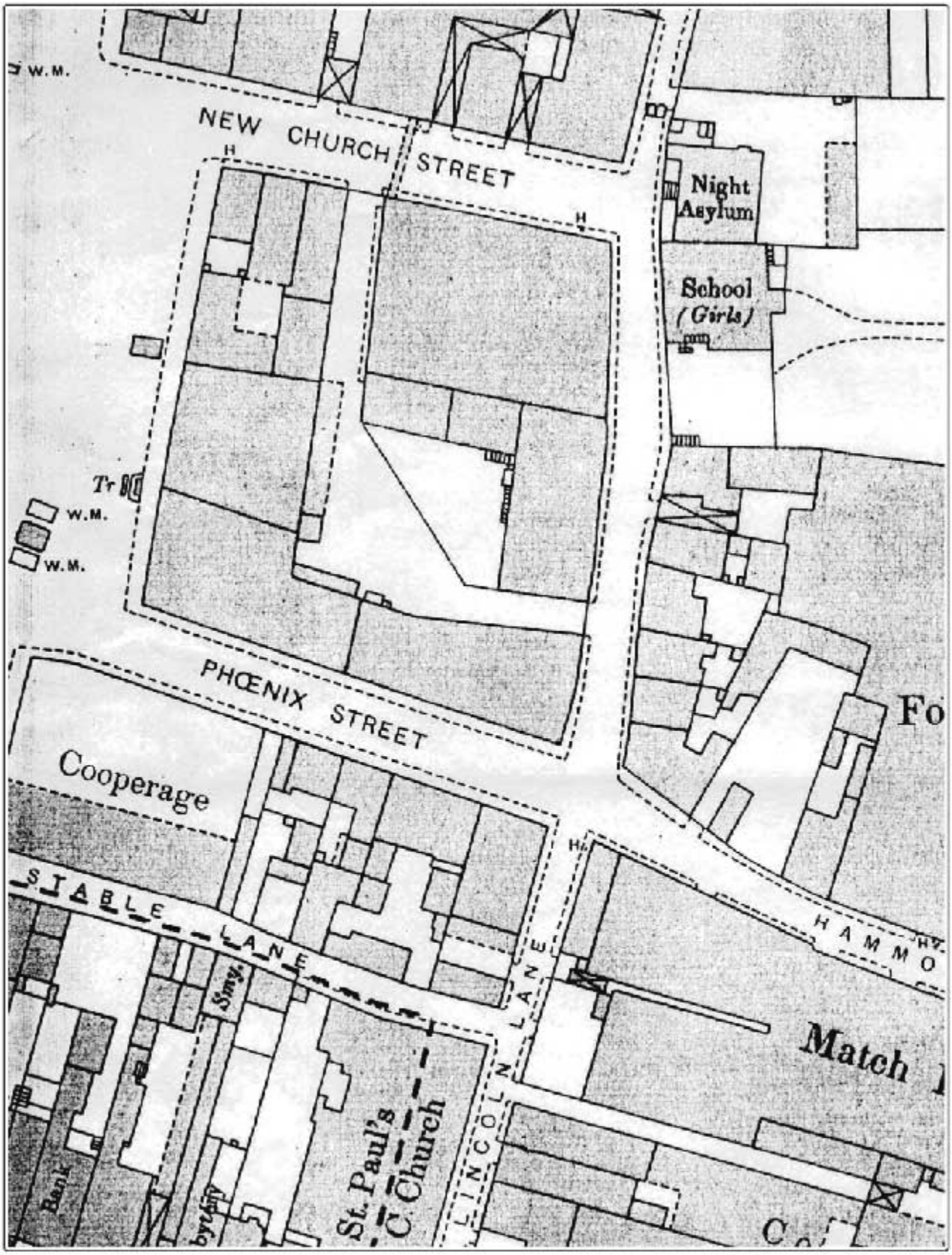
Ref.	01057
Date	16.04.03
Client	LRT/CIE
Scale	1:1,056 (enlarged)
Fig. 37	2nd OS edition



