



University of
Salford
MANCHESTER

Archaeological Evaluation and Excavation Report

Lower Irwell, Salford:
Flood Improvement
Scheme

Client: Galliford Try on
behalf of the
Environment Agency

Technical Report:
Rachael Reader and John
Roberts

Report No:
SA/2016/56



Site Location: Within meander of the River Irwell at Castle Irwell, Broughton, Salford, approximately 3km north-west of Manchester city centre

NGR: Centred at SD 820 011

Internal Ref: Salford Archaeology 15/2015

Proposal: Archaeological Evaluation and Excavation Report

Planning Ref: 14/65482/FULEIA

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Summary

In April 2015, Galliford Try on behalf of the Environment Agency (EA) commissioned the Centre for Applied Archaeology (Salford Archaeology) to undertake a programme of archaeological evaluation and excavation on land within the meander of the River Irwell, adjacent to Castle Irwell Student Village, Broughton, Salford, Greater Manchester (centred on SD 820 011). The programme of mitigation arose as a result of a planning application to construct a flood storage basin within the Castle Irwell study area, as part of the Lower Irwell Flood Improvement Scheme (Planning Ref: 14/65482/FULEIA).

Salford Archaeology were initially commissioned to carry out an archaeological Desk-Based Assessment which identified potential heritage assets within the study area. These related to Castle Irwell, a mansion house which was constructed in 1826 and associated outbuildings. The house was located on a sandstone knoll which was demolished and levelled to make way for the construction of Manchester Racecourse during the early 20th Century.

Based on the identification of the potential heritage assets, GSB were commissioned to carry out a geophysical survey. Several anomalies were identified relating to the heritage assets identified in the DBA and Greater Manchester Archaeological Advisory Service (GMAAS) imposed an archaeological condition on the planning permission to secure further archaeological mitigation.

In April 2015, Salford Archaeology carried out a programme of archaeological evaluation which positively identified the archaeological remains of the Castle Irwell estate and a possible prehistoric ditch circumventing the (now levelled) sandstone knoll upon which Castle Irwell house once sat.

Following on from the positive identification of archaeological remains during the evaluation, one area was opened up to target the remains of the 19th century cottages and glasshouses related to the Castle Irwell estate. Another area was opened to further investigate a linear feature which was identified during the evaluation. The preservation of the estate remains was fair as a lot of truncation had taken place once the site became a racecourse. However the vast majority of the buildings' footprint were revealed as well as features which were not identified on the mapping.

1. Introduction

1.1 Background

The Centre for Applied Archaeology (Salford Archaeology) was commissioned by Galliford Try on behalf of the Environment Agency to undertake a programme of archaeological evaluation and excavation within the meander of the River Irwell, adjacent to Castle Irwell Student Village, Broughton, Salford, Greater Manchester. This programme of mitigation arose as a response to a condition proposed by GMAAS, to Salford Planning Authority, on a planning application to construct a flood storage basin within the Castle Irwell study area, as part of the Lower Irwell Flood Improvement Scheme (Planning Ref: 14/65482/FULEIA). The development would involve the lowering of the current ground level within the Castle Irwell basin by approximately 1.20m, the construction of a 3.00m high flood embankment and drainage outlet around the study area perimeter and the construction of an inlet weir within the south-west corner of the study area. Planning permission was granted on 19th December 2014 and the wording of the heritage related condition is as follows:

The development shall be implemented in accordance with the Written Scheme of Investigation (WSI) titled 'Project design for a programme of archaeological mitigation at Castel Irwell', Version 1.3, ref: CfAA/2014, written by the Centre for Applied Archaeology, University of Salford., unless otherwise agreed in writing by the Local Planning Authority.

Reason: To record and advance understanding of heritage assets impacted on by the development and to make information about the archaeological heritage interest publicly accessible in accordance with Policy CH5 of the City of Salford Unitary development Plan and Para 141 of the NPPF.

As part of the planning application, previous programmes of archaeological work had taken place, including a watching brief, project design, archaeological desk-based assessment and geophysical survey (see chapter 2). As a result of the previous archaeological work, the Planning Authority's consultation with GMAAS included more detailed proposals, which are outlined in Chapter 2. The first phase of this mitigation to discharge the condition was an archaeological evaluation carried out in March 2015. Following consultation with Norman Redhead (GMAAS) and based on the positive identification of archaeological remains during the evaluation, a further programme of works was proposed. The first was an open area to target the remains of the 19th century cottages and glasshouses associated with Castle Irwell mansion, taking place in April 2015. A second area was opened to reveal the course and extent of a possible ditch identified during the evaluation, taking place in May of 2015.

1.2 Location, Topography and Land use

The study area lies within the northern edge of the city of Salford, approximately 3km north-west of Manchester city centre and 1.8km to the south of the town of Prestwich. Centred at SD 820 011, it sits within the flood plain of the River Irwell and is bounded to the north by Kersal Dale, to the east by Higher Broughton, to the south by Charlestown and to the west by Lower Kersal.

The topography of the study area is generally level sitting at a height of 30m above Ordnance Datum (AOD), albeit at its northern border which rises steeply to 50m AOD.

Currently the study area is divided into two distinct zones, which are separated by a band of trees which span the entire width of the Castle Irwell meander. The northern half of the study area is under the ownership of Salford City Council and comprised an area of deeply rutted scrub land surrounded by a dense band of vegetation including shrubs and trees. This part of the site can be accessed by a footbridge located at the north-western extent of the site, which crosses the River Irwell from Kersal.

The southern half of the site is under the ownership of Salford University and forms part of the Castle Irwell Student Village. At its southern end the site is comprised of several sports pitches whilst its northern end has been left fallow. To the east and west the site is bounded by a band of trees and shrubs and its southern end is bounded by a low embankment. This part of the site can be accessed via a footpath which runs northwards from Cromwell Road and continues around the entire study area.

1.3 Personnel

The project was conducted by professional archaeologists from Salford Archaeology. On site excavations were conducted by Sarah Cattell, Emilie Hayter, Peter Noble, Andrew Radford, Rachael Reader, Andrew Radford, John Roberts, Mandy Stanton and Kirsty Whittall. Kirsty Whittall undertook the post-excavation work and sampling strategy. The report was written by John Roberts and Rachael Reader and illustrated by Elizabeth Statham and Rachael Reader. The project was managed by John Roberts.

1.4 Monitoring

Norman Redhead, Heritage Management Director of GMAAS monitored the archaeological works on behalf of Salford Planning Authority.

2. Historical and Archaeological Background

2.1 Introduction

This section details the historical development of the study area, much of which derives from the archaeological desk-based assessment and the project design submitted with the planning application (Nash 2014a; 2014b). The programme of archaeological work carried out in conjunction with the planning application is outlined below, as well as the works detailed in the current report.

2.2 Historical Background

2.2.1 Prehistoric Period

Although there is no evidence for Prehistoric activity from within the study area, the surrounding area was certainly utilised during this period. Evidence of Neolithic activity has been uncovered to the immediate north of the study area within Kersal Moor where flint and chert cores have been uncovered along with a sandstone spindle whorl. At Irwell House to the east a flint scraper was uncovered within gravel deposits (Arrowsmith 1993, 3)

Evidence for Bronze Age activity includes the site of a possible barrow to the north-west of the study area at Broughton Old Hall, whilst an Iron Age settlement may once have been located on Rainsough Hill (*ibid*). Although this latter site was destroyed by quarrying in the mid 19th century, excavations within adjacent gardens revealed a possible palisade along with over 1000 sherds of late Prehistoric/Romano-British pottery, glass and other artefacts (*ibid*). Furthermore, this site may have been comparable to another potential later prehistoric site which lies to the west of the flood defence area, which is termed ‘Castle Hill’ on early Ordnance Survey mapping (*ibid*).

2.2.2 Roman Period

With regards to Roman activity, early OS mapping depicts a wooded knoll at the southern end of the study area, which is labelled ‘Hylewood supposed Roman Camp’ however there is no direct evidence for the presence of this camp and the only firm evidence for Roman activity close to the area is the discovery of a silver denarius of Septimus Severus, which was found in 1907 on the land between the Manchester Racecourse and the Cromwell Bridge (Arrowsmith 1993, 14).

2.2.3 Medieval to early Post-Medieval period

During the Medieval period, the study area lay within the township of Pendleton, which formed part of the manor of Salford and whose place-name is first documented in the twelfth century (Farrer and Brownbill 1911, 392-396). In 1261, the township was granted to the Priory of St. Thomas the Martyr and remained so

until the Dissolution (*ibid*). In 1539, Pendleton was then granted to the Bishop of Lichfield and subsequently passed to his nephew, Bryan Fowler, after which it remained in possession of the Fowler family until the beginning of the 18th century, when it was bequeathed to the Fitzgerald family (*ibid*). Within the study area, there is no direct evidence for either Medieval or early Post-Medieval activity.

The common assumption about the site during this period would be that it formed part of the medieval agricultural systems supporting arable and pasture lands of the surrounding environment.

2.2.4 18th century to present day

Historical research has revealed that prior to the early 18th century the study area and much of its surroundings were relatively rural consisting mainly of enclosed fields. The Kersal Estate plan of 1755 and Yates Map of Lancashire dating to 1785 do indicate the presence of two possible mill sites along the northern bank of the River Irwell meander. However both sites do not appear on any subsequent mapping.

By the early 19th century the study area began to show the first signs of development. In 1818 the Manchester Golf Course was founded within Kersal Dale and the most northern section of the study area occupied part of this course until it ceased to exist in 1960 (FoKD 2009). In 1826 John Purcell Fitzgerald constructed a mansion house named ‘Castle Irwell’ on a wooded knoll within the southern half of the study area and this appears on the OS survey of 1849. By the 1894 OS survey of 1894 some small scale development had taken place to the west of Castle Irwell.

During the first quarter of the 20th century the study area underwent a substantial phase of redevelopment which involved the demolition of Castle Irwell to make way for the construction of Manchester Racecourse and associated Stables and Stands. The study area remained largely unaltered on the OS Surveys of 1922 and 1932; however by the survey of 1956 a small area of land on the northern bank of the River Irwell’s meander had been occupied by Allotment Gardens. By the OS survey of 1968 Manchester Racecourse had been demolished with the exception of the stables which appeared on all subsequent mapping until 1986. By the OS survey of 1972, Castle Irwell Student Village had been constructed on the south-eastern boundary of the study area and by the end of the 20th century the land formerly occupied by the racecourse was developed into a Sports Ground. No further development has taken place since this time and the study area still functions as a Sports Ground.

The 19th and 20th centuries saw rapid and substantial landscape change within the immediate environment as a direct result of the growth of the Manchester and Salford populations. This social development led to substantial changes in the social mobility and aspirations of individuals through the creation of opportunities for greater wealth and by extension an increase in leisure time and activities (EH Conservation Bulletin 2012 issue 68 – “How do we sustain sporting memories of the future”).

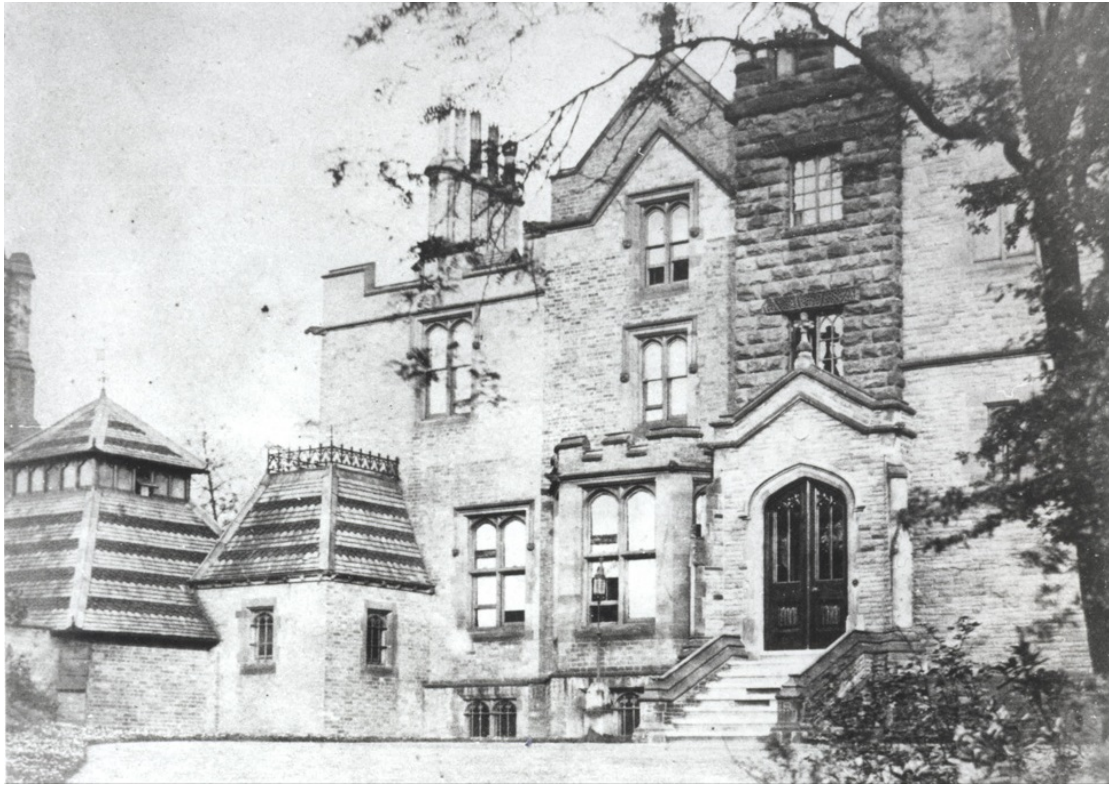


Fig 1. The north-west frontage of Castle Irwell house
(<http://www.kersalflats.co.uk/kersaldale4.html>)

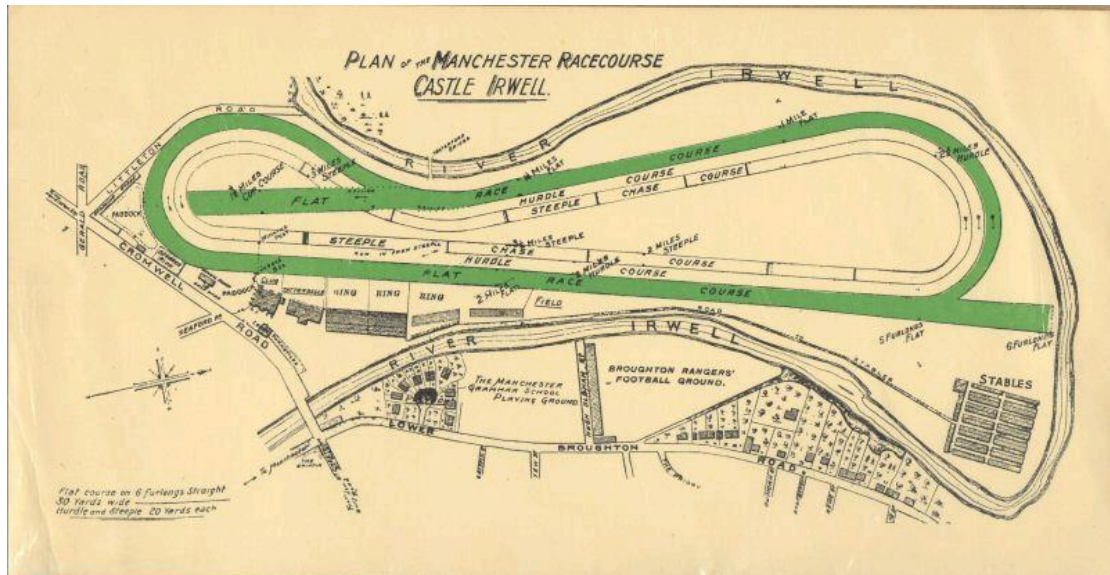


Fig 2. Plan of the racecourse at Castle Irwell
(<http://www.greyhoundderby.com/Manchester%201951.htm>)



Fig 3. The racecourse turnstiles, pictured on the final day before closure in 1963 (image: <http://www.kersalflats.co.uk/racecourse2.html>)

2.3 Archaeological Background

2.3.1 Archaeological Desk-Based Assessment

In January 2014 Salford Archaeology was commissioned by the Environment Agency to undertake an archaeological Desk-Based Assessment on the study area. The aim of this assessment was to identify as far as possible the nature, extent and significance of the archaeological resource so as to enable informed recommendations to be made for the future treatment of any surviving remains. This information was required to inform and support the planning application to construct the flood storage basin (14/65482/FULEIA).

The assessment identified the high local significance of the remains relating to the early 19th century Castle Irwell Estate, the late 19th century Waterford Bridge and the early 20th century Manchester Racecourse. It also concluded that the proposed development would involve the loss of a large proportion of the below-ground archaeological remains identified. Following consultation with the archaeological planning advisory body for the City (GMAAS), the Environment Agency commissioned a programme of geophysical survey within the study area.

2.3.2 Geophysical Survey

In April 2014, GSB Propection Ltd was commissioned by the Environment Agency to conduct a detailed magnetometer survey (fluxgate gradiometer) of the study area. The aim of this assessment was to locate and characterise any anomalies of possible

archaeological interest within the study area as part of the wider archaeological assessment (Gater 2014).

Two centuries of intensive activity on the site resulted in a confused magnetic dataset. The recorded anomalies are difficult to untangle as they could relate to many phases of activity, when the site was used as a mansion house, a racecourse and as sports pitches. However some of the magnetic responses could be tentatively assigned to a road and buildings which originally lay to the west of Castle Irwell, which itself seems to have been totally demolished and removed. Numerous services, pipes and drains were shown in the results. The racecourse also left a strong imprint on the data but only tentative evidence was found for alluvial deposits.

2.2.3 Archaeological Watching Brief

In April 2014, Environmental Scientifics Group commissioned Oxford Archaeology North (OA North) to undertake an archaeological watching brief during the course of geotechnical investigation in the study area. This comprised 17 test pits, 10 boreholes and 8 window samples (Stitt 2014). Several areas of 19th and 20th century activity were identified, with four test pits comprising of levelling layers of low archaeological significance. The evidence from the previous archaeological work suggests that the site was subject to comprehensive levelling during the construction of Manchester Racecourse. However it appears only the mansion house itself was on the levelled hill, and geophysics did detect the gatehouse therefore parts of the wider complex do survive.

Remains of early 20th century walls relating to the Stables associated with the Racecourse were identified and suggests extensive below current ground level remains associated with this building are located in the NE corner of the flood-defence area.

2.2.4 Archaeological Project Design

In October 2014, EA commissioned Salford Archaeology to produce an archaeological Project Design to lead a programme of intrusive archaeological works to mitigate the proposed impact of the development within the study area. This arose as a result of the planning application to construct the flood storage scheme (14/65482/FULEIA) and would involve the lowering of the ground level by 1.20m, impacting upon any below-ground remains. The previous investigations concluded that the study area had the potential to yield below ground remains and the development would have involved the direct loss and disturbance of the remains.

In expectation of a planning condition on the application, the Project Design described the works to be undertaken to discharge the condition. Discussions between EA and GMAAS suggested the following activities that needed to be undertaken:

1. If the stable block is to be disturbed then this should be trenched. Subject to the results, area archaeological excavation would be required

2. The area of the Castle Irwell mansion should be trenched to confirm the geophysics results. Subject to the results, area archaeological excavation would be required if significant discoveries are made
3. The area of the Castle Irwell Cottage and adjacent areas should be trenched. Subject to the results, area excavation would be required if significant discoveries are made.
4. The racecourse is of particular local and regional interest and will require mitigation which will be through a combination of archaeological trenching ahead of site construction and historic record research
5. Assessment and mitigation will be restricted to the area defined by the red line boundary on the map
6. Dependent on results and subject to health and safety constraints, mitigation will provide the opportunity for local public participation
7. The EA will work with an archaeological contractor to develop a Project Design for acceptance by GMAAS as the advisors to the local Planning Authority
8. The results of the historical research and archaeological investigations will be published in an appropriate way, probably through the Greater Manchester Past Revealed series

2.2.5 Archaeological Evaluation

In March 2015, Salford Archaeology was commissioned by EA to carry out an archaeological evaluation within the study area. GMAAS and EA agreed on an area of archaeological interest, in light of the previous archaeological work carried out, covering an area measuring 4.8ha. The aim was to preserve by record by initially identifying the quality of survival of the remains through evaluation trenches.

The aim of the trenches was to focus on the areas of known archaeological interest that will be affected by the proposed flood improvements. These were chosen based on the results of the geophysical survey, in combination with OS mapping and the desk-based assessment. The area of the stable block is contaminated with hogweed and the ground was not going to be levelled in this area, therefore an agreement was made that no trenching was required in this area.

A total of ten trenches were proposed each targeting specific anomalies from the geophysical survey and/or features identified during the desk-based assessment.

2.2.6 Open Area Excavation 1: Castle Irwell Cottages

In April 2015, Salford Archaeology was commissioned by EA to carry out the first of two open area excavations. Section 4.1.3 of the Project Design on Continued Mitigation stated that where trenches identified archaeology, these could be expanded to open area excavations, the extent of which was to be confirmed with GMAAS. In compliance with that statement, a further Project Design was drawn up (Roberts 2015), outlining GMAAS's recommendations on the opening of further excavation areas:

- A machine strip, clean, map and record exercise, followed by targeted excavation, is undertaken for the structures shown on the 1848 OS map to the west of the track (but gone by 1850) and for the cottage site to the east of the track which is shown on the OS 1850 map. Survival is likely to be patchy and could only be understood and recorded properly by open area exposure. There will be features which will require further excavation following

exposure, cleaning and recording, to maximise our understanding of the remains. Selection of features for targeted excavation should be undertaken at a site meeting following the first phase of work. It is estimated this area of interest will be approx. 55 x 40 metres.

Trenches E and D revealed archaeological remains relating to Castle Irwell Lane and Castle Irwell Cottage, which were to be targeted further in this area excavation.

2.2.7 Open Area Excavation 2: Castle Irwell Linear Feature

In May 2015, Salford Archaeology was commissioned by EA to carry out the second of two open area excavations. Evaluation trenches G, I, F and J produced evidence for the sandstone bedrock which represented the remains of the levelled knoll that Castle Irwell mansion once sat on. However in addition to this, trenches G and G1 revealed a large linear feature 'cut' into the sandstone on both sides, with trenches J and I showing it 'cut' into the natural sands and gravels on one side. The fills were devoid of any artefacts or ecofacts and did not appear to be a manmade feature. The opinion of Dr Simon Hutchinson, a senior lecturer in the School of Environment and Life Sciences, University of Salford, was sought on the feature. He was not convinced that the feature was geological in origin, therefore in consultation with GMAAS, a second area of excavation was proposed:

- GMAAS consider that the ditch-like feature skirting the sandstone outcrop requires further excavation to help understand its origins and whether or not it is human made. There is a unique opportunity to explore the feature further as part of the ground works for the development. As with (1), there should be a machine strip, clean, map and record exercise to expose the surface and extent of the original sandstone outcrop as well as the ditch-like feature running alongside it. Archaeological cleaning should only take place where potential features are exposed, rather than across the whole of the natural sandstone outcrop. Following this process there will be a site meeting to review the evidence for the ditch-like feature (and any other archaeological remains that come to light) and to agree if further investigation is necessary and, if so, what form further works will take. This might be more sampling for geological/palaeoenvironmental analysis and sample archaeological excavation of sections along the line of the ditch-like feature as well as other features of archaeological potential. It is estimated that the diameter of this area of interest will be c 120 metres. There should be some built-in flexibility to 'chase' potential features on the edge of the investigation area to maximise understanding.