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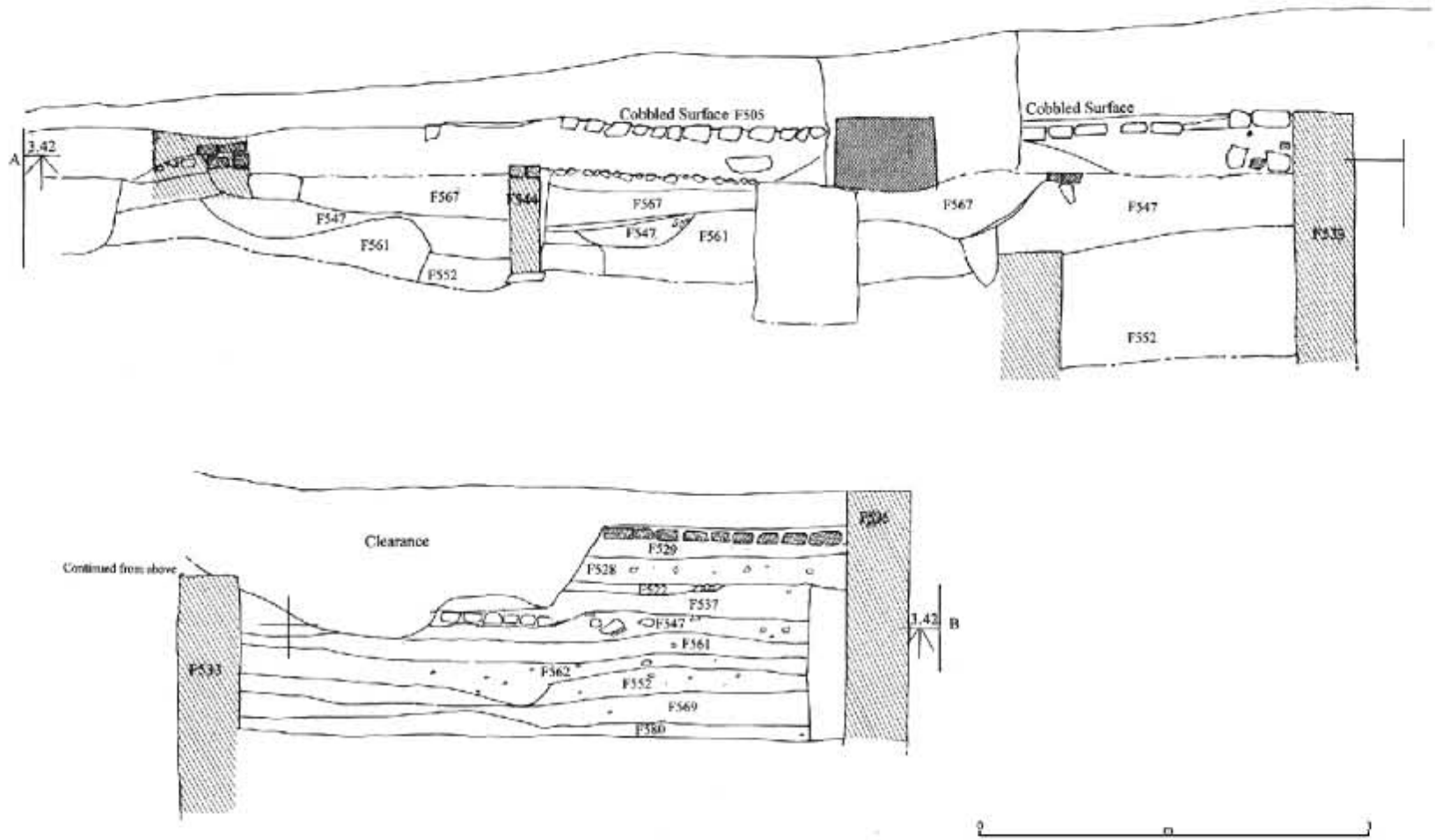
Ref.	01057
Date	16.04.03
Client	LRT/CIE
Scale	1:1,056 (enlarged)
Fig.38	3rd OS edition