3. Methodology

3.1 Excavation Methodology

The area was excavated using a tracked mechanical excavator. All excavated material was removed using a 13 tonne tracked machine with a 1.60m wide ditching bucket. At the request of Galliford Try, the main contractor, topsoil was kept separate from the deposits below and was subsequently banded around the area excavated as part of health and safety measures. Deposits were removed until archaeological features were encountered or natural geology. The machine excavation was supervised by a professional archaeologist at all times.

Excavated spoil was stockpiled at least 1.00m from the excavated edges and following machine excavation, further excavation and cleaning proceeded by hand. The site was handed to the main contractor who was responsible for any backfilling.

3.1.1 Open Area 2: Castle Irwell Linear Feature

Following consultation with EA, Galliford Try and GMAAS, it was agreed that the feature would be exposed by following it from Trench I. This was to be done with a tracked mechanical excavator to expose the uppermost fill of the feature and an area 1.00m either side to expose any potential associated features or diversions. At strategic points along the course of the feature, the fills are to be removed using a mechanical excavator and then hand excavated and cleaned. This will be augmented with hand excavation on any termini exposed and/or external features.

3.2 Recording Methodology

Separate contexts were recorded individually on Salford Archaeology pro-forma context sheets (Appendix 1 – Context List) with plans and sections recorded on drawing sheets at an appropriate scale (1:10, 1:20 and 1:50), depending on the complexity of the data and features encountered. All drawings were individually identified and cross referenced, contexts enumerated and principle layers and features annotated with OD level information.

In this report all fills, layers, deposits and structural features are in rounded brackets (***) and cuts are in square brackets [***]. Sample numbers appear within a diamond shape \diamond . Features will be named and denoted by their principle context number (see Appendix 1 for a list of contexts). All handmade bricks measured an average 230 x 110 x 70mm and were bonded with a light grey, compact mortar, unless otherwise stated. Due to the height of the surviving remains, no bonding pattern could be ascertained for the walls.

Photography of all relevant phases and features were undertaken with digital formats. General working photographs were taken during the archaeological works to provide illustrative material covering the wider aspects of the archaeological work undertaken (Appendix 3 – Photographic Archive).

All finds were recorded by context, with significant small finds located within three dimensions to the nearest 100mm, bagged and labelled separately.

All fieldwork and recording of archaeological features, deposits and artefacts were carried out to acceptable archaeological standards. All archaeological works carried out by Salford Archaeology are carried out to the standards set out in the Code of Conduct of the Chartered Institute for Archaeologists (CIfA).

4. Archaeological Evaluation

4.1. Introduction

In light of previous archaeological work, a total of eleven trenches were excavated, targeting features identified from the geophysical survey and historic mapping. At least four phases of activity were identified during the evaluation and excavation:

- Phase 1: Curving linear feature, broadly orientated NE-SW and identified within Trenches F, G, I and J. (undated)
- Phase 2: Castle Irwell cottage and Castle Irwell lane (early 19th century)
- Phase 3: Realignment of Castle Irwell lane, construction of possible outbuildings and glasshouses (late 19th century).
- Phase 4: Demolition of the buildings and levelling of the area, likely for Manchester Racecourse (early 20th century)

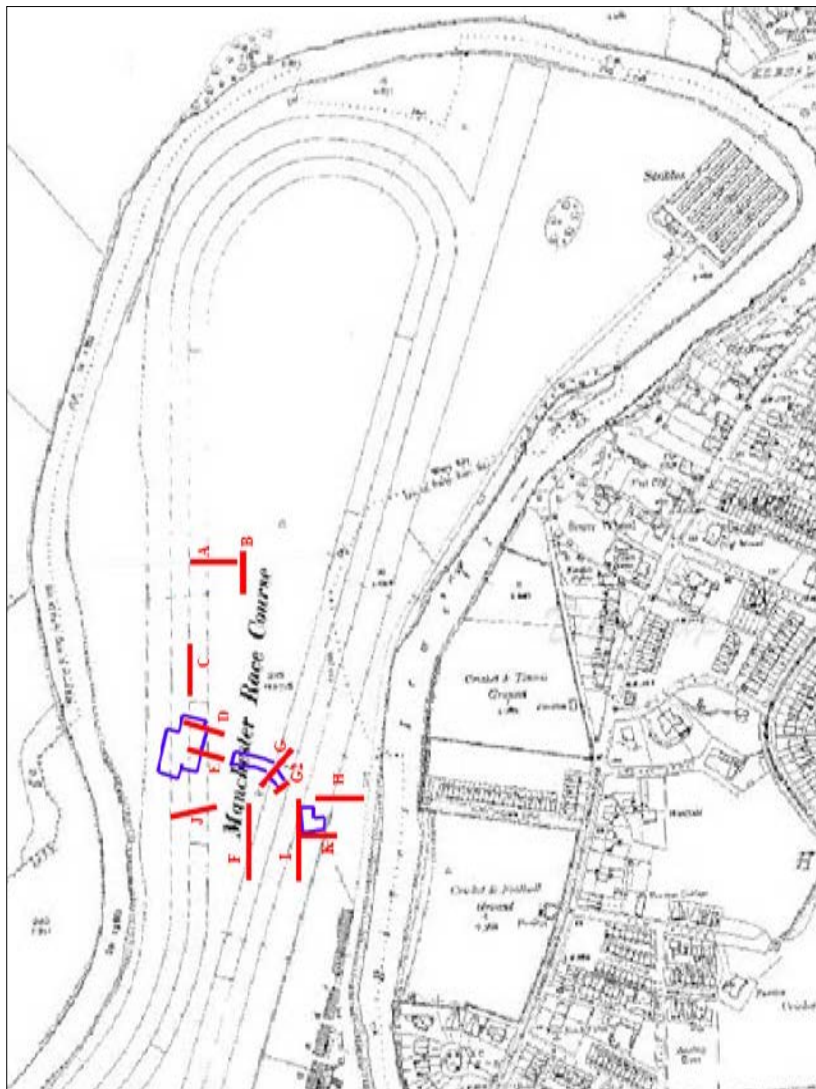


Fig 4. Evaluation trenches (red) and Open Areas (blue) overlain on the 1908 1:2500 Ordnance Survey map showing the racecourse. The evaluation failed to reveal any archaeological remains that could definitely be associated with the racecourse.

4.2 Phase 1: Linear Feature

Evaluation Trenches F, G, I and J all revealed evidence of natural red sandstone close to the current ground surface between 0.25m and 0.40m. It seemed likely that the extent of the sandstone as revealed in the trenches represented an outcrop surrounded by the river deposited sands, silts and gravels which dominated the other trenches. It is clear that this outcrop at one time extended above the current ground surface and it was on this that Castle Irwell House was built and which was later flattened for the construction of the racecourse.

A linear feature was revealed cutting into the sandstone in Trenches I/K and G. Its dimensions in Trench I were 4.0m wide by 1.35m deep however Trench I ran at an angle across the feature, so an additional evaluation trench was excavated at a right angle to give more accurate dimensions for it. Its dimensions in this trench were 3.50m by 1.00m. In Evaluation Trench G it was found to be smaller (c.1.50 x 0.50m). Although there was a variance in size based on alignment, it was considered to be part of the same feature.

An additional trench (G2) was excavated between Trench I and Trench G. This cut across the feature [510] at a right angle. Its dimensions in this trench were 0.91m deep by 3.50m wide (Fig 23 and Ill 11).

The possibility therefore existed that the feature represented a ditch cut around the base of the outcrop either as part of the grounds of Castle Irwell house or as a defensive/boundary ditch of an earlier period of occupation on the sandstone outcrop. However as no dating evidence or artifactual remains were recovered from the feature and given the nature of its fill which closely approximated the river deposits from the nearby River Irwell, it was also possible that the feature represented natural erosion caused by water/river channels.

Given the possible archaeological origins of the feature it was decided that it warranted further investigation as Open Area 2.



Fig 5. An angled section through the linear feature in Evaluation Trench I and K. The edge of the red sandstone outcrop can be seen forming the left side of the feature while the opposite side lies against sand and gravel. Looking north west. The angle of the sandstone reflects the fact that marks the most easterly extent of the sandstone outcrop.



Fig 6. The southern limit of the sandstone showing the interface with river deposits at the south end of Evaluation Trench F.



Fig 7. The linear feature in Evaluation Trench G looking north east. The interface between sandstone and river deposits can be seen in the background marking the northern extent of



Fig 8 Evaluation Trench locations showing the relative occurrence of sandstone and river deposits along with the suggested extent of the sandstone outcrop based on the evidence from the evaluation.

4.3 Phases 2/3: Castle Irwell Estate

Trenches A and B did contain the remains of brickwork however the remains were very slight and isolated and gave the impression that they were associated with drainage.

Trenches E and D revealed archaeological remains relating to Castle Irwell Lane and Castle Irwell Cottage. The brick remains within these trenches were more substantial than those in Trenches A and B and in addition there were indications that floor surfaces relating to the cottage might survive. Given the level of survival it was decided that the area around these trenches would be further investigated as Open Area 1.

4.4 Phase 4: Castle Irwell Racecourse

Trenches H; K; E and C all revealed evidence of a layer of ash and cinder. This layer appears to be the source of the magnetic disturbance recorded by the geophysics survey. It is possible that this represents the remains of tracks associated with the racecourse. These would have been used for vehicle mounted television cameras to follow the race, emergency vehicles, repair and maintenance vehicles and a route to the stables.



Fig 9. Brick wall remains of Castle Irwell Cottage in Evaluation Trench E.



Fig 10. Internal features of Castle Irwell Cottage in Evaluation Trench E.



Fig 11. Cinder layer in Evaluation Trench H.



Fig 12. Cinder layer in Evaluation Trench K. It is thought that these layers represent cinder tracks associated with Castle Irwell racecourse.

5. Open Area 1: Castle Irwell Cottages

5.1 Introduction

Following the methodology outlined in chapter 3, a broadly rectangular area measuring 51.00 x 32.00m maximum was opened up starting at evaluation Trench E to reveal the full extent of the buildings depicted on 19th century mapping.

5.2 Archaeological Descriptions

5.2.1 Phase 1

The natural geology observed within this area was **(107)**, a mix of loose light brown yellow sands and gravels. The upper fill of **[100]** was visible in this area and was truncated by the cottage walls. The feature was only visible in a small area measuring 2.00m wide, however it appeared to be 6.00m wide in this area.

5.2.2 Phase 2

5.2.2.1 Castle Irwell Cottages

The only stratigraphic relationship that could be ascertained with Phase 1 was the cut **[054]** which possibly truncated the upper fill of **[100]**. This was a linear cut, orientated N-S and up to 0.25m wide. This was left unexcavated, however this appeared to be the construction cut for wall **(004)**, which was handmade brick, orientated N-S and three courses wide. The wall was truncated at its N end. It measured 8.40 x 0.36 x 0.50m (excavated depth) and was keyed into **(003)**, a handmade brick wall, three courses wide and orientated E-W. Its overall measurements were 14.50 x 0.36 x 0.50m (excavated depth). This was keyed into **(007)**, a handmade brick wall, three courses wide and orientated N-S. Its overall dimensions were 6.60 x 0.36 x 0.30m (excavated depth). **(007)** was keyed into **(006)**, a handmade brick wall, three courses wide and orientated E-W. The bricks were bonded in English Garden Wall bond and its overall dimensions were 14.50 x 0.36 x 1.50m. This wall was also keyed into **(004)**.

Also keyed into **(006)** was **(005)**, a handmade brick wall, two courses wide and orientated N-S. Its overall dimensions were 5.50 x 0.24 x 0.40m (excavated depth) and was also keyed into **(003)**. Running west from **(005)**, although with no physical relationship was **(008)**, a handmade brick wall, one course wide and orientated E-W. There was no mortar visible and it measured 8.10 x 0.11 x 0.20m. It abutted the E face of **(007)**, which was also abutted by **(009)**, a handmade brick plinth measuring 0.75 x 0.30 x 0.10m (excavated depth).



Fig 13 General shot across the remains of the cottages and principal contexts identified

5.2.2.2 Castle Irwell Cottages ‘Backyard’ Areas

Abutting (007) to the north was **(018)**, a handmade brick wall, two courses wide and orientated N-S. The bricks were bonded with a light grey mortar and it measured 2.10 x 0.24 x 0.05m (excavated depth). This ran parallel with **(010)** which was located 2.10m to the east and was a handmade brick wall, two courses wide and orientated N-S. It measured 3.00 x 0.24 x 0.35m (excavated depth) and had a small triangular plinth attached also. It abutted (006) and was abutted by **(011)**, a handmade brick wall, two courses wide and orientated E-W. It was truncated with the western portion measuring 1.00 x 0.24 x 0.20m and the eastern part measuring 2.75 x 0.24 x 0.10m (excavated depth). The truncation gap measuring 1.50m in width and the western part also had a triangular plinth built into it. There was also evidence for a foundation course of headers stepping out to the north 0.07m.

(011) was abutted by **(012)**, a handmade brick wall, two courses wide and orientated N-S. Its overall dimensions were 2.40 x 0.30 x 1.20m and had a stepped foundation at 0.30m deep, consisting of headers, on its W side. This wall was also constructed into (006). Abutting (011) to the north and along the same line as (012) was **(014)**, a handmade brick wall, three courses wide and orientated N-S. Its overall dimensions were 1.15 x 0.36 x 0.10m (excavated depth) and ran parallel with **(013)**, which was located 1.10m to the west. This was a handmade brick wall, three courses wide and orientated N-S. Its overall dimensions were 1.30 x 0.36 x 0.20m and also abutted the north side of (011). Abutting the north ends of (013) and (014) was **(015)**, which consisted of two large stone blocks; the western one measuring 0.40 x 0.40m and the eastern one measuring 0.60 x 0.40m.

(015) was in turn abutted by (017), a handmade brick, slate lined drain broadly running E-W with an offshoot running N-S to abut (017). It was visible over a distance of 7.00m and measuring 0.36m wide and 0.30m deep. Located to the east of (017) was (016), a handmade brick rectangular structure with two course wide walls. It had a stone flagged floor which appeared to have been overlain with concrete. Its overall dimensions were 4.45 x 1.80 x 0.20m. (020) lay 12.50m to the N of wall (006) and was not physically related to any other feature described, although from the mapping appears to have belonged to this phase. This was a handmade brick surface with bricks laid on bed, covering an area measuring 2.25 x 1.00 x 0.25m.



Fig 14 Structure (016)



Fig 15 Floor surface (020)

5.2.2.3 Castle Irwell Lane

Running N-S to the west of the cottages was (040), a compacted dark grey black material forming a trackway. Its overall dimensions were 32.70 x 4.75 x 0.40m and it had no physical relationships with the features of the cottages, however it was located 0.30m to the west of wall (007)

5.2.3 Phase 3

The stratigraphic relationships ascertained with Phase 2, were those which were also physically related to the trackway (040). The mapping also helps to place a building to the north, identified archaeologically, within this phase although it had no relationships with features from Phase 2. Some features have been ascribed to this based on association with those definitely belonging to this phase.



Fig 16. The darker areas are the remains of trackway (040) and later buildings can clearly be seen truncating it.

At the south end of the trench (055) sealed trackway (040), a compact mid brown grey silty clay with no observed inclusions. (041), in turn sealed (055) a handmade brick wall, four courses wide and measuring 3.50 x 0.48 x 0.20m. This was badly truncated along its western face and to the north and was keyed into (042), a handmade brick wall, four courses wide and orientated E-W. Its overall dimensions were 6.30 x 0.48 x 0.20m and also sealed (055). (042) in turn was keyed into (043), a handmade brick wall, four courses wide and orientated N-S. Its overall dimensions were 4.50 x 0.48 x 0.10m and (045) was partially built into this wall. This was a small handmade brick rectangular structure with a handmade brick floor and 1-2 course wide walls. Its overall dimensions were 1.85 x 1.15 x 0.30m. Partially truncating (043) to the N was (044), a machine made frogged brick wall, three courses wide and orientated N-S. Its overall dimensions were 1.80 x 0.36 x 0.10m. Located 3.10m to the north of (041) was (056), a handmade brick wall, three courses wide and orientated E-W. It only survived to 1.00 x 0.36 x 0.10m but appeared to be linked to the walls described above. This also truncated trackway (040).



Fig 17 Example of phase 3 activity - remains of a possible basement level

Located approximately 7.50m to the north of the contexts described above was (046), a handmade brick drain, two courses wide and orientated E-W, measuring 4.50 x 0.24m. This led to a handmade brick rectangular feature, which measured 1.50 x 1.70 x 1.00m (excavated depth). This was infilled by (047), a loose light pink red silty sand with inclusions of medium sized (<0.15m) angular sandstone fragments. Located 6.00m N of (046) was (019), which was a handmade brick rectangular structure with 2-3 course wide walls with maximum dimensions of 2.10 x 3.30 x 0.30m (excavated depth). This feature was truncated along the northern wall and also truncated trackway (040).

Within the north-western part of the area and 4.15m to the west of (021) was **(049)**, a handmade brick wall, two courses wide and orientated E-W. Its overall dimensions were 6.90 x 0.24 x 0.20m, it was truncated at its E end and it was keyed into **(050)**, a handmade brick wall, two courses wide and orientated N-S. This measured 1.20 x 0.24 x 0.20m and was truncated at its S end. Immediately S of (050) was **(048)**, a handmade brick rectangular structure, truncated at its eastern end, with two course wide walls. Its overall dimensions were 1.60 x 1.50 x 0.25m.

Lying approximately 3.00m to the NE of the above described contexts was **(025)**, a truncated stone flagged surface with maximum dimensions of 1.25 x 2.40m. There was also the remains of a possible wall along the northern part, orientated E-W, two courses wide and visible over a length of 1.00m. Located 1.75m to the N of (025) was **(029)**, a handmade brick floor consisting of ½ bricks, laid on bed and at its maximum dimensions measured 2.50 x 1.80m. This was sealed by **(030)**, a handmade brick plinth surviving to three courses high and measuring 0.75 x 1.15 x 0.25m. This also abutted **(028)**, a handmade brick wall, two courses wide and orientated N-S. This measured 1.70 x 0.24 x 1.20m and was keyed into **(027)**, a handmade brick wall, 2 courses wide and orientated E-W. Its overall dimensions were 3.50 x 0.24 x 1.20m and it abutted (021). **(031)** abutted (027) and (029) and was a handmade brick floor consisting of full and ½ bricks laid on bed, with overall dimensions of 1.60 x 1.40 x 0.30m. This also survived up to three courses high in places.

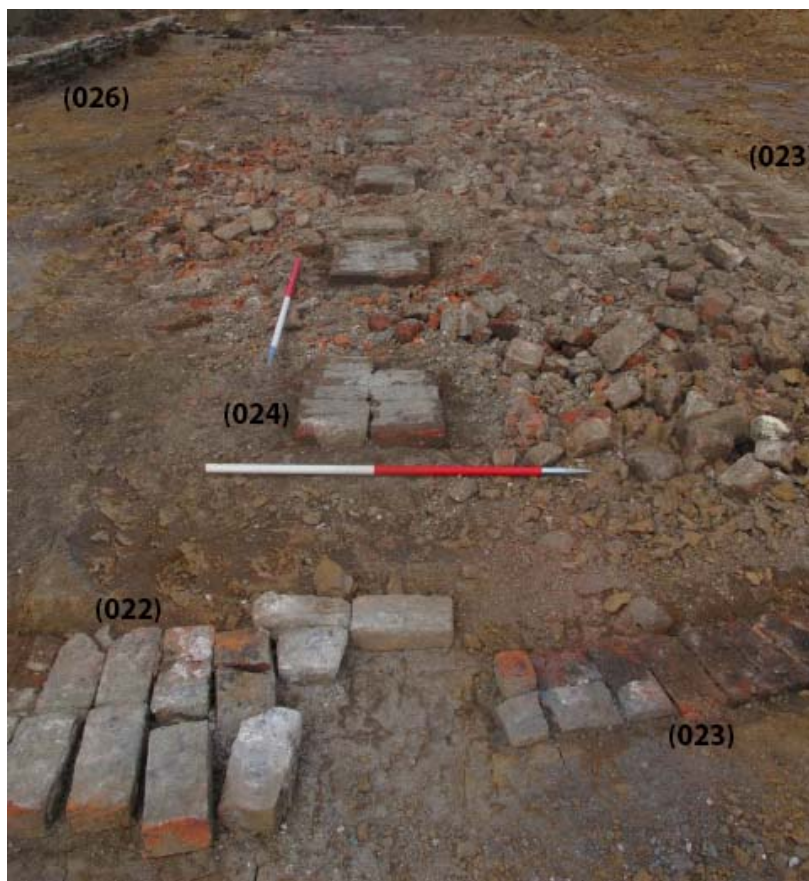


Fig 18. Remains of the glasshouses, looking north.

(031) and (027) abutted the west face of **(026)**, a handmade brick wall, three courses wide and orientated N-S. Its overall dimensions were 12.30 x 0.36 x 1.00m.

Running N from drain (017) although not physically related to it was **(021)**, a handmade brick wall, three courses wide and orientated N-S. Its overall dimensions were 11.50 x 0.36 x 0.50m and it was abutted by **(022)** along its east face. This was a handmade brick wall, four courses wide and orientated E-W. Its overall dimensions were 4.50 x 0.48 x 0.30m and was located immediately west of **(023)**, although they were not physically related. This was the truncated remains of a handmade brick drain which was partially brick and stone lined. Its overall dimensions were >7.50 x 0.25 x 0.25m and it initially ran E-W from (022) before turning to run from S to N.

Running parallel with (023) was **(024)**, a series of six rectangular handmade brick plinths and a seventh, truncated one. These measured 0.60 x 0.40 x 0.20m and were orientated N-S, spaced apart at approximately 0.80m. To the north of these lay **(032)**, a handmade brick floor with ½ bricks laid on bed. This floor was badly truncated however it measured at its maximum dimensions 6.50 x 4.00m). This was abutted by **(057)** to the west, a handmade brick wall, two courses wide and orientated N-S. This measured 2.10 x 0.24 x 0.35m but had no sign of surviving mortar and was badly truncated.

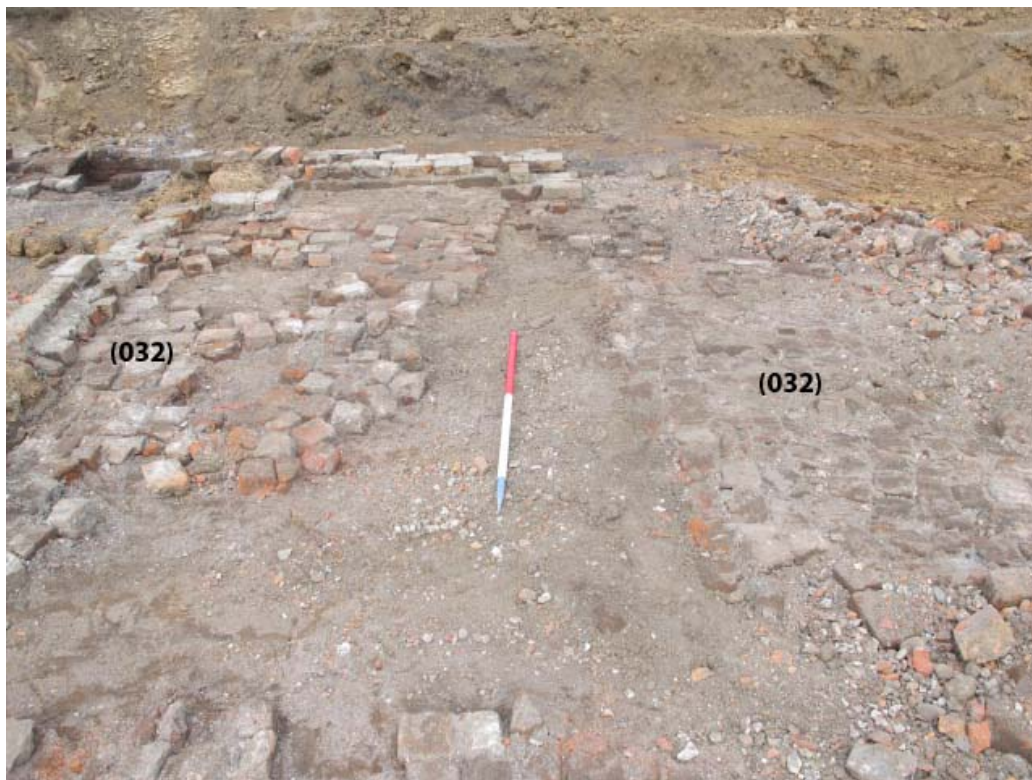


Fig 19. Truncated remains of flooring within northern end of the glasshouses.