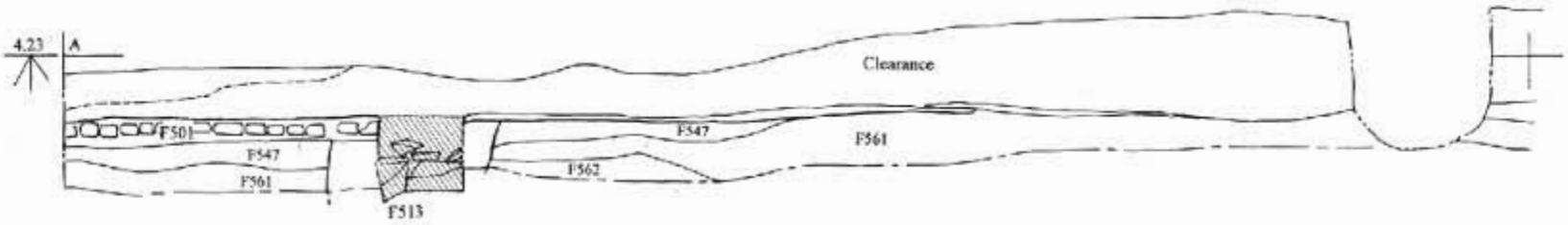
Section 1

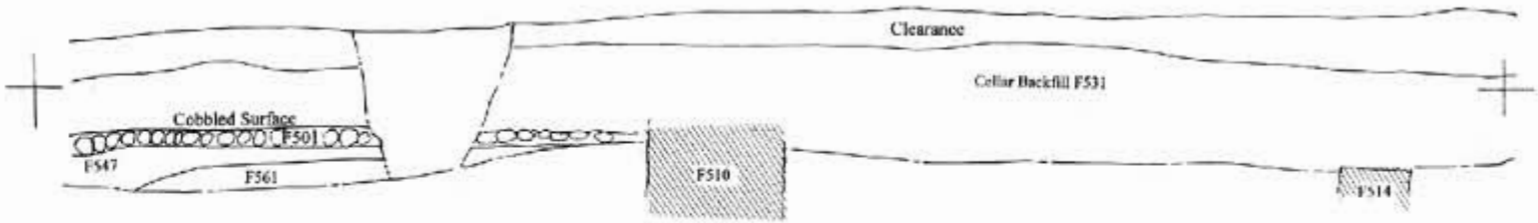


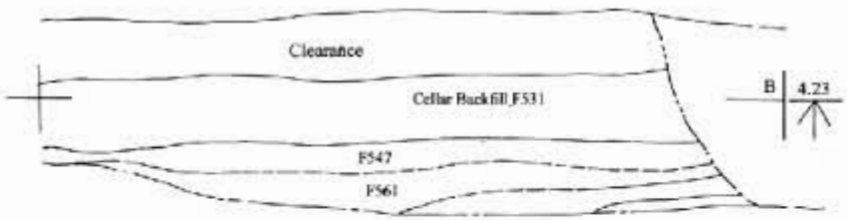
Job	LUAS, Line A,Tram Street / Phoenix Street, Dublin 7
Ref.	01057
Date	13.01.03
Client	LRT/CIE
Scale	As indicated
Fig. 19	Section 1

PHOENIX STREET

Section 2







Job Luas Line A, Tram Street/ Phoenix Street, Dublin 7
Ref. 01057
Date 23.01.03
Client LRT/CIE
Scale As indicated
Fig. 40 Section 2

PHOENIX STREET

Fig. 42
Section 3

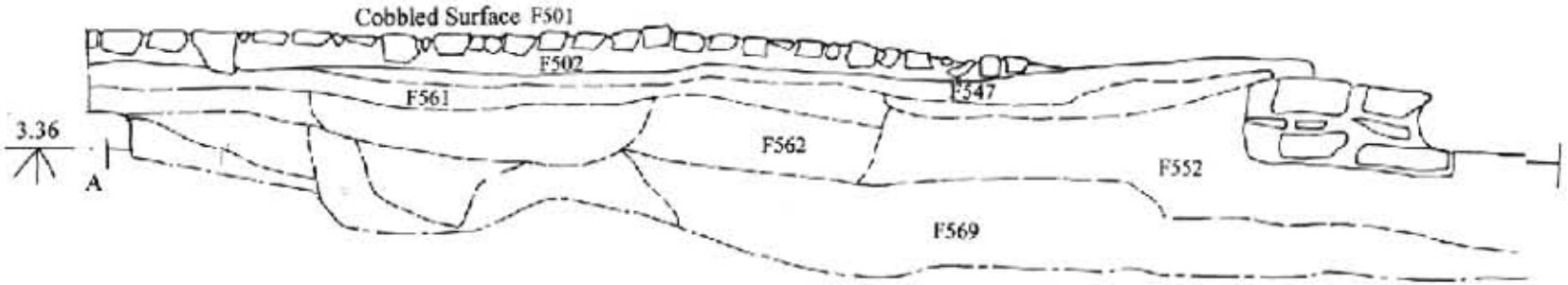
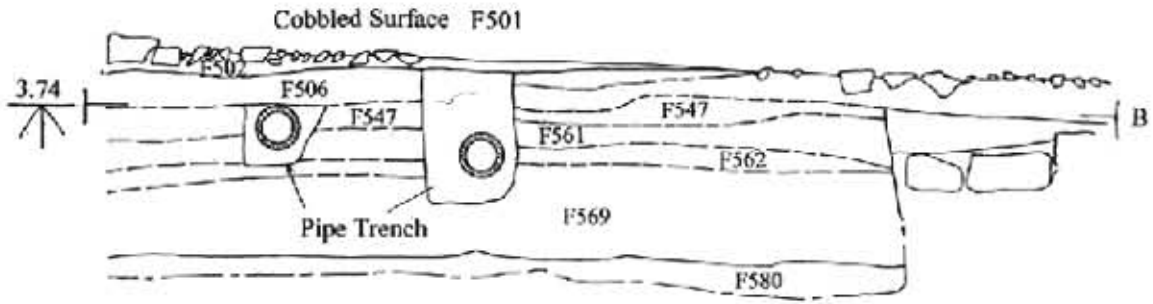
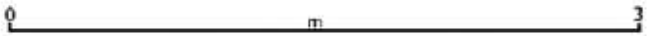


Fig. 42
Section 4





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Ref. 01057
Date 23.01.03
Client LRT/CIE
Scale As indicated
Fig. 41 - 42 Sections 3-4

Fig. 43
Section 5

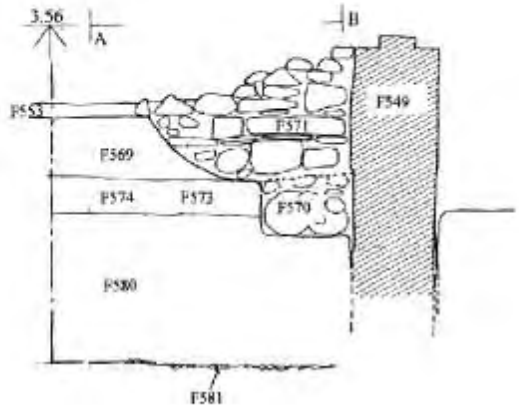

Fig. 44
Section 6

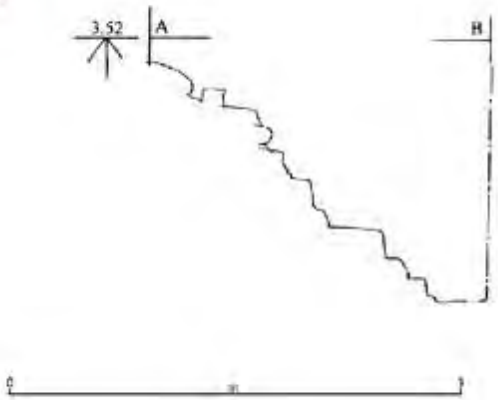

Fig. 45
Section 7

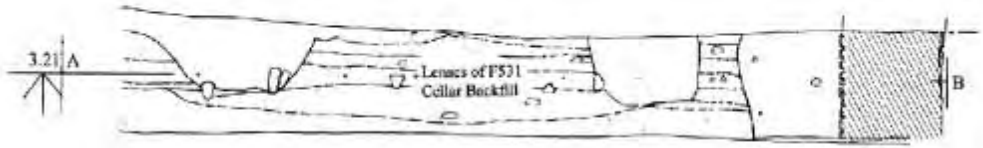

Fig. 46
Section 8

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Date 23.01.03
Client LRT/CIE
Scale As indicated
Fig. 43-46 Sections 5-8

Plate 1 F14 masonry well with gravel and garden soil (F70) in the section

Plate 2 Western end of Trench 1 with well cut F31, surface F89, masonry wall, F2 (right) and cellar F45 (right)