This wall continued to run eastwards to abut (032) at its north side and **(034)** was built into this wall. This was a handmade brick wall, 2 courses wide and orientated E-W. Its overall dimensions were 3.15 x 0.24 x 0.35m and **(035)** was keyed in on its northern face. This was a handmade brick wall, two courses wide and orientated N-S. Its overall dimensions were 1.15 x 0.24 x 0.30m and it was abutted by **(037)**, a stone flagged floor covering an area 2.00 x 1.25m. Four flagstones were partially visible with an average width of 0.70m and one contained a deliberately created hole. This was abutted by **(036)**, a handmade brick wall, one course wide and orientated E-W. This measured 1.65 x 0.11 x 0.20m and abutted **(039)**, two parallel handmade brick walls, 2-3 courses wide and orientated E-W with layers of brick partially sealing them,

some of which had been heat affected. Its overall dimensions were 1.60 x 1.05 x 0.25m and abutted (026) and (038), a handmade brick floor visible over an area measuring 0.45 x 0.30m. The bricks within this flooring had been heavily heat affected and also abutted (037).



Fig 20. Possible flue at the northern end of the glasshouses

Although only visible in section, (058) lay to the west of (040) and was determined to be part of this phase through mapping. This was a compact dark grey black clinker-like material which survived up to 0.20m in depth. This was overlain directly onto (107).

5.2.4 Phase 4

Wall (050) was truncated by [051], an L shaped cut measuring 1.65 x 0.50m (N-S) and 4.90 x 0.50m (E-W). [052] was similar to [051] and truncated (049) at its E end. This was a linear cut measuring 2.40 x 0.50m, with this and [051] infilled by (053). This deposit was a compact mid grey brown silty clay with no visible inclusions and left unexcavated.

Across the site, the features were sealed by (033), a loose light brown grey silty sand with abundant inclusions of brick fragments and shards of glass. This was more concentrated to the north of the site but only patchy covering the western features. This in turn was sealed by (002), a friable mid grey brown sandy silt with occasional small sub-rounded pebbles. This measured up to 0.30m in depth and was sealed by (001), a loose dark brown grey loam with rare small rounded pebbles, measuring up to 0.30m deep. This was the uppermost deposit visible.

5.3 Archaeological Results

5.3.1 Phase 1: Castle Irwell Feature

The earliest identified feature was the possible river channel/ditch, which is discussed in more detail in chapter 6. It was partially visible at the eastern end of the area orientated NE-SW and measured c.6.00m wide.

5.3.2 Phase 2

5.3.2.1 Castle Irwell Cottages

The foundation cut for (004) truncated the Phase 1 feature and formed the eastern wall of the cottage. The building identified archaeologically had overall dimensions of 14.50 x 6.25m and was sub-divided into three rooms. The eastern room measured 6.35 x 6.25m, with the NW room measuring 8.10 x 3.40m and the SW room measuring 8.10 x 2.15m. The foundations for the cottage building seemed to be substantial enough, measuring 1.50m in depth. The N-S division (wall (005)) was of solid construction however the E-W division (wall (008)) was only one course wide and of poor construction. There was evidence for a possible threshold within the SW corner of the NW room (009), however this may also have been a drainage related feature. There was also no evidence to suggest what the function of any of these rooms may have been.

The 1891 census records make reference to a labourer's and a gardener's cottage, implying two dwellings. The N-S division therefore may be the dividing wall for the two houses. There was no evidence for cellarage so these would have been relatively small dwellings.

5.3.2.2 Castle Irwell 'Backyards'

Due to the depth of the foundations identified within wall (006), the remains to the north have been interpreted as external to the main cottage building. However lining up the mapping evidence suggests that these could have been part of the main building, however the remains may relate to kitchen/pantry areas. A cistern is identified on the map and this is reflected on the ground as walls (013) and (014). It is likely as well that drain (017) was connected to the cistern also. This suggests that feature (016) may be a later, larger cistern as it appeared to have waterproof lining although it was difficult to ascertain its phase due to the lack of physical relationships to other features. It could also have been a coal shed.

5.3.2.3 Castle Irwell Lane

Orientated N-S and located west of the cottages were the archaeological remains of Castle Irwell Lane. This is first shown on Johnson's 1819 map, before Castle Irwell was constructed suggesting it was an established trackway. It consisted of up to three layers of compacted dark 'clinker' like material, which shows that it was probably a well used and maintained trackway. It was around 0.30m away from the eastern wall of the cottages, suggesting that there were no pavements.

5.3.3 Phase 3

5.3.3.1 Re-alignment of Castle Irwell Lane

There were several major changes which had taken place between the mapping of 1848 and 1891. One of these was the realignment of Castle Irwell Lane, with its course moved approximately 10.00m to the west. The new trackway was only observed in section but did not appear to be as substantial as its predecessor and only one layer was identifiable. This was probably a short-lived trackway.

5.3.3.2 Later Outbuildings

As a consequence of the lane realignment, a number of features were constructed over the old alignment of Castle Irwell Lane. The most substantial of these was a small, broadly square building immediately to the SW of the cottages. Although much of the northern half had been truncated its maximum dimensions were 6.40 x 5.15m. There was also a small ancillary structure attached on its western side which may have been a toilet. It seems unlikely that this was a dwelling although its function is unknown.

A small extension, truncating the trackway, appears along the western side of the Cottage backyards. Its maximum dimensions were 3.15 x 2.20m although due to truncation, it's not clear whether this was a separate building or if it formed an extension to a building defined by wall (018).

Lying further north still is another rectangular building, although once again affected by later truncation. This building's dimensions were 6.65 x 2.80m and again, was cut into the disused trackway.

There were also the remains of two possible drainage sumps, (046) and (048), of which the former was better preserved. Again, (046) was placed directly over the disused trackway and the partial remains of a handmade brick drain running E-W appeared to lead to it. Only the possible sump remained of (048) and was located immediately south of the building described above.

5.3.3.3 Glasshouses

The construction of the glasshouses to the north led to the construction of a new wall (021)/(026), running N-S directly to the north of drain (017), although its relationship could not be ascertained. To the east of this wall lay the remains of a glasshouse, probably supported by centrally placed columns. It appears that (026) did not form the western limit of the glasshouse structure itself but rather, along with (057), could have formed a corridor. This building therefore measured 17.25 x 4.40m and had the remains of a brick floor also. It is not clear how tall the building would have been but the depth of the remaining foundations suggests that it could not have supported a heavy structure. The remains of possible below ground rooms were also identified, thought to have been part of this complex. Two separate rooms were identified but these were both badly truncated and could not be linked to each other. These lay to the west of wall (021)/(026).

There was evidence for a heating system, in the form of a possible flue identified to the north of the glasshouse. With overall dimensions of 3.40 x 1.30m, there was possible evidence for piping in the form of a deliberately created gap in the stone floor, with the flue leading out westwards. The bricks were heavily fire affected, noticeably more so within the western part of this feature.

5.3.4 Phase 4

When the Manchester Racecourse moved back to the Salford site (see Chapter 2), this entailed a complete clearance of the site. This was represented by extensive truncation, evidence for robbing out of walls, as identified within the NW outbuilding and demolition layer (033). There was little archaeological evidence for the racecourse itself. This may be due to the area lying outwith the actual courses depicted on later mapping, or when the site was turned into sports pitches after the Racecourse closure, further truncation may have taken place. In addition other than grandstands and stables the actual track and its paraphernalia are likely to have left only the slightest of archaeological footprint.

5.3.5 Finds

The methodology of the excavation for this particular phase did not involve the hand digging of many features to any depth, as this was a strip, map and record exercise. There was a limited number of finds recovered, consisting of 19th century clay pipe and pottery, however these were from unstratified and/or disturbed contexts.

6. Open Area 2: Castle Irwell Linear Feature

6.1 Introduction

Following the methodology outlined in Chapter 3, an excavation measuring 20m by 15m traced the feature running south east for a further 10m beyond Evaluation Trench I at which point the feature terminated. A second excavation area c10m wide followed the feature for 65m north west from Evaluation Trench G2. Linear feature [100] was observed curving around from the south, then running north before turning to run westwards. Although not excavated it is believed that [100] was visible running into Open Area 1 before disappearing beneath wall (054). If so this would give an overall observed length of c 140m. A total of eight ‘slots’ were excavated across [100] with placed within this feature and a separate number assigned to each slot as the profiles and fills varied along its course. They are described below, running from the southern terminus towards its excavated limit in the east.

6.2 Archaeological Descriptions

Within the area excavated, there were two dominant natural geologies: (108) a compact mid pink red sandstone that fractured easily. This was overlain in places by (107) which was banded natural sands and gravels which varied in colour although dominated by a loose light brown yellow material.



Fig 21. Fill (124) showing the terminus (pre-excavation) against the natural red sandstone (108) in the background and the sands and gravels (107) in the foreground.

An expansion of the excavated area around Evaluation Trench I revealed that the southern end of the linear feature was defined by terminus **[103]**, which was excavated to a length of 5.20m. The feature here measured 6.25m wide and 1.30m deep with gently sloping (< 45°) sides, defined by (108) on its western side and base and (107) on its eastern side. There was also a noticeable ‘rippling’ along the western side of the feature. At the base of this deposit was **(114)** a loose light red brown silty sand with rare (< 1%) small (< 0.05m) rounded pebbles. This measured 0.32m deep and was sealed by **(115)** a malleable mid grey brown clayey silt with rare small rounded pebbles with a small concentration of large (< 0.20m) angular stones. This measured 0.55m in depth and was sealed by **(116)**, a malleable mid yellow grey silty clay with small rounded pebbles and lenses of compact light blue grey silty clay. This was observed in two separate places within the S facing section and measured 0.15m in depth. This in turn was sealed by **(123)** a friable mid yellow brown clayey sand with rare small rounded pebbles. This measured <0.10m in depth and was sealed by **(124)** although the deposit boundary was unclear in the section face. (124) was a friable mid grey brown clayey sand with occasional (< 5%) small rounded pebbles. This was the uppermost deposit visible within this slot and measured <0.40m in depth.



Fig 22. Southern terminus of the linear feature showing the change in natural geology in the profile.



Fig 23. Linear feature in evaluation Trench G2. Looking south-east

Located 5m to the north of [103] was slot [111] which was excavated to a length of 2.00m. The feature at this point measured 2.00m wide and 0.35m deep, with relatively steep sides and a flat base. [111] was cut into (108) and was infilled by (128), a loose mid brown red silty sand with rare small rounded pebbles and visible over a width of 1.20m and measuring 0.25m deep. This was sealed by (117), a friable light grey brown sandy silt with rare small rounded pebbles and measuring 0.35m in depth.



Fig 24. Slot [125], N facing section

Slot [125] was located 2.75m NW of [111] and was excavated to a length of 7.50m. At its SE end it measured 0.76m wide and 0.34m deep and had a relatively gentle profile with a slightly rounded base. Towards its NW end it remained relatively flat, however there was a sudden break in slope and the base gradually sloped towards its NW end. Here the feature measured 2.40m wide and 0.60m in depth and had a steeper profile which rounded to a flat base. The entire feature at this point was cut into (108).

The fills differed in each section face, with (126) the lowest observed deposit within the NW facing section. This was a loose mid grey red silty sand measuring 0.05m in depth and no inclusions visible. This was sealed by (128) which measured 0.30m deep within this section face and appeared to be heavily affected by worm action in one small area. In turn (128) was sealed by (127), a friable light grey brown sandy silt with rare small – medium (< 0.10m) rounded pebbles. There were also lenses of degraded red sandstone, yellow sand and clay visible also. This deposit measured 0.30m in depth but its boundary with (128) was not clear. This was the uppermost deposit observed within this section face.



Fig 25. Slot [125], SE facing section



Fig 26. Slot [129]

Located 1.50m to the NW of [112] was [129] which was excavated to 4.00m wide. The profile was fairly gentle on both sides which rounded to a flat base however it was partially lost on the north side as (107) partially overlay (108). The lowest deposit observed within this slot was (142), a friable light blue grey sandy silt with no observed inclusions. This measured < 0.10m in depth and was sealed by (141), a friable light brown yellow sandy silt with inclusions of rare small rounded pebbles. This measured <0.35m in depth and was sealed by (140), a firm mid grey brown clayey silt with inclusions of rare small rounded pebbles. This measured <0.30m and was sealed by (138), a malleable light blue grey silty clay with inclusions of rare small rounded pebbles. This measured <0.20m in depth and was sealed by (137), a fairly compact mid brown grey silty clay with rare small rounded pebbles measuring <0.45m in depth. This in turn was sealed by (119) which was the uppermost deposit visible and measured 0.15m.

Located 4m to the W of [129] was [113] which measured 3.20m in length, 4.00m wide and 1.35m in depth. The sides were fairly gentle $< 45^\circ$ which rounded off to a U-shaped base. The lowermost deposit within this slot was (121), a loose mid red brown silty sand with no visible inclusions. This measured 0.10m in depth and was sealed by (143), an indurated dark grey brown silty clay with no visible inclusions, measuring up to 0.40m in depth. There were further lenses of this material visible in deposit (122), which sealed (143). This was a friable light grey brown sandy silt with occasional small rounded pebbles, measuring up to 0.60m in depth and was the uppermost deposit visible within this slot.



Fig 27. Slot [113], E facing section

Located 2.80m west of [113] was [130] which was excavated to 4.80m in length. The profile was similar to that of [129] although the sides were slightly steeper within this part of the feature, before rounding off to a flat base. The lowest observed deposit within this slot was (136), a friable mid grey brown sandy silt with inclusions of

frequent ($<10\%$) small rounded pebbles. This deposit also contained lenses of grey coloured sand and clay. This measured $<0.05\text{m}$ in depth and was sealed by (135), a loose light yellow grey silty sand with no visible inclusions. This measured $<0.05\text{m}$ in depth and was only visible on the southern side of the feature. This in turn was sealed by (132), a friable light blue grey sandy silt with lenses of degraded red sandstone visible. This measured $<0.05\text{m}$ in depth and was also only visible over on the southern side of the slot.

(132) was sealed by (134), a fairly compact mid yellow brown silty clay with inclusions of rare small rounded pebbles and lenses of brown clay. This measured 0.60m in depth and was only visible on the southern side of the slot, sealed by (133), a loose mid grey brown silty sand with rare small rounded pebbles. This deposit also contained lenses of yellow sand, degraded manganese and grey sand, as well as a lens of dark grey brown sandy silt with frequent small rounded pebbles. This measured <1.10m in depth and was the uppermost deposit visible within this part of the feature.

In addition to the feature described above, two other features were encountered at the southern terminus. [105] was located immediately NE of [103] and was a curvilinear feature orientated NW-SE, measuring 1.00 x 0.50 x 0.30m. This had fairly steep sides with a rounded base and was 'cut' into (107). This feature was infilled by (104) a compact light grey brown sandy clay measuring 0.25m in depth and flecks of manganese in the deposit. Located to the SE of [103] was [110] a curvilinear feature measuring 8.00 x 6.00 x 1.50m with gently sloping sides, rounding off to a flat base. Although the sides were 'cut' into (107), these were overlying (108) which was visible at the base. This was infilled by (109), a friable light grey brown sandy silt with occasional small rounded pebbles and measured 1.50m in depth. These were the only other features encountered.



Fig 28. Slot [130], W facing section

6.3 Archaeological Results

A total of seven slots were excavated within this feature and two features were encountered, external to [100]. The terminus reached a depth of 1.30m however as the feature ran northwards, it became very shallow and was 0.30m deep at its shallowest. As revealed in slot [125], the profile dropped away quite sharply from 0.30m to 0.60m and then the feature began to gradually get deeper and wider, reaching a maximum width of 3.80m and a depth of 1.50m, as observed in slot [130].

The sides of this feature were relatively gently sloping and were fairly symmetrical in profile. A rippling effect along the natural sandstone was observed in a few places, including the western side within the terminus [103] and along the same side of [130]. There was also evidence for 'pitting' along the base of the deposit and it was far from being smooth. The natural sands and gravels were observed mostly along the northern side of the feature and to the south of the terminus, with excavation revealing that the sandstone did continue to run beneath these deposits at varying depths.

The deposits within the feature were generally dominated by silty sands. Towards the west of the feature, slot [129] revealed a very compact clay like deposit which was not observed elsewhere. There was also evidence for iron panning in this area and within the terminus, suggesting periods of standing water within the feature. Where the feature became shallower there was evidence for degradation of the sandstone as the deposit was red in colour and again, was not observed elsewhere except for probable primary silting in other slots.

Although only c1m was excavated either side of the feature particular attention was paid to these zones in an attempt to identify any archaeological features associated with [100]. No features of any significance were discovered.

As a result of following the line of [100] it appeared that at its west end it ran into Area 1 rather than curving to the south of it following the sandstone as had been anticipated. It may be the case therefore that what was interpreted during Area 1 excavations as a variation within the natural river sands and gravels is in fact [100] continuing across Area 1 and beneath wall (054).



Fig 29. Possible continuation of [100] into Area 1 and beneath wall (054). Looking west.

6.3.1 Finds

No artefacts were recovered from this phase of excavation.

7. Discussion

7.1 Introduction

This discussion attempts to interpret the features discovered during this excavation and does so chronologically. The linear feature has so far defied a single interpretation, however the arguments are put forward for it being a possible prehistoric feature or part of a designed landscape garden for the Castle Irwell house. The development of this garden from its inception in the early 19th century is shown both archaeologically and through the mapping, with the construction of a glasshouse during the later 19th century as a reflection of changing tastes and attitudes to gardening. Finally, the development of Manchester racecourse is discussed as it became an important part of the history of the area, despite there being little archaeological evidence recovered pertaining to this.

7.2 The Linear Feature

Attempting to interpret the date, origins and function of this feature has proved perplexing and it should be stated that no definite conclusion has been reached and what follows is a drawing together and discussion of the various pieces of circumstantial evidence relating to the date and purpose of this feature. The absence of finds or other evidence to precisely date the feature from any of the slots excavated through the feature meant that other avenues of investigation were pursued in an effort to answer these questions. This included pollen analysis of soil samples (see Appendix 4) and XRF analysis (see Appendix 5). The following utilises the evidence to show that it could be either a naturally formed feature or manmade. For the purposes of the discussion where appropriate the linear feature will be referenced by its generic 'cut' context number, [100].

7.2.1 The Linear Feature as a Natural Formation

A number of column and bulk samples were taken from several sections excavated across the feature. These were sent to Archaeological Services at Durham University for palaeoenvironmental assessment by Dr Charlotte O'Brien and her staff (Appendix 4). Additionally, Dr Simon Hutchinson (Senior Lecturer in Environmental Science in the School of Environment and Life Sciences at the University of Salford) has kindly provided his time and expertise. He and his colleagues studied the feature in an attempt to ascertain whether or not there were natural processes such as flooding or glacial effects which might have been responsible for its formation. It appeared to them that the depth of the cut into bedrock meant it was unlikely that the feature was formed by a river channel.

"Across most of the site there are the kind of sediments you would expect on the floodplain of a river in mid course. They suggest a channel migrating across the floodplain with an array of deposits reflecting a range of energy levels i.e. faster flow / quieter depositional environments. The geological maps for the area show extensive alluvium along the course of the Irwell. At the site there is also a river terrace deposit (1) and I think the trenches of interest are in / under this deposit. However, the removal of surface features and the scale of the on-line BGS maps I consulted make determining an exact location a little problematic.

In terms of the 'features' of interest, they are rather different being cut into the bedrock. I don't think you would ordinarily expect to find this sort of feature at this point in a river's course. The question is where would the energy to form these 'channels' have come from? Over a relatively short distance the incision from <1 m to <1.5 m (approx.) is not inconsiderable. In understand that there would have been a rock knoll on this part of the floodplain (removed in the past with the previous development of the site). The channel may have been constrained by this feature and therefore incised. However, it would seem to dip markedly and then disappear! Of course if this is a palaeo channel (under river terrace 1), then the flow regime of the river could have been rather different. However, there is still the issue of the short and steep nature of the feature in a wide floodplain.

On the other hand, the surfaces of the rock 'channel' do seem rather smooth and therefore might be water worn. In the larger 'channel' there seems to be almost an inner and an outer (shallower) channel. The sediments infilling the feature are quite uniform and relatively fine, but there are no particular (and diagnostic) features. The darker colour implies they are more humic than elsewhere; an abandoned channel infilling, but the formation of the channel may / not be river action?

I understand that the nature of the fill of the features indicates that they are unlikely to be a ditch feature and the fact that they do not encircle of the former knoll is also puzzling. I wonder if the truncation of the rock outcrop also involved either the burial of the part of the feature or the formation of what we can see?

On balance, I would not be happy to confidently say that the features I saw were clearly fluvial. Such incision seems out of place and the other evidence may relate to other factors.”(Simon Hutchinson pers. comm.)

This conclusion is supported by some of the findings from the palaeoenvironmental assessment which states:

“...the absence of peaty organic remains such as those recovered in the palaeochannel at Burrs indicates that the feature was not fully waterlogged in a manner characteristic of a cut off former river channel which held permanently standing or slow flowing water. The absence of permanently standing water is also supported by the absence of obligate aquatics in the pollen and plant macrofossil assemblages.” (ASDU 2015, 5; see Appendix 4)

Based on the power of the water flow that would have been required to form the feature, shows that it could have been a type of sub glacial meltwater channel known as a Nye Channel. Examples can be seen at Lymm Dam and also at Thurston on the Wirral. Pressurised by the weight of the ice above and carrying glacial debris, these meltwaters had the power to erode the sandstone. Nye Channels can display characteristics such as a long undulating profile and an abrupt inception or terminus, both of which are displayed by the feature at Castle Irwell.



Fig 30. These deep cut Nye Channels are at Lymm in Cheshire.
https://www.geocaching.com/geocache/GC24XGG_lymm-scallops-nye

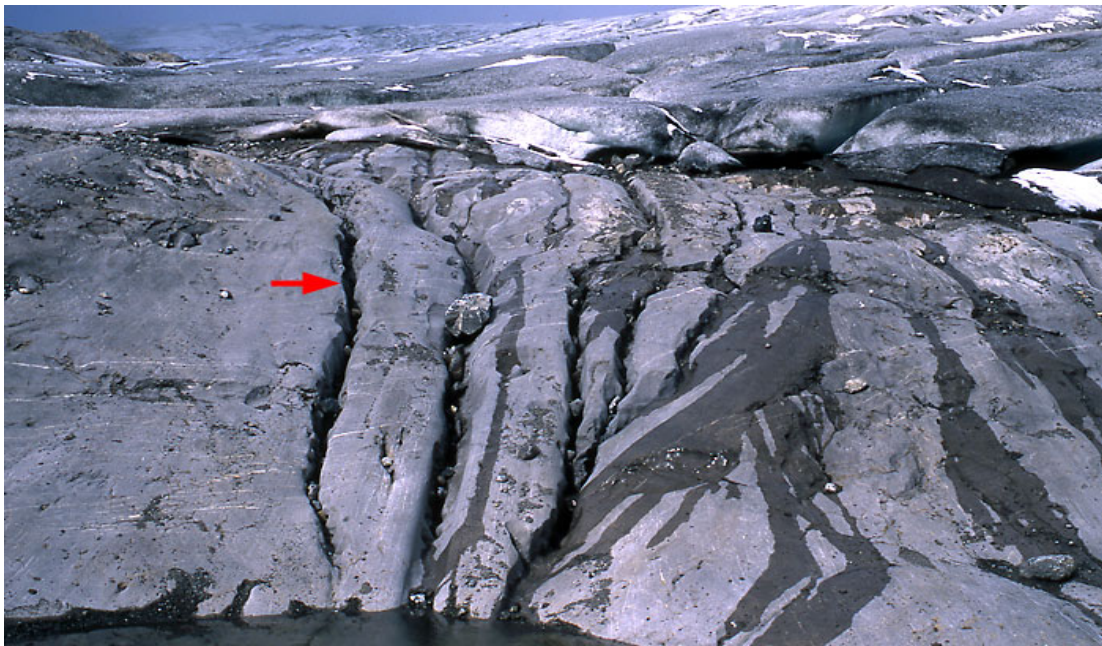


Fig 31. Nye channels eroded into limestone bedrock in front of Glacier de Tsanfleuron, Valais, Switzerland (Photo J. Alean 2005)

7.2.1 *The Feature as Human in Origin*

In looking at possibilities for a human origin to the feature there are two strands to follow; as a prehistoric feature or part of the 19th century designed garden landscape at Castle Irwell house. There are arguments both for and against each possibility.

7.2.1.1 *Prehistoric enclosure*

The feature may represent a defensive or enclosure ditch dating to prehistoric or Roman times. Although from photographs the sandstone knoll does not seem particularly extensive, it would probably have been able to accommodate a prehistoric farmstead or Roman signal station or fortlet. These types of occupation are generally within ditches which can serve to formalise a demarcation in property or land use and to defend the occupants. Some of the results from the palaeoenvironmental assessment seem to support the idea of a prehistoric enclosure ditch (*italics below*).

5.3 The low values of Ulmus pollen suggest that the sediments post-date the elm-decline, an event which has been dated to between 6347-5281 cal yr BP (Parker et al. 2002). The assemblages show some similarities with the Middle to Late Bronze Age pollen sequences recorded in a palaeochannel within the River Irwell valley at Burrs Countryside Park, Bury (Smith et al. 2010). As at Castle Irwell, Alnus and Corylus carr was found to have occupied the damp valley floor, with mixed deciduous woodland present on the surrounding slopes. However, in contrast to Castle Irwell, the Bronze Age landscape reconstructed at Burrs features dense woodland with limited evidence for human activity such as clearance and farming. Although precise dating of the deposits is not possible from the pollen assemblages, the evidence for extensive clearance and agriculture recorded at Castle Irwell, may suggest the deposits date to some period from the Iron Age onwards. (ASDU 2015, 4-5)

Further work carried out by Dr Hutchinson included XRF Analysis of samples taken from the fills [100]. The process looks at the levels of various elements present in the soil and measures these against a standard. In this country soils that were exposed to the atmosphere during the industrial revolution show a higher percentage of certain elements than the standard, this is usually particularly marked in lead and arsenic. Dr Hutchinson concludes from his analysis that this was not the case for the soils from [100].

The site would have had certain attractions from a military and defensive point of view during the Prehistoric or Roman period. A possible settlement could exert control of potential river crossings on the raised knoll and would have had good lines of sight, obstructed only by the hill of Kersal Moor to the north. In the case of defensive ditches, they usually form a closed boundary around the area of occupation. However traces of such a ditch are likely to have been removed when Castle Irwell house was demolished and the knoll flattened to construct the racecourse between 1898 and 1902 (see below). Tantalisingly, next to Castle Irwell house on the 1850 Ordnance Survey Map, is a notation which says “*The supposed site of a Roman Camp*” however the only archaeological evidence to support this is the silver denarius of Septimus Severus which was found in 1907 on the land between the Manchester Racecourse and the Cromwell Bridge.

Enclosure ditches are more varied in shape, form and function. They were excavated to fulfil a variety of functions such as dividing areas of land according to usage for example separating animal grazing land from different areas. They could also be used to demarcate limits of land ownership. In many instances these were not required to be formidable as they were simply acting as boundaries. In many instances natural objects in the landscape were used to enhance and further delineate enclosure ditches. A possibility considered at Castle Irwell was that the linear feature was an enclosure ditch which ran between the east and west arms of a meander in the River Irwell to create two zones, one to the south containing the sandstone knoll and possibly the settlement and the other to the north bounded by the curve of the meander the function of which can only be guessed at.

However neither the Palaeoenvironmental Assessment nor the XRF Analysis are designed to provide a precise dating of the deposits. Therefore the only thing that can be said with any certainty is that the infilling of the feature occurred in a post glacial environment.

There are also some aspects of [100] that cast doubt on its ability to function as a ditch in a manner useful to a local Prehistoric community. Generally, Prehistoric enclosure ditches do not enclose the base of a hill and are only found encircling hilltops. This is likely to have been the case at nearby Rainsough Camp c.1km NW of Castle Irwell, where limited evidence for an Iron Age enclosure encircling the hilltop has been found (www.pastscape.org.uk). The terminus of the feature at its south east end is 20m short of the river and would have made it ineffective as an enclosure ditch, although allowance could have been made for access between the two areas for livestock and goods. The 'gap' between feature and river could have been filled with a temporary or movable structure such as a fence and gate which is unlikely to show in the archaeological record. The depth of the feature varies, reaching 2.50m in depth in some places and 0.30m in others. This does not appear to be down to natural erosion but may be explainable as part of a 19th century garden feature (see below)

The nature of the feature towards the west end of Area 2 also provides an argument against it being Prehistoric in origin. Here, the sandstone dips to the north-west and the outcrop appears to curve to the south west. The result is that the north side of the feature is no longer formed by sandstone but by sand and gravels on both sides. A similar situation exists at the south east terminus as the sandstone dips to the north east and the outcrop turns south. The sands and gravels are loose and highly mobile and where slots were excavated, the sand and gravel sides quickly began to collapse and there was considerable erosion after heavy rain. This would have meant maintaining the feature as a functioning barrier/boundary in these areas would have been very difficult and time consuming.

A further point worth making in relation to the sides of the feature is that no definite signs of tool marks were observed. However, these may have been worn away by erosion or it might be that excavation of the plated sandstone was more easily accomplished by establishing the depth and then progressing the excavation horizontally by levelling out the plates.

7.2.2.2 Designed landscape feature

The second strand of evidence which might provide an indication that the feature is man-made is documentary evidence and also the sequence of historical maps relating to the area. An overlay of the trench location plan onto the 1848 Ordnance Survey map strongly suggests that the feature found during the excavations corresponds in alignment to a feature shown on this map which appears to be part of the landscaping of the environs around Castle Irwell House. The scale and detail of other historical maps makes an exact overlay more difficult but it seems quite likely that it also appears on Simms 1858 map of Manchester and its neighbourhood as well as the 1894 Ordnance Survey map. There is no indication of the feature on the Johnson map of 1819 prior to the building of Castle Irwell House in 1826, nor is it on the 1908 Ordnance Survey map after the demolition of the house. This would seem to suggest that the feature was either, partly extant by 1848 (as a possible relict prehistoric feature) and incorporated into the landscape design or it was created as part of a landscape garden. Caution must be exercised due to the nature of the maps. A largely infilled and grassed over prehistoric ditch may have been present in the landscape as a shallow channel but the recording of such a feature on the 1819 map may have been outside the remit of the map maker.



Fig 32. The Johnson map of 1819 shows the meander in the river Irwell that would later contain Castle Irwell house and the racecourse. Note that there is no sign of any ditch at this stage

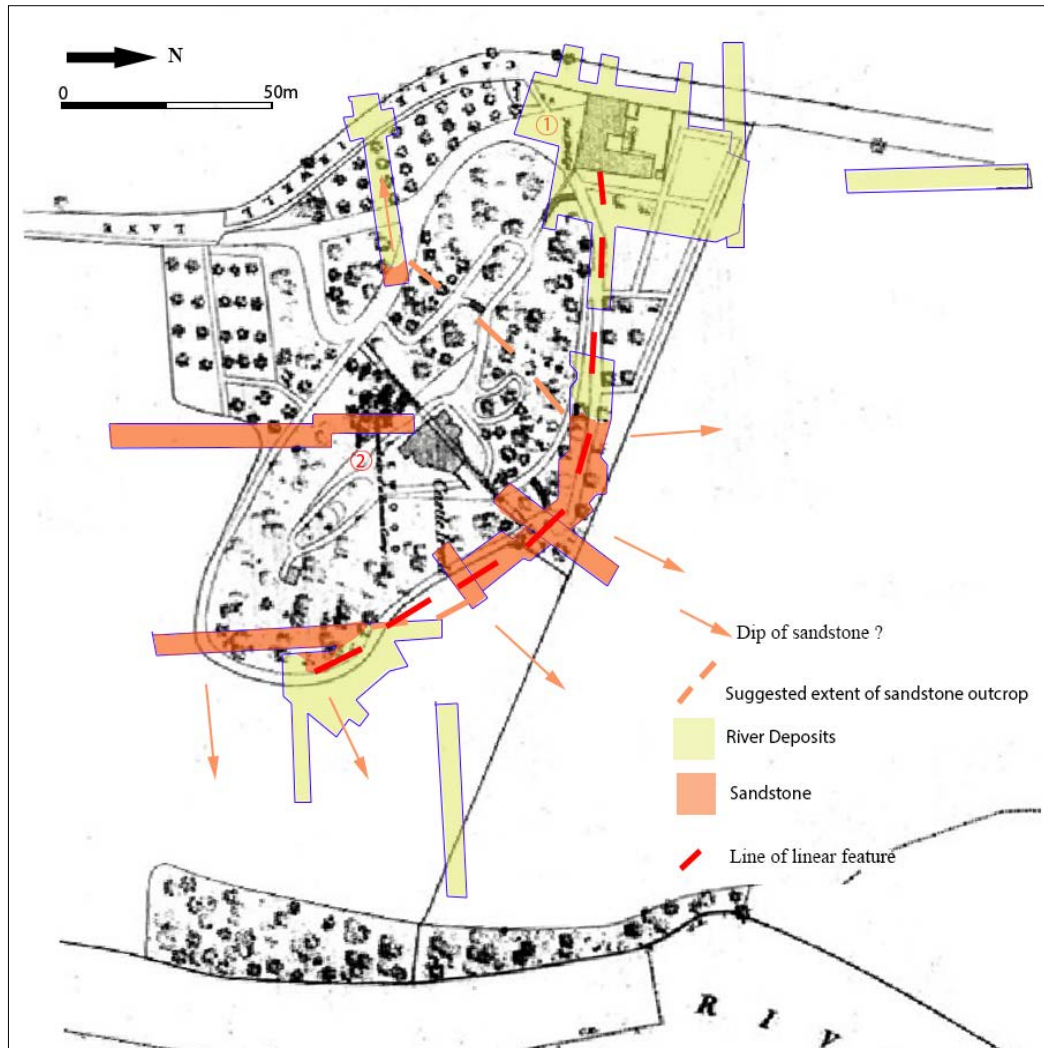


Fig 33. Showing the areas of sandstone (brown) revealed during the archaeological works overlain onto the 1844-1849 six inch to one mile Ordnance Survey map. The arrows indicate its line of dip. Note the Open Area 2 trench directly overlying the 'path' feature

Some of the features may represent paths or tracks and given the nature of the feature excavated some of these may have been sunken routes. The existence of a footbridge across the line of [100] on the 1850 Ordnance Survey map would seem to support this theory. Additionally there are symbols which are taken to represent steps linking some of these features giving the impression of a two level system of tracks. One difficulty with this interpretation is the lack of finds from the fills of [100]. If [100] was one of a pattern of sunken tracks associated with Castle Irwell House one might expect excavation to produce some artefacts from the Victorian period. They may of course have been purely ornamental but in this case, given the proximity of the glasshouses and the fashion of the times for collections of exotic plants, it might be expected that the palaeoenvironmental assessment would provide some evidence of this.

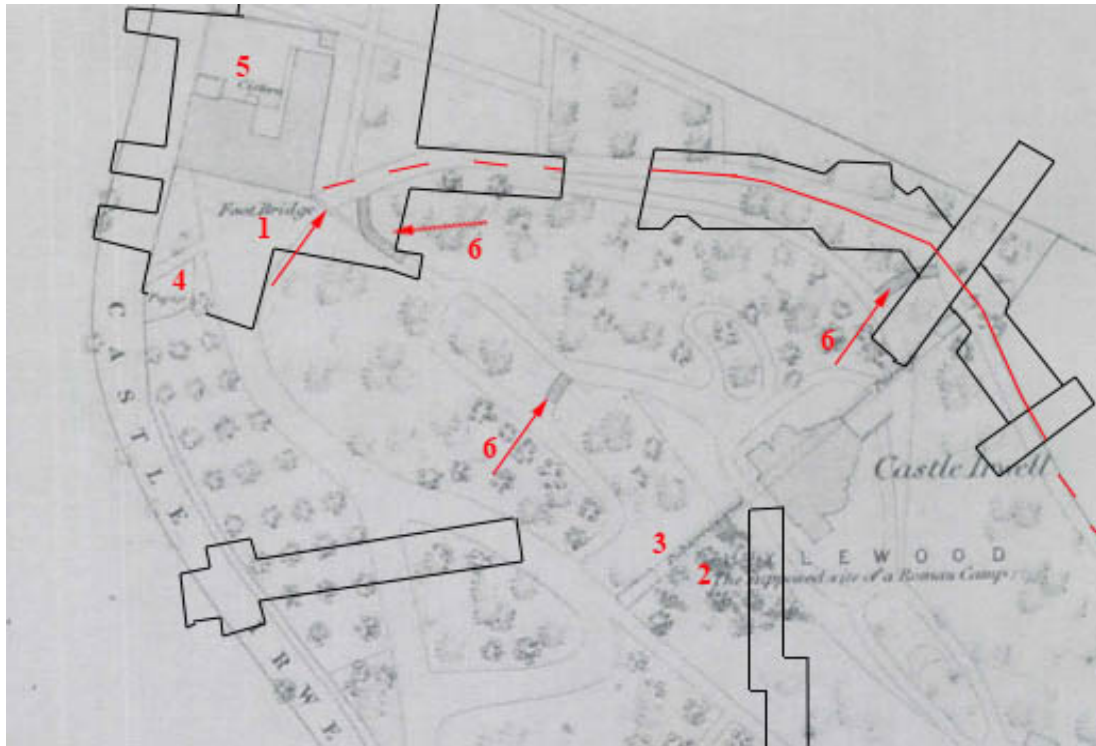


Fig 34. Detail taken from the 1850 5 feet to one mile Ordnance Survey map. Archaeological excavations are outlined in black. The line of [100] by excavation shown in solid red by observation dashed red. Text reads 1 Foot Bridge; 2 the supposed site of a Roman Camp; 3 subterraneous passageway; 4 Pump; 5 Cistern. Arrows labelled 6 show what might be steps

A second group of documents that are pertinent to this discussion are photographs of Castle Irwell House and the land surrounding it. The photographs themselves show that the house had an eclectic range of design styles and building materials. It is difficult to be certain as to what angle the photographs were taken from. Fig 36 certainly gives a good impression of the extent to which the knoll rose above the surrounding level but none of these photographs show any sunken tracks, pathways or linear depressions.

7.3 Castle Irwell House and Estate

With the construction of Castle Irwell house in 1826, John Purcell Fitzgerald ran a small estate, apparently by proxy as a Mr George Cox was listed as a caretaker in the mid 19th century. He did not live in the house but in one of the cottages excavated, which were small dwellings with external toilets. Initially this estate seemed to be relatively small with the house sitting on a knoll to the south-east of this small cottage complex.

The construction of the racecourse in 1900 meant that any remains of the house were destroyed as the knoll was levelled. However a series of old photographs show that the house went through at least two phases of construction. The wing on the left in Fig 35 has a crenelated tower whereas in Fig 36 it has acquired a pitched roof and tower appears to have been increased in height and had a chimney stack added. This photograph shows a denuded knoll, evidence of what appears to be ground clearance and numerous tree stumps suggesting that this was taken immediately prior to demolition.

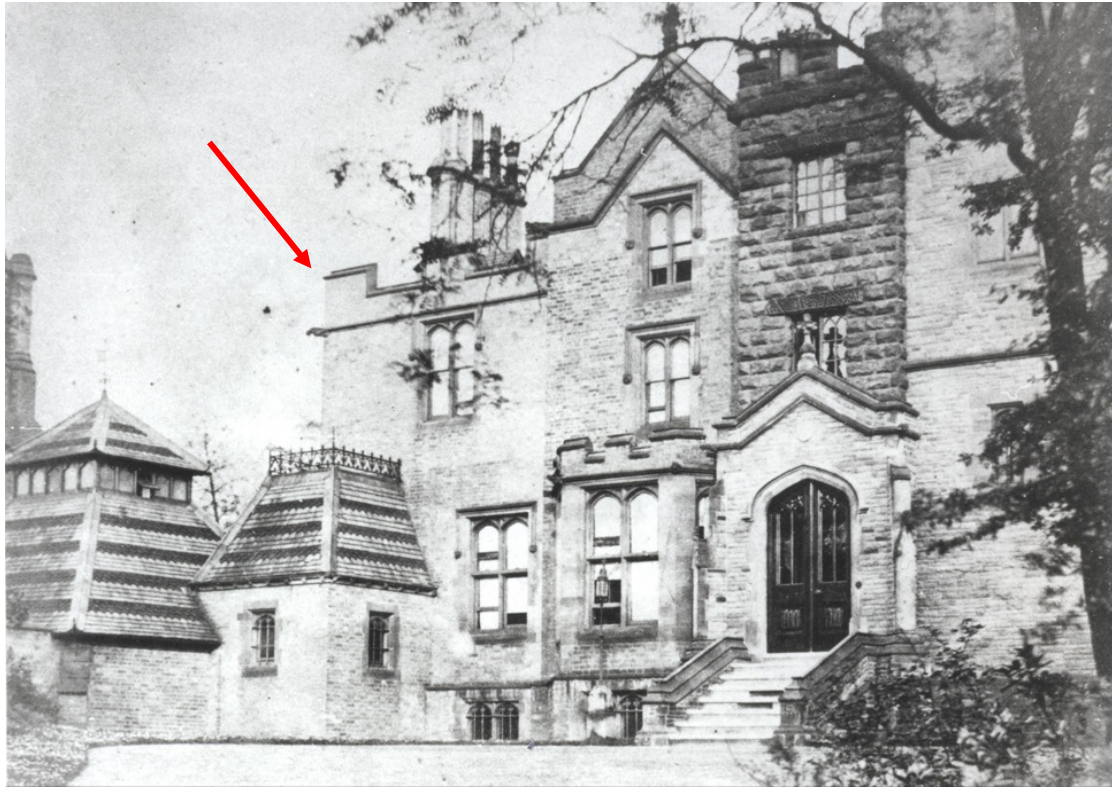


Fig 35. Close-up of the north-west elevation of Castle Irwell House (courtesy of Dr Shane Sullivan). The arrowed part appears to have been rebuilt at a later stage (see below).

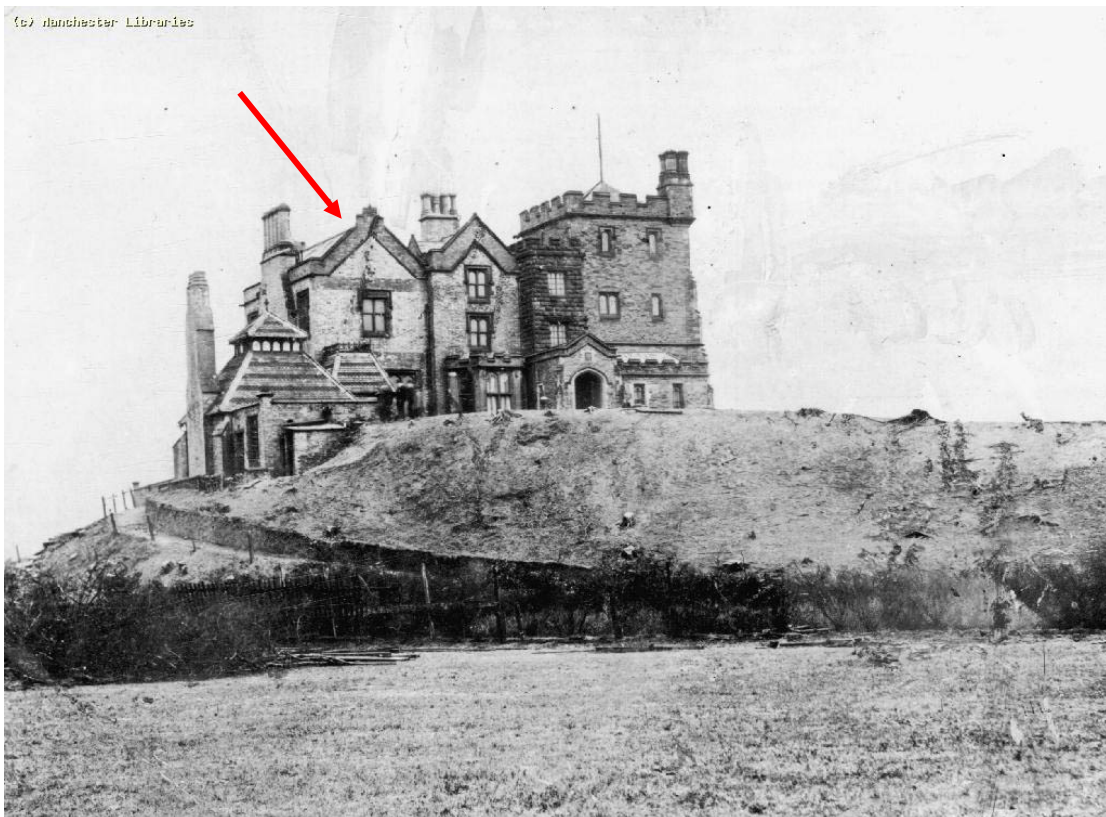


Fig 36. The north-west elevation of Castle Irwell House. Although dated to 1870, the lack of trees suggests a later date, possibly prior to demolition and levelling for the racecourse in 1900. The arrowed elevation part appears to be a rebuild. © Manchester Libraries
<http://images.manchester.gov.uk/web/objects/common/webmedia.php?irn=74877&refable=ecatalogue&refirn=20999>

Figs 38 and 39 begin to give an impression of what the wider landscaped garden may have looked like. A small amount of agriculture may have continued, with fenced off fields with paths leading through deciduous woodland. Designed gardens changed in nature during the 19th century and woodland gardens were not popular again until the late 19th century. Wild gardens became more popular as a backlash against the polluted landscapes of the Industrial Revolution. Castle Irwell appears to have been a wild, wooded garden with a series of formalised paths and steps leading down probable wooded terraces. It may have been similar, albeit on a smaller scale, to Cragside in Northumberland. Built in 1863 for the Armstrong family, this country house was built on a steep sided valley and utilised a mix of formal, wild and rock gardens. A large iron bridge crosses the Debdon Burn and although much larger than Castle Irwell, it shows how low, sunken paths utilised the natural landscape at Cragside.