Plate 3 Early surface in laneway, F119 (right) slightly sunken into garden soil (F70) with masonry wall F4 stratigraphically above (left)

Plate 4 Cellar F45 after excavation

Plate 5 Fragment of wall tile recovered from F45 (01E229:42:8)

Plate 6 Selection of wares from Phase I contexts

Plate 7 Masonry well F14 after the excavation of the recuts

Plate 8 F10 cobbling in laneway, looking west

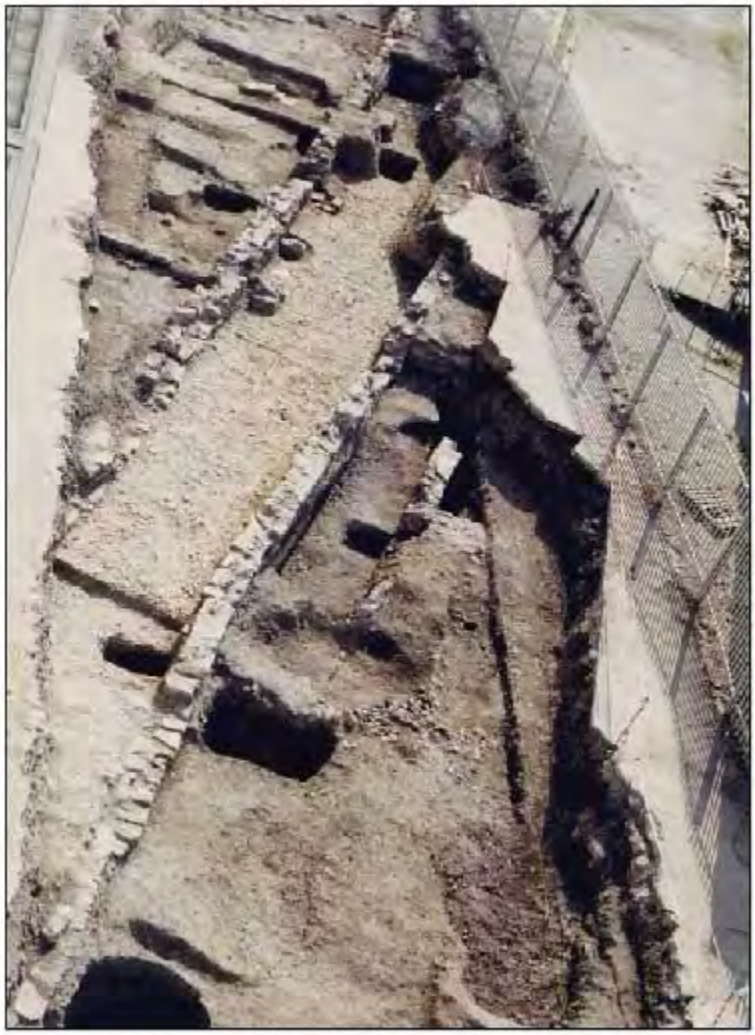

Plate 9 Overview of Trench A showing F119 (foreground) and F10 (background) surfaces in laneway

Plate 10 Section of masonry wall F4, with F10 surface (foreground)

Plate 11 F64 surface north of laneway (looking west)

Plate 12 Inhumation B1

Plate 13 Rubbish pit F7/F14 (recut of well) under excavation

Plate 14 Masonry wall F2, looking north

Plate 15 F95 surface with drain cut

Plate 16 Surfaces F119 (foreground), F10 (centre) and F95 (background) within the laneway

Plate 17 Brick revetting wall F19

Plate 18 F58 'cellar' post-excavation

Plate 19 Detail of F19 wall with F70 garden soil exposed behind (left)

Plate 20 Detail of F4 masonry wall within its foundation cut

Plate 21 F553 surface

Plate 22 Surface F539 (foreground) will F540 well behind, looking west

Plate 23 Detail of F540 well

Plate 24 Structure B with excavated construction cut for F514 wall, looking west

Plate 25 Detail of masonry in Structure B (F514 wall)

Plate 26 F571 buttress after the removal of F570 wall, looking south

Plate 27 F570 wall (left) abutting F549 wall at junctions of Structures B and C, looking north

Plate 28 Structure F showing sondage through dump deposits below

Plate 29 Detail of F507 wall at eastern side of gateway

Plate 30 F501 cobbled surface, looking east