Fig 37. Cragside wooded gardens, Northumberland. Although on a much larger scale, this image shows how the hill at Castle Irwell could have been enhanced by digging a sunken path around the house (image: www.visitengland.co.uk)

By the late 19th century, the estate seems to have become more formalised and expanded. This required the realignment of Castle Irwell Lane and the construction of glasshouses, as well as several outbuildings, suggesting there may have been a small formal garden. There is little information to ascertain when this happened, however John Purcell Fitzgerald died in 1867, leaving the estate to his son also called John. It may have been at this time that Fitzgerald decided to invest in the estate, including in glasshouses.

© Manchester Libraries



Fig 38. Castle Irwell house, 1900 (looking north?) © Manchester Libraries

<http://images.manchester.gov.uk/web/objects/common/webmedia.php?irn=4194&reftable=ecatalogue&refirn=14668>

© Manchester Libraries



Fig 39. Castle Irwell house, 1900 (looking east?) © Manchester Libraries

<http://images.manchester.gov.uk/web/objects/common/webmedia.php?irn=4132&reftable=ecatalogue&refirn=14667>

During the late 19th century, glasshouses became more affordable to the middle classes and it was fashionable to acquire exotic plants. The Castle Irwell Glasshouse appears to be of the later, lighter construction possibly utilising either a composite wood and iron frame or just an iron frame. It also appears to have been a span house, which typically had its ridge running north-south (Jameson 2013). The flue identified to the north may have been used to help heat the glasshouses. The below ground remains identified may be the remains of a pit house, which could have been used to propagate plants. The glasshouses at Cragside were built in 1870 and again shows how those at Castle Irwell could have functioned.



Fig 40. Glasshouses at Cragside. These were built in 1870 and typically had low walls supporting the iron and glass framework (image: <http://www.jibberjabberuk.co.uk/2015/10/the-formal-garden-cragside.html>)



Fig 41. A view of Manchester from Kersal Moor, by William Wyld in 1852
 In 1851 Wyld's admirer Queen Victoria commissioned paintings of Liverpool and Manchester to celebrate her visit there, which remain in the Royal Collection.
 Later rendered as an engraving entitled Cottonopolis by Edward Goodall
http://forquignon.com/history/global/industrial_revolution/manchester_medium.JPG, Public-Domain, -<https://commons.wikimedia.org/w/index.php?curid=5386960>

7.4 Castle Irwell Racecourse

By the 1890s, the landscape garden appears to be in a state of disrepair. The sunken path appears to have at least partly gone out of use and the slopes of the knoll may have been deforested. The steps are also no longer easily identifiable, further suggesting that this form of garden was no longer maintained. Documentary research has established that in 1867 John Purcell Fitzgerald died and the Castle Irwell estate was inherited by his son John Fitzgerald. On his son's death in 1898, the Castle Irwell Estate was purchased by the Manchester Racecourse Committee who formed a company and set about turning Castle Irwell into a sporting facility (Inglis, 2004: 39). Historical photographs last record Castle Irwell in 1900 which suggests that the site was demolished between 1900 and 1902 when the Manchester Racecourse was opened. Although no archaeological trace was found of the racecourse, it forms an important part of the history of landuse of this site

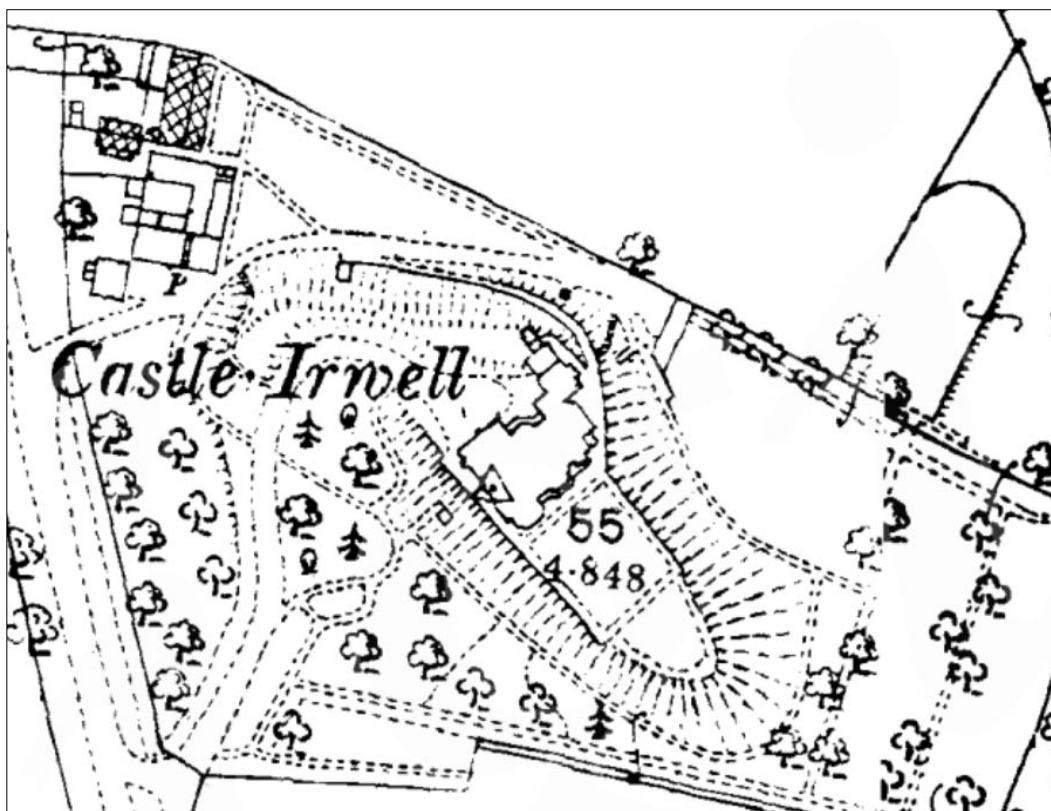


Fig 42. Enlarged image of Castle Irwell house, as depicted on the 1893 1:2500 Ordnance Survey map. The lack of definition on garden features and disappearance of others, suggests that the garden fell into disrepair. Less than 10 years later, the racecourse was opened

There was a racecourse at Castle Irwell prior to the early 20th century one, located to the north of the estate and was here between 1847 and 1867. Manchester had a race course from the late 17th century onwards, as well as one off races in various locations around the city. However its main location was on Kersal Moor between 1687 and 1847, an undulating and hilly course 1.5km N of Castle Irwell. When the lease ran out and was not renewed in 1847, a new site was chosen to the immediate north of the Castle Irwell estate. This area was flat and bound on three sides by the river, making it easier to manage although it was damp and boggy. Nevertheless, a 20 year lease was taken out and a 1000 seater grandstand built. However when John

Purcell Fitzgerald died in 1867, the lease also ran out the same year and his son John, who inherited the estate, refused to renew the lease. The racecourse moved to New Barns in Weaste (now part of Salford Quays and the Manchester Ship Canal) however the compulsory purchase order of the land for the ship canal led to another move.



Fig 43. Simms map of 1858 showing the layout and position of Manchester Race Course during its first residency at Castle Irwell between 1847 and 1867

John Fitzgerald died in 1898 and the Manchester Racecourse Committee bought the whole estate, with the intention of creating a new, bigger racecourse than its predecessor. This opened up in 1902 (Inglis 2004, 39;) and ran races there until its eventual closure in 1963 and transference of land to University of Salford for student accommodation and multi-use sports pitches. Inner city racecourses were to be found all over the country: Bromford Bridge in Birmingham (1895-1965), Hurst Park in Surrey (1890-1962) and Lincoln (1597-1964), to name but a few (BBC 2015; Luser n.d.). Many of these were lost to pressures for housing land, particularly during slum clearances of inner cities. Today, very little remains of Castle Irwell racecourse although the turnstiles still stand on Cromwell Road as a reminder of the sporting legacy here.

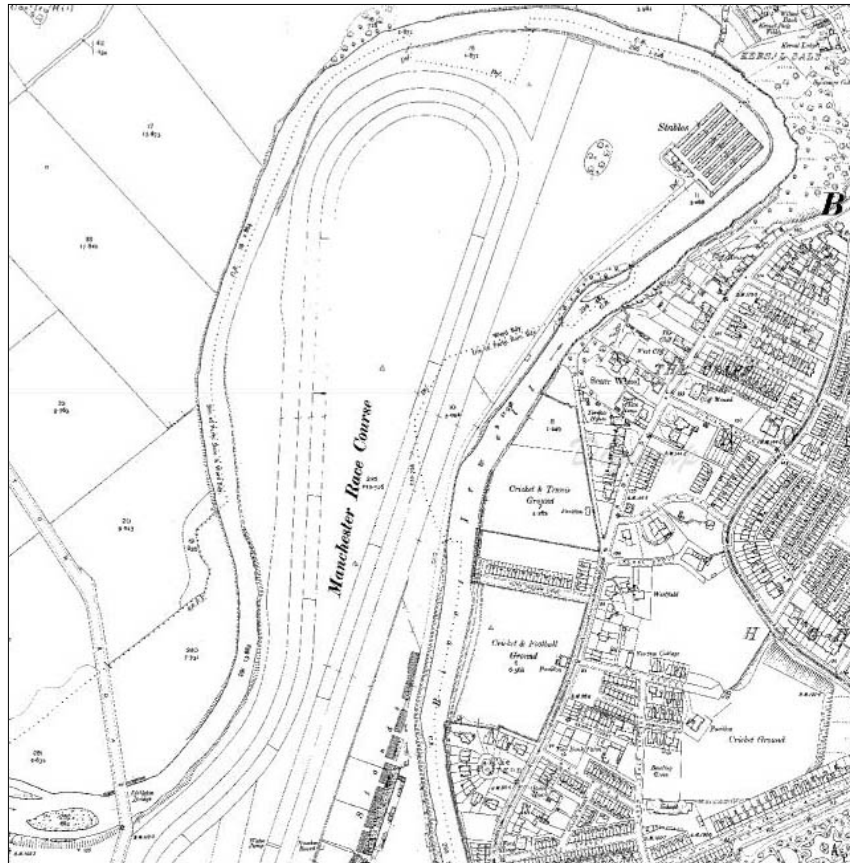


Fig 44. 1909 1:2500 Ordnance Survey map showing Manchester Race Course during its second residency at Castle Irwell between c1900 and 1963.



Fig 45. A distraction from the war; crowds flock to the racecourse in 1941. The entrances in the background are still extant ©Manchester Libraries
<http://images.manchester.gov.uk/web/objects/common/webmedia.php?irn=5398&refable=ecatalogue&refirn=5524>



Fig 36. Around 20,000 people turned out for the last day of racing at Manchester Racecourse in 1963, which included the last running there of the November Handicap
<http://www.bbc.co.uk/news/uk-england-32796143>

8. Archive and Dissemination

A copy of this report will be forwarded to the Environment Agency and Galliford Try and a copy of this report will also be deposited with the Greater Manchester Historic Environment Record, held by GMAAS.

The archive comprises of annotated field drawings, site registers and digital photographs. These have been digitised and the archive is currently held by Salford Archaeology. The results of the archaeological investigation will form the basis of a full archive to professional standards, in accordance with current Historic England guidelines (The Management of Archaeological Projects, 2nd edition, 1991), the Guidelines for the Preparation of Excavation Archives for Long Term Storage (UKIC 1990), and current CIfA standards and guidance for the creation, compilation, transportation and deposition of archaeological archive (published October 2009). The project archive represents the collation and indexing of all the data and material gathered during the course of the project. The deposition of a properly ordered and indexed project archive in an appropriate repository is considered an essential and integral element of all archaeological projects by the CIfA in that organisation's code of conduct. As part of the archiving process, the on-line OASIS (On-line Access to Index of Archaeological Investigations) form will be completed.

The archaeological archive will consist of the following:

- All original records created throughout the course of the project;
- All original drawings, whether created during fieldwork or post-investigation;
- Indexes to the drawings;
- Indexes to the photographic archive;
- Digital material created from written, drawn or photographed original records;
- The final project report;
- A list of contents of the archive.
- Permission will be sought to deposit artefacts recovered during the excavation with Salford Museum Services.

It is likely that most, if not the entire, project archive will be in digital format. It would thus be appropriate to deposit the archive generated from the archaeological investigation with the Archaeological Data Service (ADS), through ADS-Easy. Any records that are created in hard copy during the course of the project will be scanned and added to this digital archive.

9. Further Work

As part of a review and update of the archaeological work carried out at Castle Irwell in the summer of 2016 Salford Archaeology have sought direction from the Greater Manchester Archaeological Advisory Service and the Environment Agency as to what further work is required by them for the better understanding of the site and the dissemination of the information gained from the archaeological work and the full discharge of the Archaeological Planning Condition. Three further pieces of work were highlighted as being important to the project.

The first was to obtain a radiocarbon date from charcoal recovered from a linear ditch like feature during the excavations.

The second was the publication of a booklet in the Greater Manchester's Past Revealed series which would use the Castle Irwell excavations as a central focus for a broader view of the affect the River Irwell has had in shaping the archaeology and history of the area.

The third was the provision of information boards which would allow visitors to the site to appreciate the part it has played in the history of Salford.

Radiocarbon Dating

The analysis carried out on our soil samples by Dr Simon Hutchinson looks for increased percentages of various elements compared to a standard baseline (row 3 in the attached worksheet). An increased level of certain elements, lead and arsenic in particular, is a good indicator that the soil was exposed during the industrial revolution. His interpretation of the results is that this was not the case.

The palaeoenvironmental assessment by Dr Charlotte O'Brien suggests an environmental profile similar to those found elsewhere associated with the Bronze Age and Iron Age.

It was always hoped to retrieve a radiocarbon date from one of the samples taken from the linear feature at Castle Irwell. Initially this was intended to be from what was thought to be decayed wood from the base of the feature however analysis showed this to be a compacted lens of silt.

The processing of two of the samples by Durham University as part of the palaeoenvironmental assessment did retrieve small amounts of charcoal from them. These were sample numbers (119) and (127). Durham advises that there may not be sufficient material from (119) to provide a C14 date.

Given the increasing body of evidence that points towards the linear feature being prehistoric in origin and that we have no other precise dating evidence Salford Archaeology feel that it is very important that the opportunity to obtain a radiocarbon date from sample number (127) should be taken.

Greater Manchester's Past Revealed

The series of booklets has covered a wide variety of topics dealing with many aspects of Greater Manchester's past and the people and places that have shaped it. It is felt that the excavations at Castle Irwell offer the chance to explore a new area particularly the impact the River Irwell has had on the historical landscape and its occupants.

Scope-

- How the river has dictated, helped and hindered the schemes of people living alongside it. This would expand on the immediate area of the excavations allowing for an expanded discussion on the excavations and a detailed look at aspects such as the heated glass house and following on from the Historic England publication 'Played in Manchester' a more comprehensive history of the racecourse. It would also consider the multi-disciplinary processes involved in the analysis of the linear feature.
- A wider view of land use in the rivers environs looking at industrial processes, such as dyeing, and social changes, such as suburbia, which were attracted by the river. It would provide an account of the historic development of the area, including villa residences at Broughton and industrialisation and workers' housing in Charlestown/Pendleton
- The publication would look at how the river has influenced settlement in other periods referencing examples such as Rainsough Romano-British and Iron Age site and other potential prehistoric river promontory sites. The discussion would also take in medieval sites such as Kersall Cell just up the river and Pendleton Hall. It would also look at Salford University's use of the area both for playing fields and accommodation.
- The publication would look at how the river itself has changed both by natural processes and by human intervention such as the cutting off of the 'Anaconda' meander. This could include sections on bridges and flood defences and a look at river sediment geomorphology.

10. Acknowledgements

Salford Archaeology would like to thank Norman Redhead of GMAAS for monitoring the excavations and for his advice. Steven Kemp and, Connor MacIlwrath of The Environment Agency and Ian Broadhurst and Lee Cansfield of Galliford Try for their patience and support in facilitating the work.

Salford Archaeology are most grateful to Dr Neil Entwistle and Dr Simon Hutchinson from the School of Life Sciences and Environment at Salford University for giving up their time to guide us through the geological processes at work on the site.

On site excavations were conducted by Sarah Cattell, Sophie Gingell, Emilie Hayter, Peter Noble, Andrew Radford, Rachael Reader, John Roberts, Mandy Stanton and Kirsty Whittall. The report was written by Rachael Reader and John Roberts and illustrated by Elizabeth Statham and Rachael Reader. The project was managed by John Roberts.

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Appendix 1: Context List

Site Code: CIS15		Site Name: Castle Irwell (Open Area 1)
Context No.	Trench/Area	Description
(001)	Site	Loose dark brown grey loam with rare small rounded pebbles, < 0.30m deep.
(002)	Site	Friable mid grey brown sandy silt with occasional small sub-rounded pebbles. < 0.30m in depth
(003)	Open Area 1	Handmade brick wall, three courses wide and orientated E-W. 14.50 x 0.36 x 0.50m (excavated depth). Keyed into (007)
(004)	Open Area 1	Handmade brick wall, orientated N-S and three courses wide. 8.40 x 0.36 x 0.50m (excavated depth). Keyed into (003)
(005)	Open Area 1	Handmade brick wall, two courses wide and orientated N-S. 5.50 x 0.24 x 0.40m (excavated depth), keyed into (003)
(006)	Open Area 1	Handmade brick wall, three courses wide and orientated E-W. 14.50 x 0.36 x 1.50m. Keyed into (004)
(007)	Open Area 1	Handmade brick wall, three courses wide and orientated N-S. 6.60 x 0.36 x 0.30m (excavated depth). Keyed into (006)
(008)	Open Area 1	Handmade brick wall, one course wide and orientated E-W. 8.10 x 0.11 x 0.20m. Abutted the E face of (007)
(009)	Open Area 1	Handmade brick plinth measuring 0.75 x 0.30 x 0.10m (excavated depth). Abutted (007)
(010)	Open Area 1	Handmade brick wall, two courses wide and orientated N-S. 3.00 x 0.24 x 0.35m
(011)	Open Area 1	Handmade brick wall, two courses wide and orientated E-W. Truncated with the western portion measuring 1.00 x 0.24 x 0.20m and the eastern part measuring 2.75 x 0.24 x 0.10m (excavated depth). Truncation gap 1.50m wide
(012)	Open Area 1	Handmade brick wall, two courses wide and orientated N-S. 2.40 x 0.30 x 1.20m and a stepped foundation at 0.30m deep, consisting of headers, on its W side. Abutted (011)
(013)	Open Area 1	Handmade brick wall, three courses wide and orientated N-S. 1.30 x 0.36 x 0.20m and also abutted the north side of (011).
(014)	Open Area 1	Handmade brick wall, three courses wide and orientated N-S. 1.15 x 0.36 x 0.10m (excavated depth) and ran parallel with (013)
(015)	Open Area 1	Two large stone blocks; the western one measuring 0.40 x 0.40m and the eastern one measuring 0.60 x

		0.40m. Abutting (013) and (014)
(016)	Open Area 1	Handmade brick rectangular structure with two course wide walls. It had a stone flagged floor, overlain with concrete. 4.45 x 1.80 x 0.20m.
(017)	Open Area 1	Handmade brick, slate lined drain broadly running E-W with an offshoot running N-S to abut (017). 7.00m long, 0.36m wide and 0.30m deep.
(018)	Open Area 1	Handmade brick wall, two courses wide and orientated N-S. 2.10 x 0.24 x 0.05m (excavated depth). Parallel with (010)
(019)	Open Area 1	Handmade brick rectangular structure with 2-3 course wide walls 2.10 x 3.30 x 0.30m (excavated depth).
(020)	Open Area 1	Handmade brick surface with bricks laid on bed, 2.25 x 1.00 x 0.25m.
(021)	Open Area 1	Handmade brick wall, three courses wide and orientated N-S. 11.50 x 0.36 x 0.50m and it was abutted by (022)
(022)	Open Area 1	Handmade brick wall, four courses wide and orientated E-W. 4.50 x 0.48 x 0.30m immediately west of (023)
(023)	Open Area 1	Truncated remains of a handmade brick drain which was partially brick and stone lined. >7.50 x 0.25 x 0.25m, initially ran E-W from (022) before turning to run from S to N
(024)	Open Area 1	Six rectangular handmade brick plinths and a seventh, truncated one. 0.60 x 0.40 x 0.20m
(025)	Open Area 1	Truncated stone flagged surface with maximum dimensions of 1.25 x 2.40m
(026)	Open Area 1	Handmade brick wall, three courses wide and orientated N-S. 12.30 x 0.36 x 1.00m
(027)	Open Area 1	Handmade brick wall, 2 courses wide and orientated E-W. 3.50 x 0.24 x 1.20m abuts (021).
(028)	Open Area 1	Handmade brick wall, two courses wide and orientated N-S. 1.70 x 0.24 x 1.20m and was keyed into (027)
(029)	Open Area 1	Handmade brick floor consisting of ½ bricks, laid on bed 2.50 x 1.80m. This was sealed by (030)
(030)	Open Area 1	Handmade brick plinth surviving to three courses high and measuring 0.75 x 1.15 x 0.25m. Abuts (028)
(031)	Open Area 1	Handmade brick floor consisting of full and ½ bricks laid on bed, 1.60 x 1.40 x 0.30m.
(032)	Open Area 1	Handmade brick floor with ½ bricks laid on bed. Badly truncated, maximum dimensions 6.50 x 4.00m
(033)	Open Area 1	Loose light brown grey silty sand with abundant inclusions of brick fragments and shards of glass
(034)	Open Area 1	Handmade brick wall, 2 courses wide and orientated E-W. Its overall dimensions were 3.15 x 0.24 x

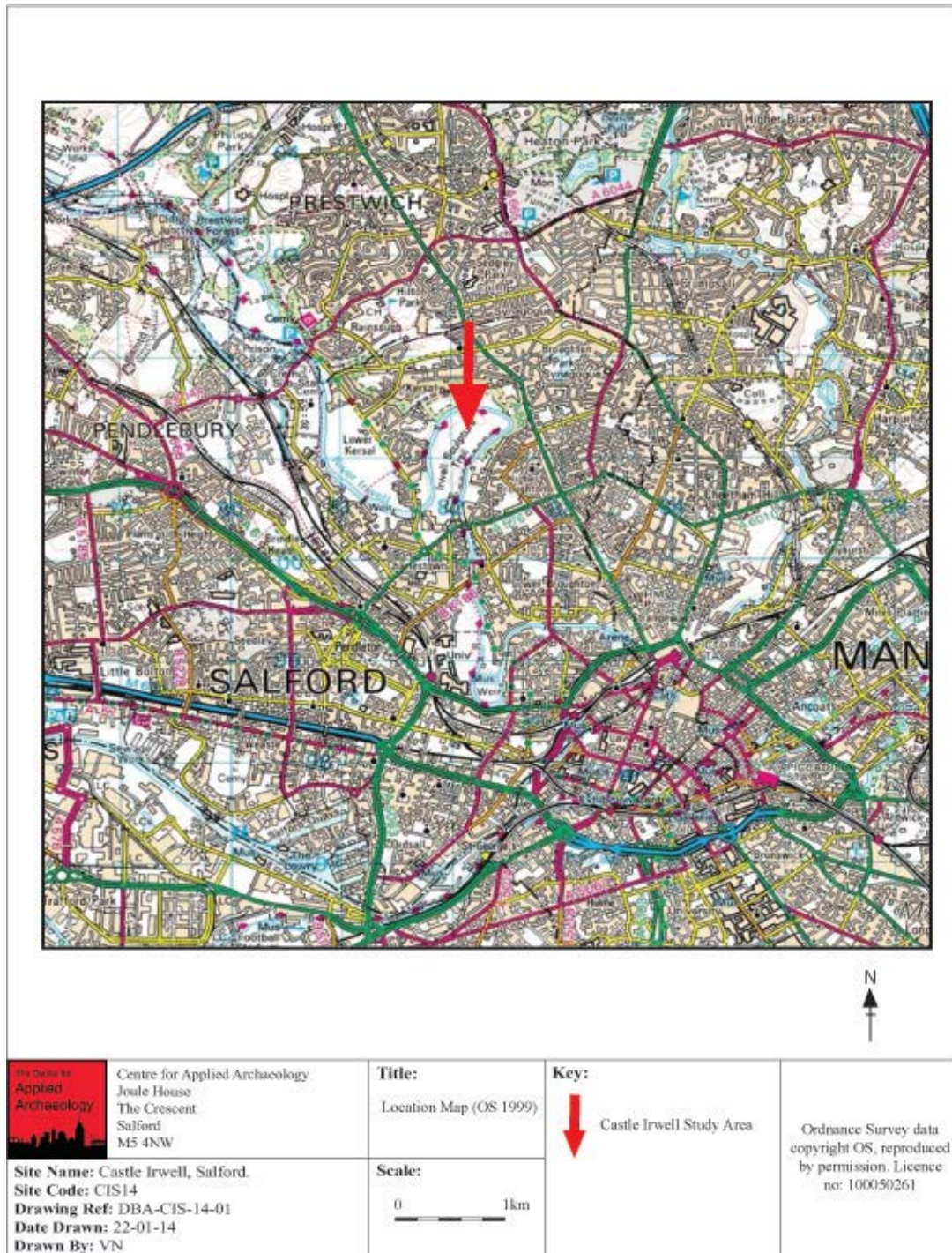
		0.35m. Built into (057)
(035)	Open Area 1	Handmade brick wall, two courses wide and orientated N-S. 1.15 x 0.24 x 0.30m, abutted by (037)
(036)	Open Area 1	Handmade brick wall, one course wide and orientated E-W. 1.65 x 0.11 x 0.20m and abutted (039)
(037)	Open Area 1	Stone flagged floor covering an area 2.00 x 1.25m
(038)	Open Area 1	Handmade brick floor 0.45 x 0.30m. heavily heat affected, also abutted (037).
(039)	Open Area 1	Two parallel handmade brick walls, 2-3 courses wide and orientated E-W with layers of brick partially sealing them, some of which had been heat affected. 1.60 x 1.05 x 0.25m and abutted (026) and (038)
(040)	Open Area 1	Compacted dark grey black material forming a trackway. Its overall dimensions were 32.70 x 4.75 x 0.40m
(041)	Open Area 1	Handmade brick wall, four courses wide and measuring 3.50 x 0.48 x 0.20m. Keyed into (042)
(042)	Open Area 1	Handmade brick wall, four courses wide and orientated E-W. 6.30 x 0.48 x 0.20m and also sealed (055). Keyed into (043)
(043)	Open Area 1	Handmade brick wall, four courses wide and orientated N-S. 4.50 x 0.48 x 0.10m
(044)	Open Area 1	Machine made frogged brick wall, three courses wide and orientated N-S. 1.80 x 0.36 x 0.10m.
(045)	Open Area 1	Small handmade brick rectangular structure with a handmade brick floor and 1-2 course wide walls. 1.85 x 1.15 x 0.30m
(046)	Open Area 1	Handmade brick drain, two courses wide and orientated E-W, 4.50 x 0.24m. This led to a handmade brick rectangular feature, 1.50 x 1.70 x 1.00m (excavated depth).
(047)	Open Area 1	Loose light pink red silty sand with inclusions of medium sized (<0.15m) angular sandstone fragments.
(048)	Open Area 1	Handmade brick rectangular structure, truncated at its eastern end, with two course wide walls. Its overall dimensions were 1.60 x 1.50 x 0.25m.
(049)	Open Area 1	Handmade brick wall, two courses wide and orientated E-W. 6.90 x 0.24 x 0.20m, keyed into (050)
(050)	Open Area 1	Handmade brick wall, two courses wide and orientated N-S. 1.20 x 0.24 x 0.20m and was truncated at its S end
[051]	Open Area 1	L shaped cut measuring 1.65 x 0.50m (N-S) and 4.90 x 0.50m (E-W). Truncated (050), infilled by (053)
[052]	Open Area 1	Linear cut measuring 2.40 x 0.50m. Truncated (049), infilled by (053)

(053)	Open Area 1	Compact mid grey brown silty clay with no visible inclusions
[054]	Open Area 1	Linear cut, orientated N-S and up to 0.25m wide. Foundation cut for wall (004), truncates feature [100]
(055)	Open Area 1	Compact mid brown grey silty clay with no observed inclusions
(056)	Open Area 1	Handmade brick wall, three courses wide and orientated E-W. 1.00 x 0.36 x 0.10m. Truncated trackway (040).
(057)	Open Area 1	Handmade brick wall, two courses wide and orientated N-S. 2.10 x 0.24 x 0.35m. Abuts (032)
(058)	Open Area 1	Compact dark grey black clinker-like material which survived up to 0.20m in depth. Trackway

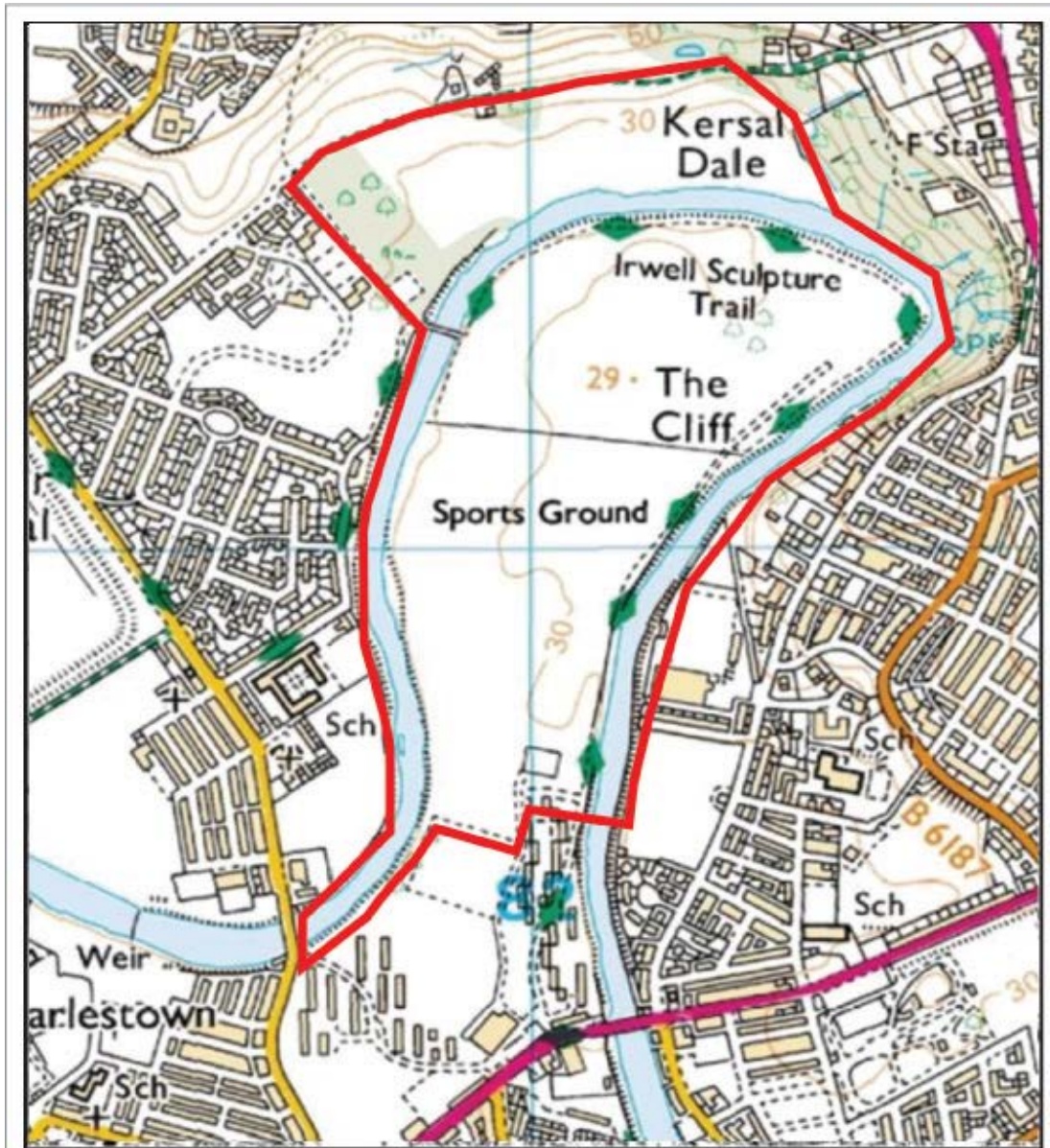
Site Code: CIS 15		Site Name: Castle Irwell (Open Area 2)
[100]	Site	Large linear feature curving around the old sandstone knoll
(101)	VOID	VOID
(102)	VOID	VOID
[103]	Open Area 2	Feature [100] terminus. 6.25m wide and 1.30m deep
(104)	Open Area 2	Compact light grey brown sandy clay measuring 0.25m in depth. Fill of [105]
[105]	Open Area 2	Curvilinear feature orientated NW-SE, measuring 1.00 x 0.50 x 0.30m. Filled by (104)
(106)	VOID	VOID
(107)	Site	Loose light brown yellow sands and gravels – natural geology
(108)	Site	Compact mid pink red sandstone – natural geology, overlain with (107)
(109)	Open Area 2	Friable light grey brown sandy silt with occasional small rounded pebbles 1.50m deep
[110]	Open Area 2	Curvilinear feature measuring 8.00 x 6.00 x 1.50m with gently sloping sides. Infilled by (109)
[111]	Open Area 2	Part of feature [100] 2.00 x 2.00 x 0.35m
[112]	Open Area 2	Part of feature [100] 2.00 x 2.20 x 1.00m
[113]	Open Area 2	Part of feature [100]. 3.20 x 4.00 x 1.35m
(114)	Open Area 2	Loose light red brown silty sand with rare (< 1%) small (< 0.05m) rounded pebbles. 0.32m deep. Seals [103] sealed by (115)
(115)	Open Area 2	Malleable mid grey brown clayey silt with rare small rounded pebbles with a small concentration of large (< 0.20m) angular stones. 0.55m deep. Seals (114), sealed by (116)
(116)	Open Area 2	Malleable mid yellow grey silty clay with small rounded pebbles and lenses of compact light blue grey silty clay. Seals (115). Sealed by (123)
(117)	Open Area 2	Friable light grey brown sandy silt with rare small rounded pebbles. 0.35m deep. Seals (128)
(118)	Open Area 2	Loose mid red brown silty sand with no visible inclusions < 0.05m deep. Seals [125], sealed by (139)
(119)	Open Area 2	Friable light grey brown sandy silt with inclusions of rare small-medium rounded pebbles. 0.30m deep
(120)	Open Area 2	Loose mid yellow brown silty sand with inclusions of rare small rounded pebbles. 0.30m deep. Seals (139) and sealed by (119)
(121)	Open Area 2	Loose mid red brown silty sand with no visible inclusions. 0.10m deep, seals [113], sealed by (143)
(122)	Open Area 2	Friable light grey brown sandy silt with occasional small rounded pebbles, < 0.60m deep. Seals (143)
(123)	Open Area 2	Friable mid yellow brown clayey sand with rare small rounded pebbles. <0.10m deep. Seals (116), sealed by (124)

(124)	Open Area 2	Friable mid grey brown clayey sand with occasional (< 5%) small rounded pebbles. <0.40m deep. Seals (123)
[125]	Open Area 2	Part of feature [100] 7.50 x 0.76 x 0.34m, gets deeper and wider towards the west (2.40 x 0.60m)
(126)	Open Area 2	Loose mid grey red silty sand measuring 0.05m in depth and no inclusions visible. Seals [125], sealed by (128)
(127)	Open Area 2	Friable light grey brown sandy silt with rare small – medium (< 0.10m) rounded pebbles. Seals (128), 0.30m deep
(128)	Open Area 2	Loose mid brown red silty sand with rare small rounded pebbles. 0.25m deep. Seals (111), sealed by (117)
[129]	Open Area 2	Part of feature [100]. 4.25 x 4.40m
[130]	Open Area 2	Part of feature [100]. 4.80 x 5.70m
(131)	Open Area 2	Same as (138)
(132)	Open Area 2	Friable light blue grey sandy silt with lenses of degraded red sandstone visible. < 0.05m deep, seals (135), sealed by (134)
(133)	Open Area 2	Loose mid grey brown silty sand with rare small rounded pebbles. 1.10m deep, seals (134)
(134)	Open Area 2	Fairly compact mid yellow brown silty clay with inclusions of rare small rounded pebbles and lenses of brown clay. 0.60m deep, seals (132), sealed by (133)
(135)	Open Area 2	Loose light yellow grey silty sand with no visible inclusions. <0.05m deep. Seals (136), sealed by (132)
(136)	Open Area 2	Friable mid grey brown sandy silt with inclusions of frequent (<10%) small rounded pebbles. <0.05m deep. Seals [130], sealed by (135)
(137)	Open Area 2	Fairly compact mid brown grey silty clay with rare small rounded pebbles <0.45m deep. Seals (138), sealed by (119)
(138)	Open Area 2	Malleable light blue grey silty clay with inclusions of rare small rounded pebbles. <0.20m deep, seals (140), sealed by (137)
(139)	Open Area 2	Malleable dark grey brown clayey sand with inclusions of rare small rounded pebbles. 0.70m deep. Seals (118), sealed by (120)
(140)	Open Area 2	Firm mid grey brown clayey silt with inclusions of rare small rounded pebbles. <0.30m deep. Seals (141), sealed by (138)
(141)	Open Area 2	Friable light brown yellow sandy silt with inclusions of rare small rounded pebbles. <0.35m deep. Seals (142), sealed by (140)
(142)	Open Area 2	Friable light blue grey sandy silt with no inclusions. < 0.10m deep. Seals [129], sealed by (141)
(143)	Open Area 2	Indurated dark grey brown silty clay with no visible inclusions, < 0.40m deep. Seals (121), sealed by (122)

Appendix 2: Illustrations

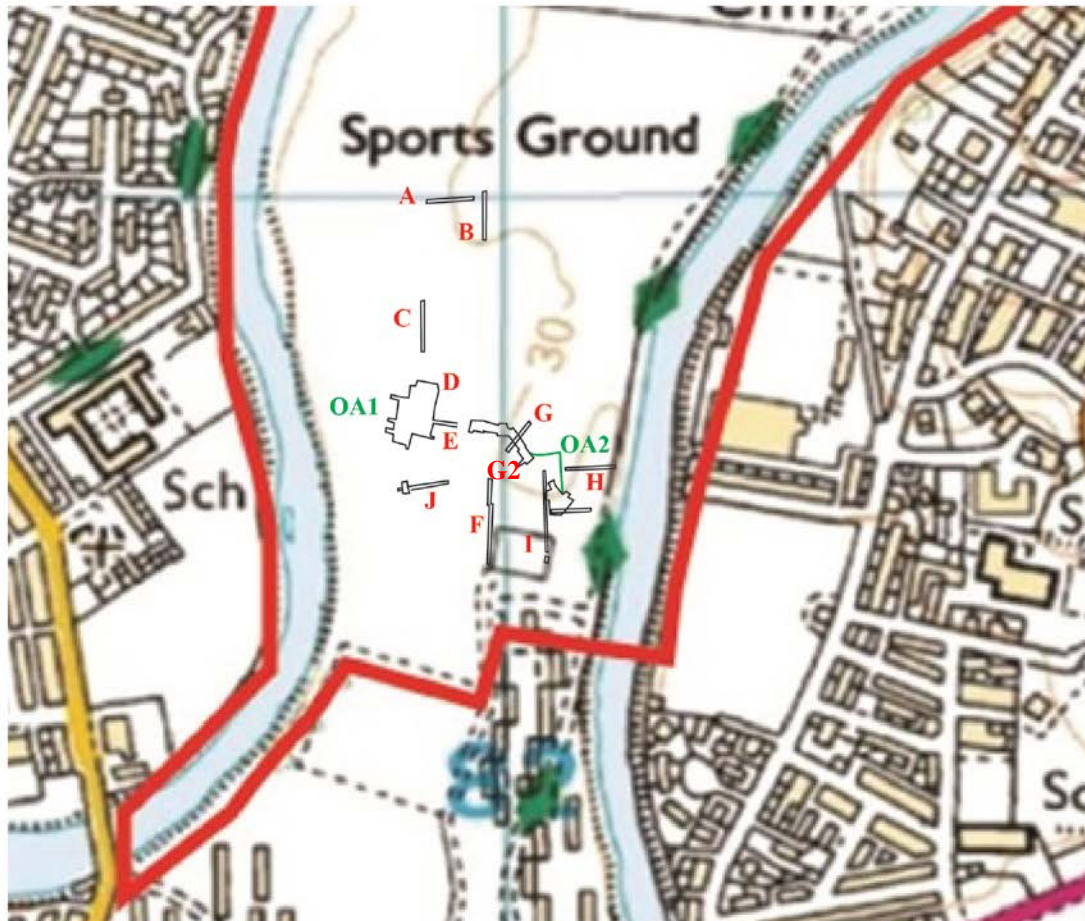






III 1. Site location map



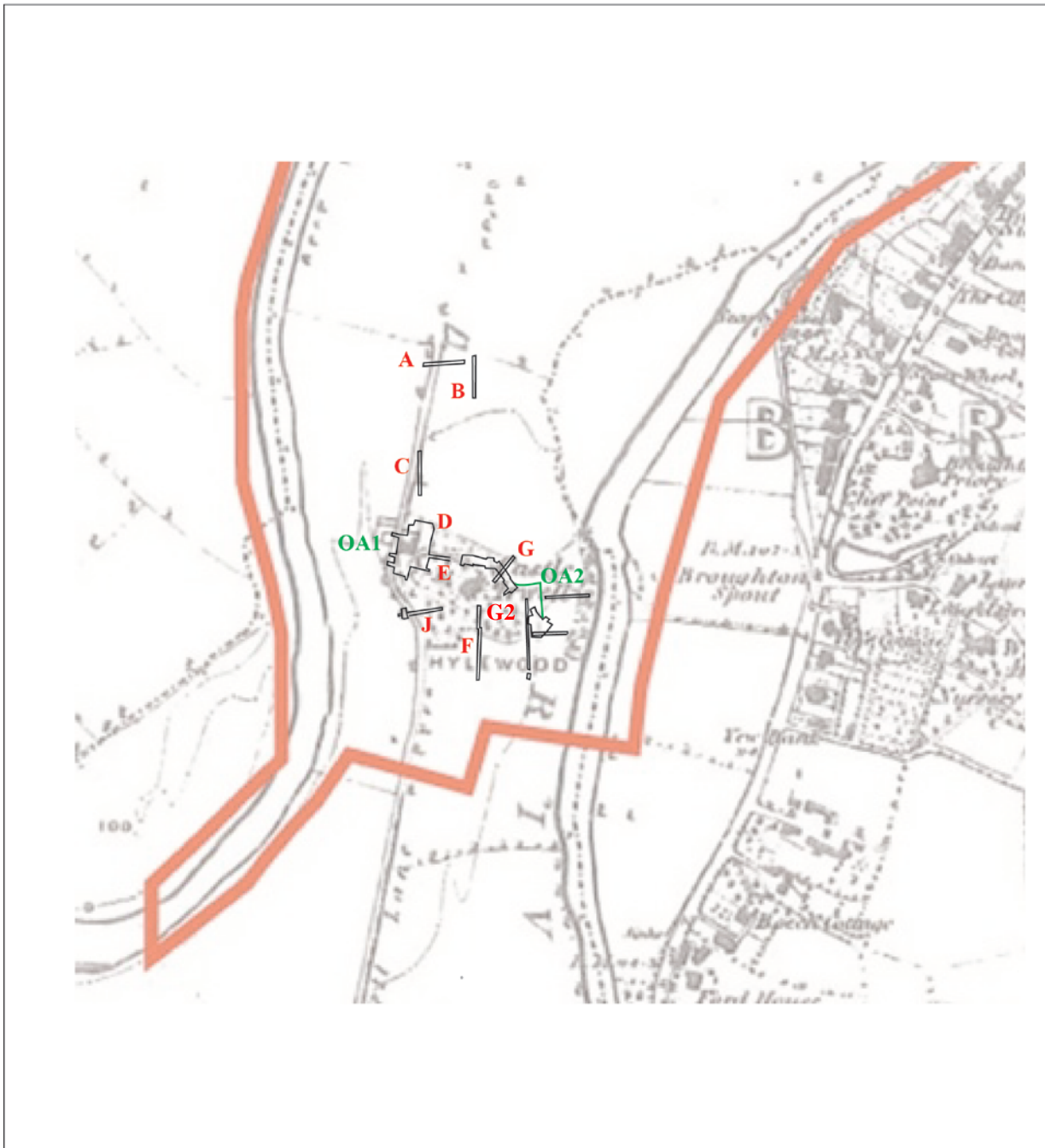
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<p>Site Name: Castle Irwell, Salford. Site Code: CIS14 Drawing Ref: DBA-CIS-14-07 Date Drawn: 22-01-14 Drawn By: VN</p>		<p>Scale: 0m 250m </p>		




III 2. Castle Irwell Study Area



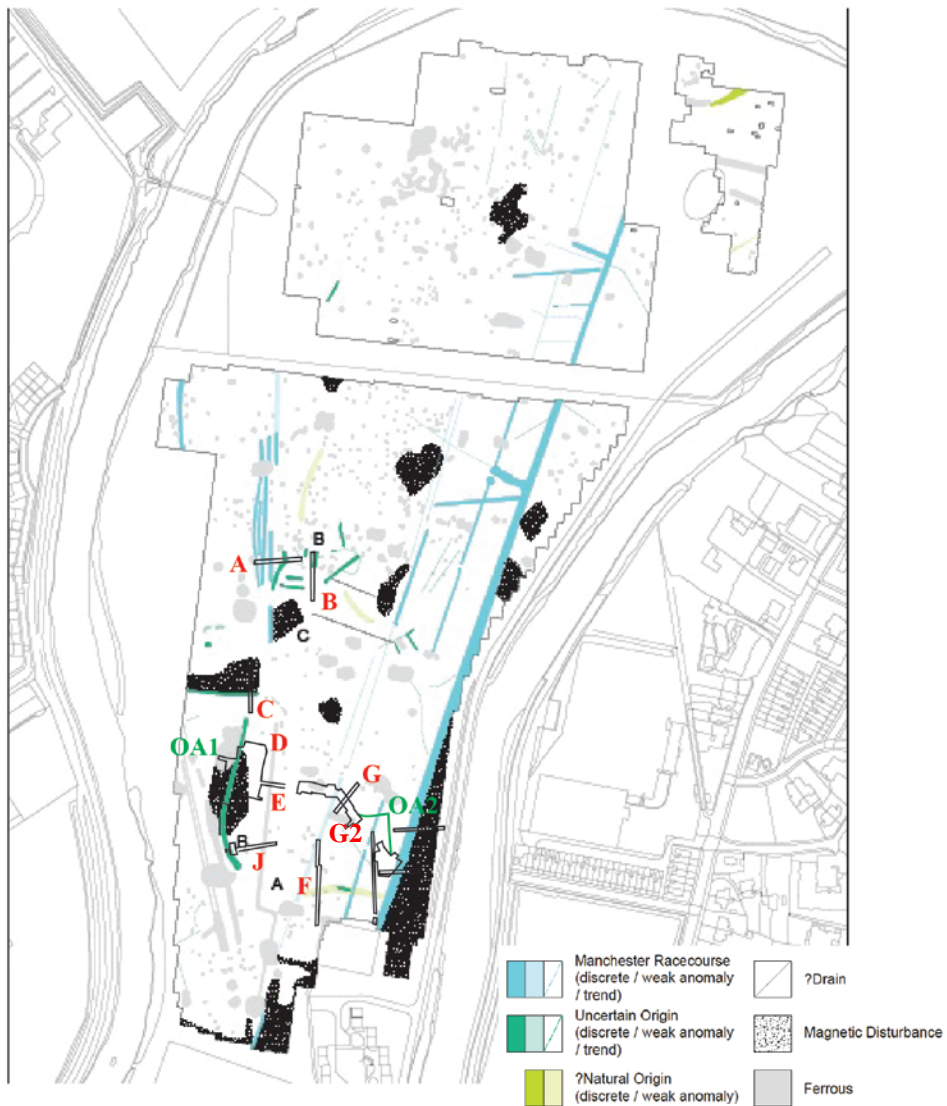
 <p>Centre for Applied Archaeology College of Science and Technology The Crescent Salford M5 4WU</p>	<p>Title: Modern OS map showing trench locations</p>	<p>Key:</p> <ul style="list-style-type: none">  Trench/Open Area C Trench OA2 Open Area 	
	<p>Site Name: Castle Irwell, Salford Site Code: CIS15 Drawing Ref: EXC-CIS15-1 Date Drawn: 20.07.2015 Drawn By: RR</p>	<p>Scale:</p> 	

III 3. Close-up showing trench locations



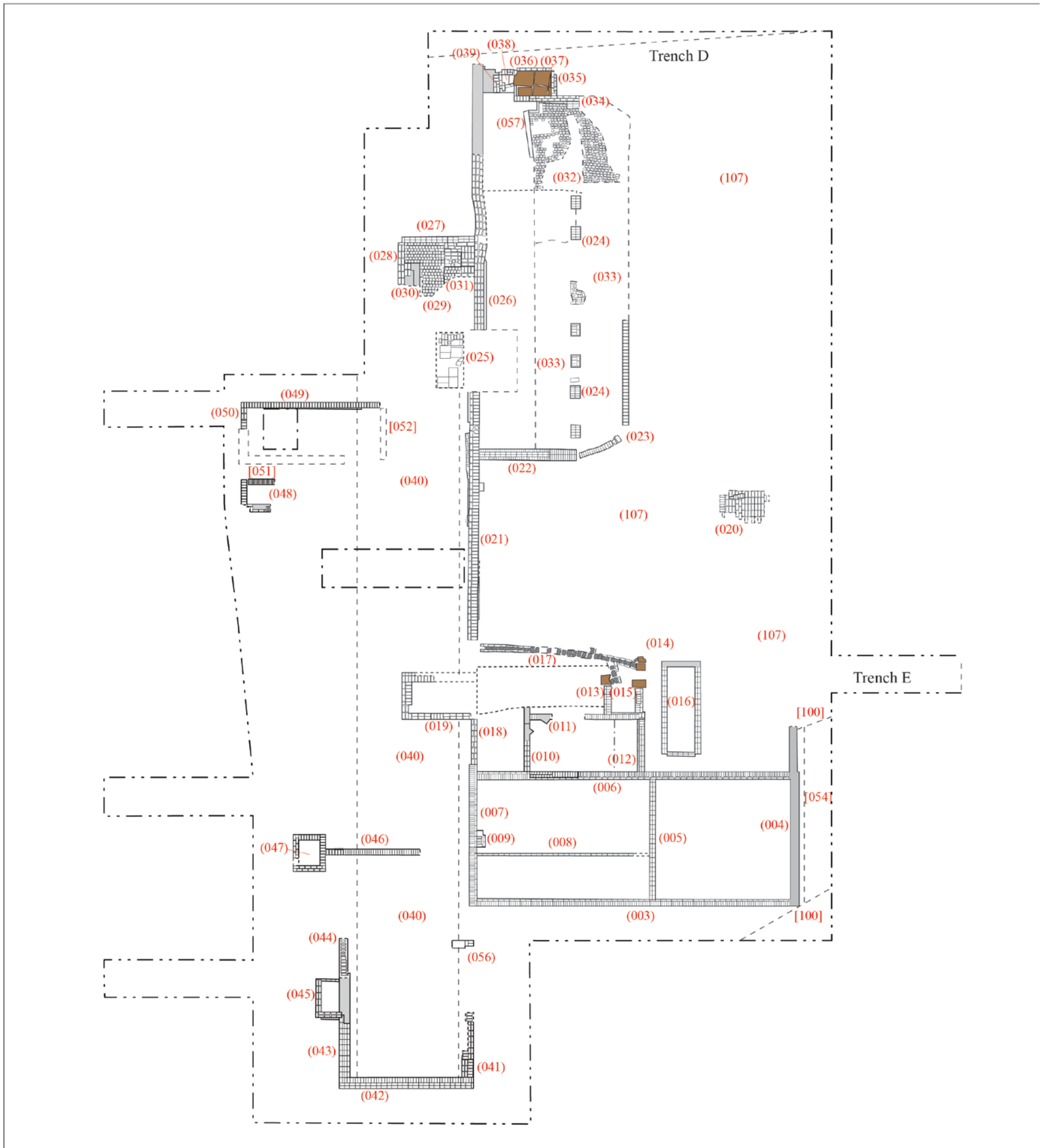
<p>The Centre for Applied Archaeology</p>	<p>Centre for Applied Archaeology College of Science and Technology The Crescent Salford M5 4WU</p>	<p>Title: 1849 OS map showing trench locations</p>	<p>Key:  Trench/Open Area C Trench OA2 Open Area</p>	
<p>Site Name: Castle Irwell, Salford Site Code: CIS15 Drawing Ref: EXC-CIS15-2 Date Drawn: 20.07.2015 Drawn By: RR</p>	<p>Scale: </p>			

Ill 4. Trench Locations in relation to first edition OS map



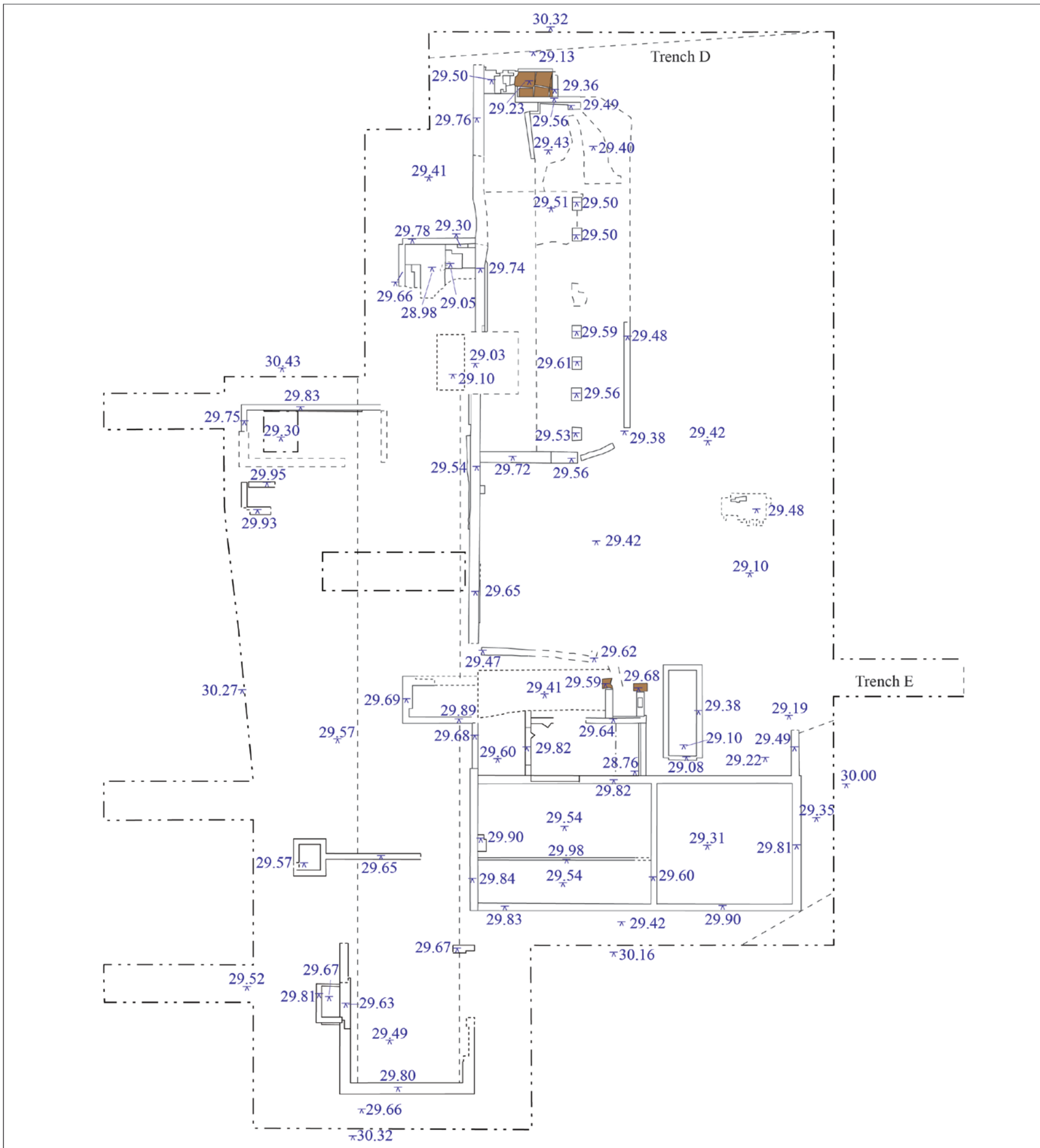
<p>The Centre for Applied Archaeology</p>	<p>Centre for Applied Archaeology College of Science and Technology The Crescent Salford M5 4WU</p>	<p>Title: Geophysics interpretation plot with trench locations</p>	<p>Key: <div style="display: flex; align-items: center; margin-bottom: 5px;"> Trench/Open Area </div> <div style="display: flex; align-items: center; margin-bottom: 5px;"> C Trench </div> <div style="display: flex; align-items: center;"> OA2 Open Area </div> </p>	
<p>Site Name: Castle Irwell, Salford Site Code: CIS15 Drawing Ref: EXC-CIS15-3 Date Drawn: 20.07.2015 Drawn By: RR</p>		<p>Scale: 0 200m</p>		



III 5. Trench Locations and identified Geophysical anomalies



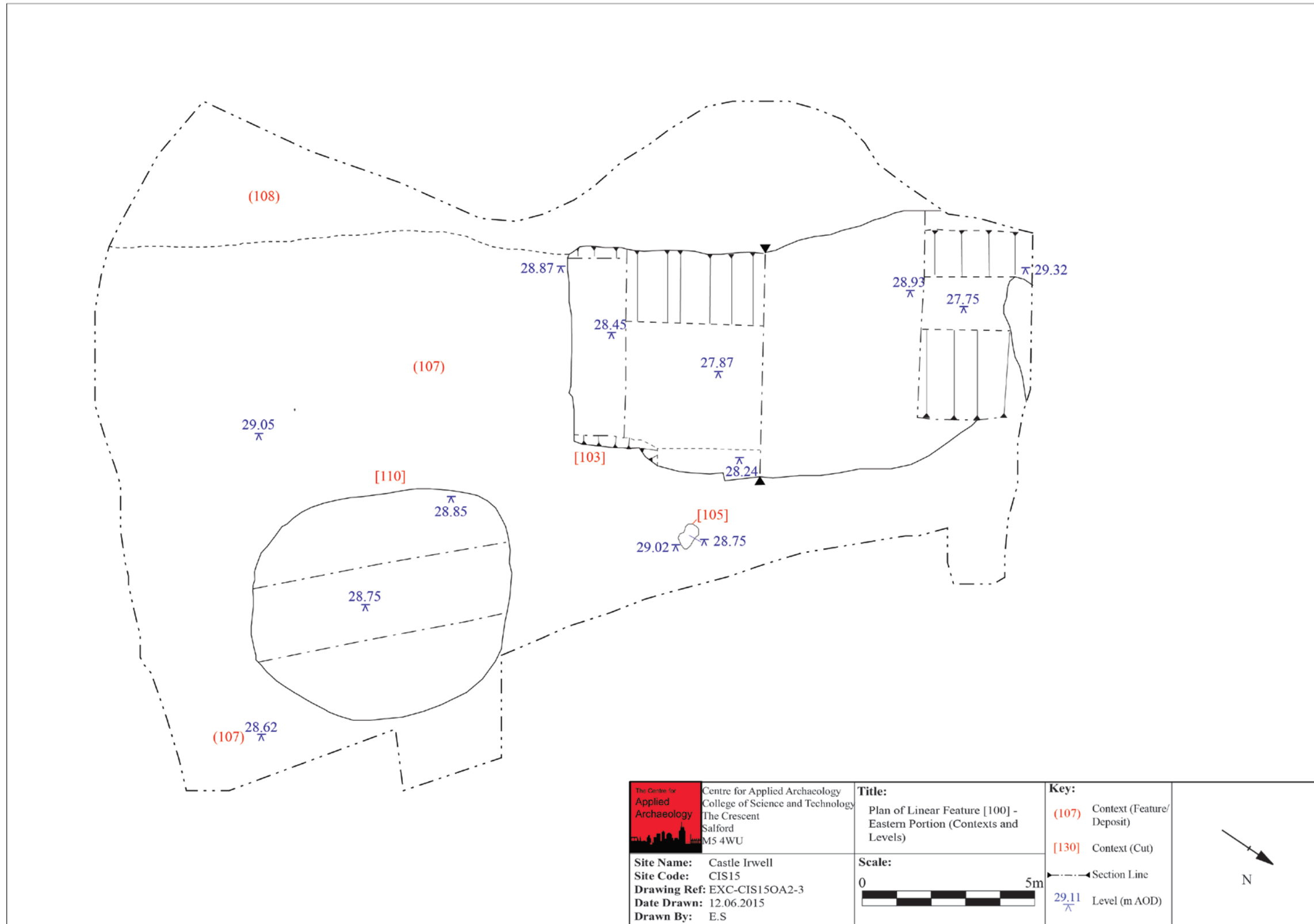
<p>The Centre for Applied Archaeology</p>	<p>Centre for Applied Archaeology College of Science and Technology The Crescent Salford M5 4WU</p>	<p>Title: Open Area 1: Principal Features</p>	<p>Key:</p> <ul style="list-style-type: none"> Mortar Stone (041) Context (Deposit/Feature) [100] Context (Cut) 	
<p>Site Name: Castle Irwell, Salford Site Code: CIS15 Drawing Ref: EXC-CIS15OA1-1 Date Drawn: 15.06.2015 Drawn By: E.S</p>	<p>Scale:</p>			

Ill 6. Plan of features within Open Area 1



 <p>Centre for Applied Archaeology College of Science and Technology The Crescent Salford M5 4WU</p>	<p>Title: Open Area 1: Levels (m AOD)</p>	<p>Key:</p> <ul style="list-style-type: none"> Mortar Stone 29.57 Level (m AOD) 	 <p>N</p>
	<p>Site Name: Castle Irwell, Salford Site Code: CIS15 Drawing Ref: EXC-CIS15OA1-2 Date Drawn: 15.06.2015 Drawn By: E.S</p>		

III 7. Plan of Levels taken in Open Area 1



III 8. Eastern part of Open Area 2

Title:

Plan of Linear Feature [100] -
Western Portion (Contexts)

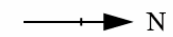
Key:

- (107) Context (Feature/Deposit)
- [130] Context (Cut)
- Section Line
- 29.11 Level (m AOD)

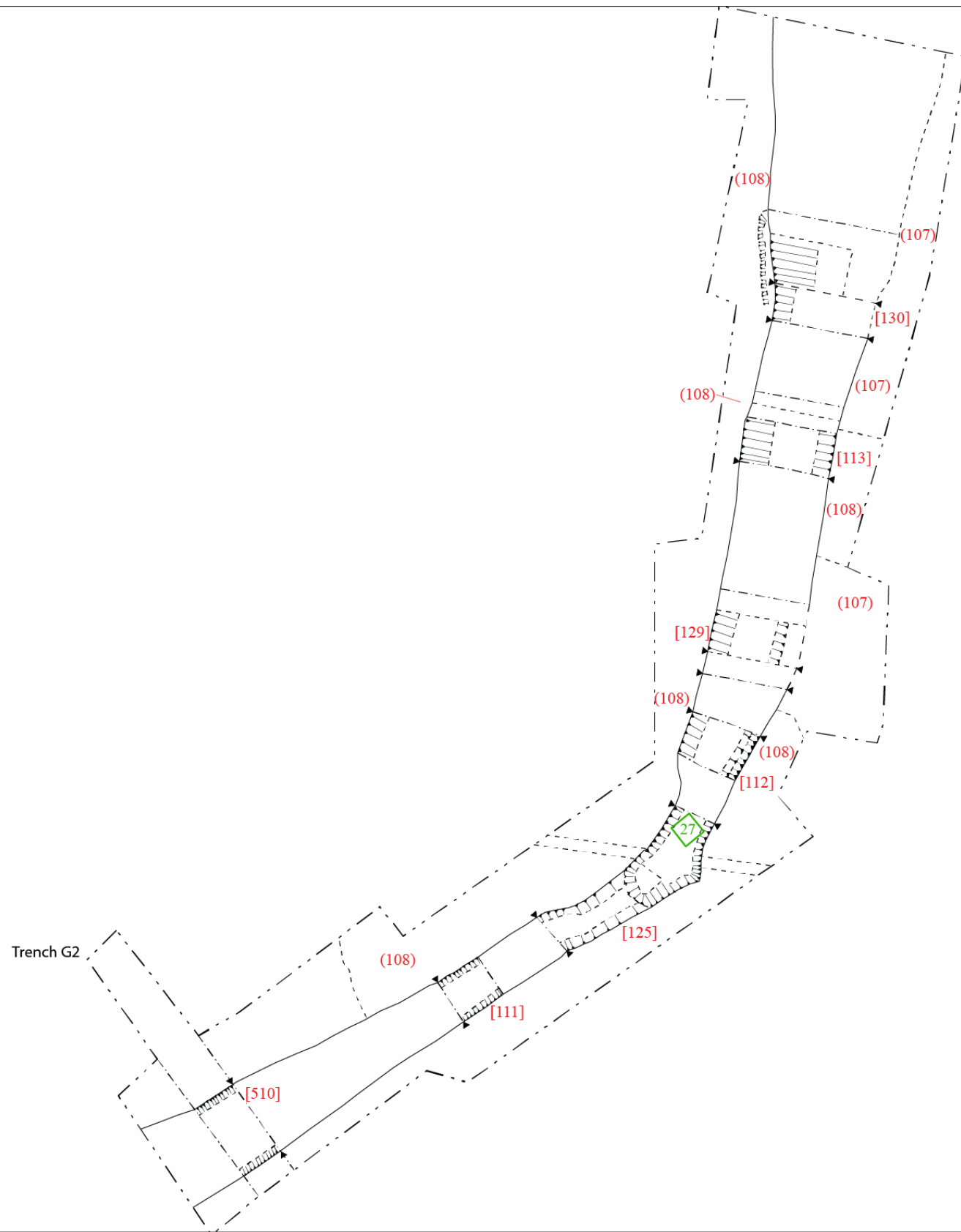
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Orientation:



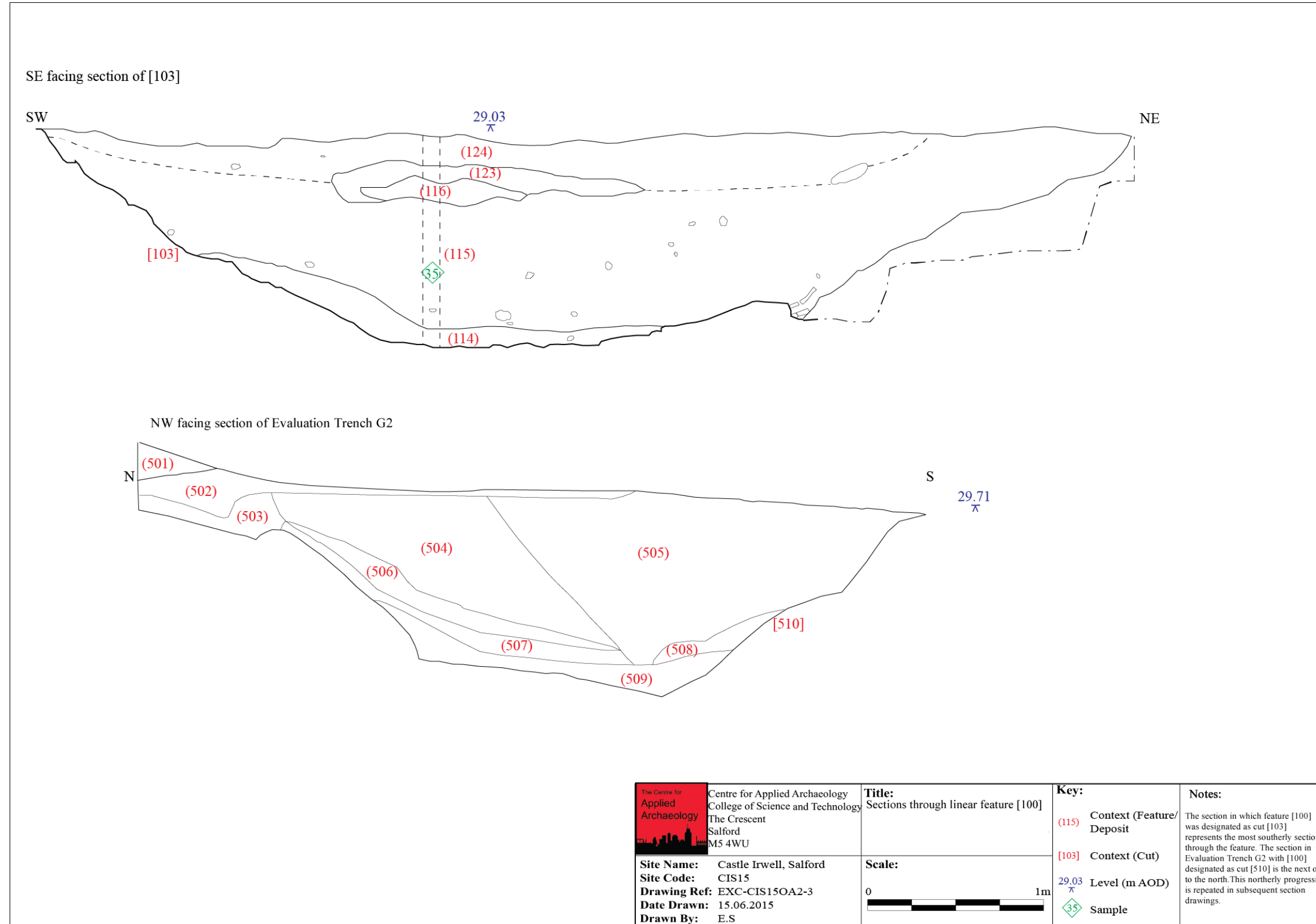
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Site Code: CIS15
Drawing Ref: EXC-CIS15OA2-1
Date Drawn: 01.06.2015
Drawn By: E.S



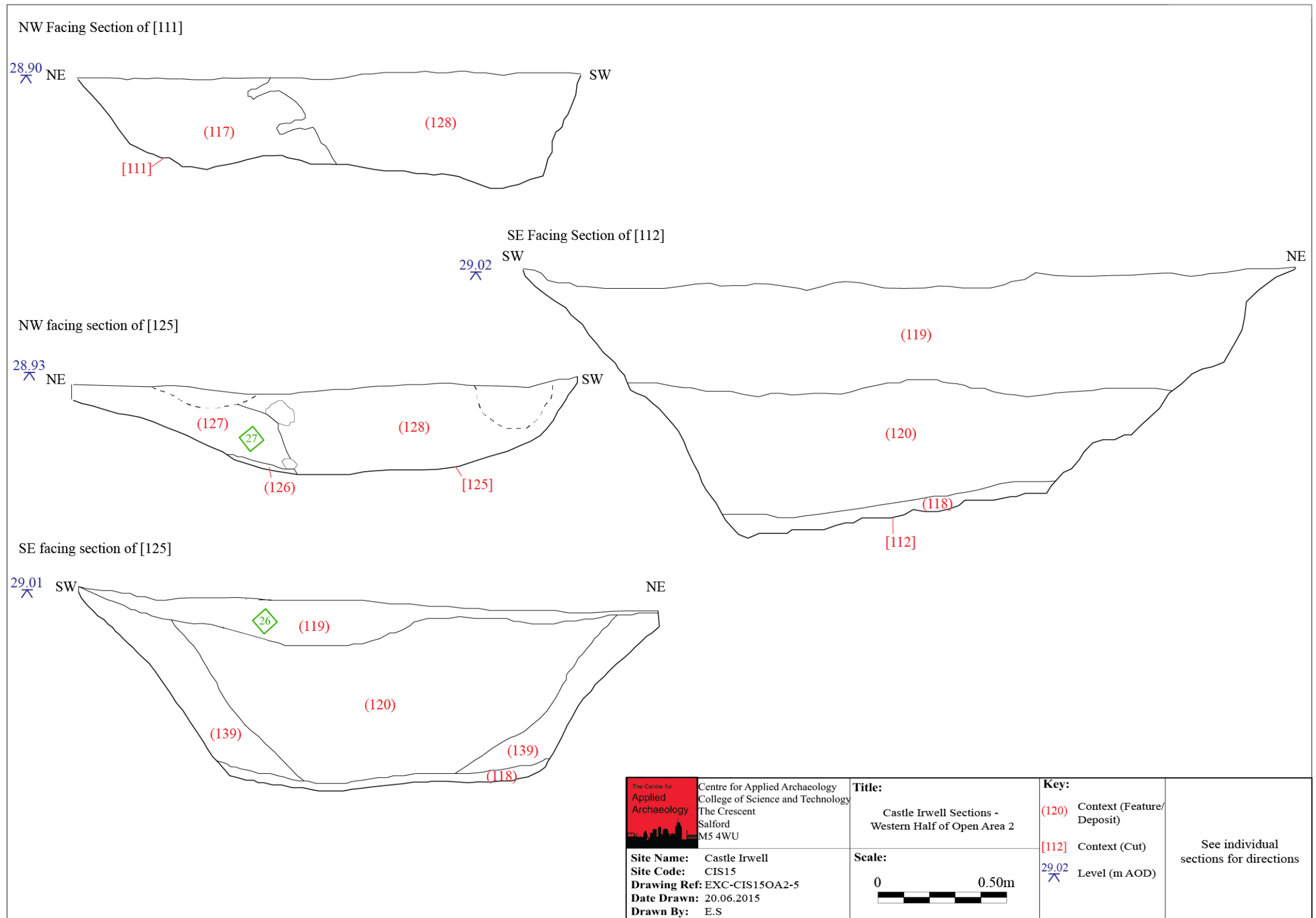
III 9. Plan of features within Open Area 2



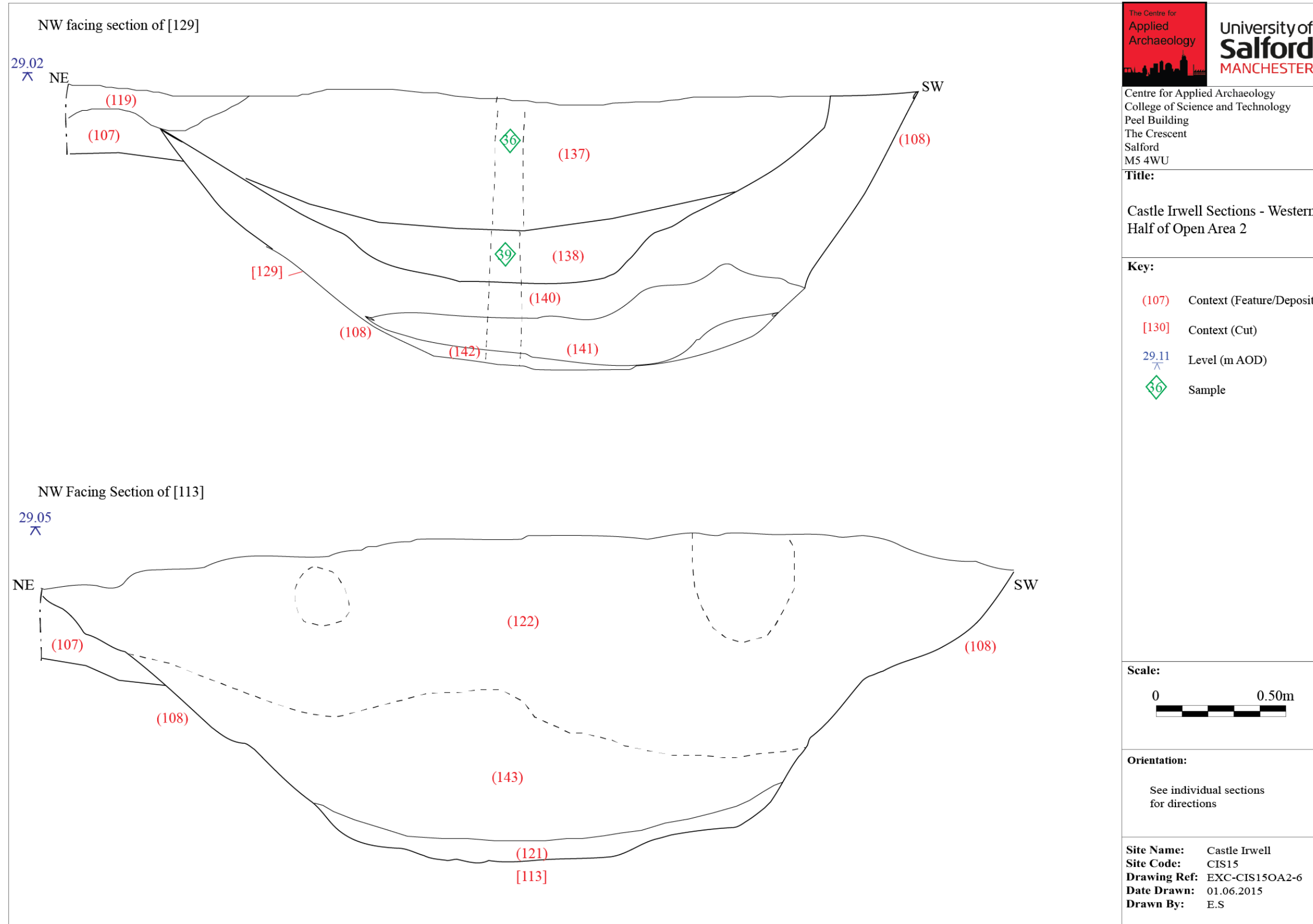
III 10. Plan of Levels taken within Open Area 2



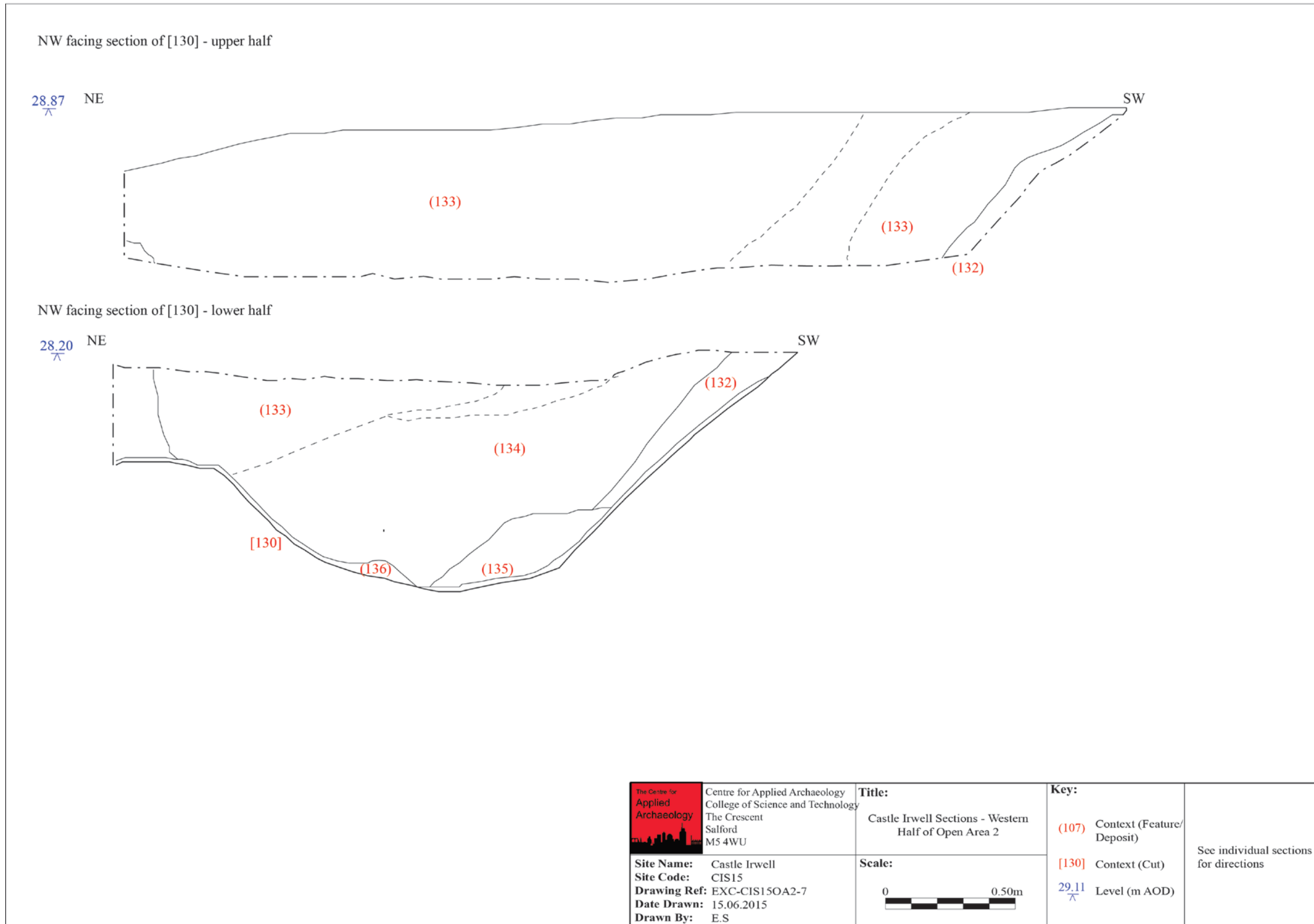
Ill 11. South facing section of feature [100], terminus [103] and north west facing section from Evaluation Trench G2. The following sections of the linear feature move broadly from east to west



III 12. Sections [111], [125] and [112] – Open Area 2



III 13. Sections [129] and [113] - Open Area 2



Ill 14. Sections [130] - Open Area 2

Appendix 3: Photographic Register

Site Name: Castle Irwell		Site Code: CIS15 (Open Area 1)	
Frame	Trench/ Area	Description	Direction Facing
128	Area 1	Exterior wall	N
129	Area 1	Overall trench shot	NW
130	Area 1	Room 1	NW
131	Area 1	Room 1, interior wall – facing Room 2	W
132	Area 1	Room 1, interior wall facing Room 3	W
133	Area 1	Interior wall dividing room 2 and 3	N
134	Area 1	Room 2 large wall	N
135	Area 1	Room 3, exterior wall, drain break	E
136	Area 1	Room 3, interior division 3/5	N
137	Area 1	Room 3, interior division 3/6	N
138	Area 1	Room 2 area shot	E
139	Area 1	Room 3 area shot	E
140	Area 1	Room 4 wall	N
141	Area 1	Room 4 area shot	W
142	Area 1	Room 5 area shot	S
143	Area 1	Room 5 division wall 5/6	S
144	Area 1	Room 6 wall break	S
145	Area 1	Room 6 area shot	E
146	Area 1	Room 6 sondage	S
147	Area 1	Room 6/7 internal division	E
148	Area 1	Room 6 porch	S
149	Area 1	Room 7 pit?	S
150	Area 1	Room 7 area shot	SE
151	Area 1	Slate gully	W
152	Area 1	Slate gully close	W
153	Area 1	North south exterior wall	E
154	Area 1	North south exterior wall with relationship to east west wall	E
155	Area 1	East west wall	N
156	Area 1	East west wall	W
157	Area 1	Flagged area to the west of north south wall	N
158	Area 1	General site photo	SE
159	Area 1	General site photo	W
160	Area 1	General site photo	NE
161	Area 1	General site photo	NW
162	Area 1	Room 9	N
163	Area 1	Room 9	W
164	Area 1	Room 9	S
165	Area 1	Room 9	W
166	Area 1	Room 9	E
167	Area 1	General shot – room 8 (glasshouses)	N
168	Area 1	E external wall/drain	N
169	Area 1	Close up of pillar bases	E
170	Area 1	Damaged flooring in Room 8	N

171	Area 1	Damaged flooring in Room 8	S
172	Area 1	Damaged flooring in Room 8	N
173	Area 1	Damaged flooring in Room 8	N
174	Area 1	Damaged flooring in Room 8	S
175	Area 1	Damaged flooring in Room 8	S
176	Area 1	Flue? At N end of room 8	W
177	Area 1	?	?
178	Area 1	General shot of wall (and partial damage)	
179	Area 1	Possible wall in NW corner of glass house	W
180	Area 1	Isolated surface (room 11)	N
181	Area 1	Isolated surface (room 11)	W
182	Area 1	Isolated surface (room 11)	S
183	Area 1	Isolated surface (room 11)	E
184	Area 1	River gravel at E end of Trench	E
185	Area 1	Room 10 built over trackway – W end of area	S
186	Area 1	Room 10 built over trackway – W end of area	W
187	Area 1	Room 10 built over trackway – W end of area	N
188	Area 1	Room 10 built over trackway – W end of area	E
189	Area 1	Room 10 built over trackway – W end of area	?
190	Area 1	“Alcove” in W wall of room 10	W
191	Area 1	Possible toilet and drain to N of room 10	E
192	Area 1	Small square structure W of trackway	E
193	Area 1	In situ wall and robbed out wall cutting trackway	E
194	Area 1	In situ wall and robbed out wall cutting trackway	S
195	Area 1	General shot of trackway	S
196	Area 1	Later trackway to W of old one in S/N facing section on S machine trench extension	N
197	Area 1	Later trackway to W of old one in S/N facing section on S machine trench extension	S
198	Area 1	Phase 1 trackway revealed in section of machine sondage	S
199	Area 1	Phase 1 trackway revealed in section of machine sondage	S
200	Area 1	N facing section of trackway	S
201	Area 1	N facing section of trackway	S
202	Area 1	General shot of trackway	S
203	Area 1	General shot of trackway	S
204	Area 1	General shot of trackway	S
205	Area 1	General shot of trackway	N
206	Area 1	General shot of trackway	N
207	Area 1	General site shot starting from SW corner working clockwise	NE
208	Area 1	S facing section of later trackway	N
209	Area 1	Follows on from 207. General site shots	E
210	Area 1	Follows on from 207. General site shots	E
211	Area 1	Follows on from 207. General site shots	E
212	Area 1	Follows on from 207. General site shots	E
213	Area 1	Follows on from 207. General site shots	SE
214	Area 1	Follows on from 207. General site shots	E
215	Area 1	Follows on from 207. General site shots	E

216	Area 1	Follows on from 207. General site shots	SE
217	Area 1	Follows on from 207. General site shots	S
218	Area 1	General site shots	SW
219	Area 1	General site shots	W
220	Area 1	General site shots	W
221	Area 1	General site shots	NW
222	Area 1	General site shots	SW
223	Area 1	General site shots	SW
224	Area 1	General site shots	W
225	Area 1	General site shots	W

Site Name: Castle Irwell		Site Code: CIS15 (Open Area 1)	
Frame	Trench/ Area	Description	Direction Facing
226	Area 2 machine slot 2	Fragment of wood in primary fill of linear feature. Sample 20 from deposit (118)	W
227	Area 2 machine slot 2	Fragment of wood in primary fill of linear feature. Sample 20 from deposit (118)	W
228	Area 2 machine slot 2	Detailed shot	W
229	Area 2	Possible terminus of linear feature to the S of evaluation trench I [103]	N
230	Area 2	Possible terminus of linear feature to the S of evaluation trench I [103]	W
231	Area 2	As 229	N
232	Area 2	Possible terminus of linear feature to the S of evaluation trench I [103]	E
233	Area 2	Possible terminus of linear feature to the S of evaluation trench I [103]	N
234	Area 2	W facing section of machine slot 3 [113]	E
235	Area 2	W facing section of machine slot 3 [113]	E
236	Trench E	Extension to trench E through linear feature	S
237	Trench E	Extension to trench E through linear feature	S
238	Trench E	Extension to trench E through linear feature	W
239	Trench E	Extension to trench E through linear feature	W
240	Trench E	Extension to trench E through linear feature	W
241	Trench E	Extension to trench E through linear feature	SW
242	Trench E	Extension to trench E through linear feature	S
243	Trench E	Extension to trench E through linear feature	S
244	Trench E	Extension to trench E through linear feature	SE
245	Area 2	Slot through large “blob” at E end of “Ditch” terminus [103] ([110])	SE
246	Area 2	Slot through large “blob” at E end of “Ditch” terminus [103] ([110])	NW
247	Area 2	Slot through large “blob” at E end of “Ditch” terminus [103] ([110])	NW
248	Area 2	Slot through large “blob” at E end of “Ditch” terminus [103] ([110])	NW
249	Area 2	“Kidney” shaped feature just E of ditch?	SE

250	Area 2	“Kidney” shaped feature just E of ditch?	SE
251	Area 2	General shot of “ditch” from gap between trench E and Area 2	SE
252	Area 2	General shot of “ditch” from gap between trench E and Area 2	SE
253	Area 2	General shot of “ditch” from gap between trench E and Area 2	SE
254	Area 2	General shot of “ditch” from gap between trench E and Area 2	SE
255	Area 2	General shot Area 2	NW
256	Area 2	General shot Area 2	NW
257	Area 2	General shot Area 2	NW
258	Area 2	General shot Area 2	NW
259	Area 2	Slot through ditch at NW end of area 2	NW
260	Area 2	Slot through ditch at NW end of area 2	NW
261	Area 2	Slot through ditch at NW end of area 2	N
262	Area 2	Slot through ditch at NW end of area 2	SE
263	Area 2	Slot through ditch at NW end of area 2	SE
264	Area 2	Slot through ditch at NW end of area 2	SE
265	Area 2	Slot through ditch at NW end of area 2	S
266	Area 2	Section of [103] terminus	N
267	Area 2	Section of [103] terminus	N
268	Area 2	W side of ditch showing “rippling” effect in [103]	W
269	Area 2	W side of ditch showing “rippling” effect in [103]	W
270	Area 2	E side of S -> section – showing stone concentration and sand and gravels	E
271	Area 2	E side of S -> section – showing stone concentration and sand and gravels	E
272	Area 2	“Ditch” petering out? S end of trench. Machine slot 1 in background [111]	NW
273	Area 2	“Ditch” petering out? S end of trench. Machine slot 1 in background [111]	NW
274	Area 2	NW -> section of [125]	SE
275	Area 2	NW -> section of [125]	SE
276	Area 2	NW -> section of [125]	SE
277	Area 2	SE -> section of [125]	NW
278	Area 2	General shot of [125]	NW
279	Area 2	General shot of [125]	NW
280	Area 2	General shot of [125]	SE
281	Area 2	General shot of [125]	SE
282	Area 2	General shot of [125]	NW
283	Area 2	General shot of [125]	NW
284	Area 2	W -> section of [129]	E
285	Area 2	W -> section of [129]	E
286	Area 2	Close up of above – lower fills	E
287	Area 2	Close up of above – lower fills	E
288	Area 2	Close up of above – lower fills	E
289	Area 2	W -> section of [130]	E
290	Area 2	W -> section of [130]	E
291	Area 2	W -> section of [130]	E
292	Area 2	Terminus [103] – post excavation. Various	Various

		close ups and different directions	
293	Area 2	Terminus [103] – post excavation. Various close ups and different directions	Various
294	Area 2	Terminus [103] – post excavation. Various close ups and different directions	Various
295	Area 2	Terminus [103] – post excavation. Various close ups and different directions	Various
296	Area 2	Terminus [103] – post excavation. Various close ups and different directions	Various
297	Area 2	Terminus [103] – post excavation. Various close ups and different directions	Various
298	Area 2	Terminus [103] – post excavation. Various close ups and different directions	Various
299	Area 2	Terminus [103] – post excavation. Various close ups and different directions	Various
300	Area 2	Terminus [103] – post excavation. Various close ups and different directions	Various
301	Area 2	Terminus [103] – post excavation after removal of central baulk	SE
302	Area 2	Terminus [103] – post excavation after removal of central baulk	SE
303	Area 2	Terminus [103] – post excavation after removal of central baulk	S
304	Area 2	Shot of main feature continuing into cottage area	Various
305	Area 2	Shot of main feature continuing into cottage area	Various
306	Area 2	Shot of main feature continuing into cottage area	Various
307	Area 2	Shot of main feature continuing into cottage area	Various
308	Area 2	Shot of main feature continuing into cottage area	Various
309	Area 2	Shot of main feature continuing into cottage area	Various
310	Area 2	Shot of main feature continuing into cottage area	Various
311	Area 2	Shot of main feature continuing into cottage area	Various
312	Area 2	General shots of excavated area	Various
313	Area 2	General shots of excavated area	Various
314	Area 2	General shots of excavated area	Various
315	Area 2	General shots of excavated area	Various
316	Area 2	General shots of excavated area	Various
317	Area 2	General shots of excavated area	Various
318	Area 2	General shots of excavated area	Various
319	Area 2	General shots of excavated area	Various
320	Area 2	General shots of excavated area	Various
321	Area 2	General shots of excavated area	Various

Appendix 4: Palaeoenvironmental Assessment

ARCHAEOLOGICAL
SERVICES
DURHAM UNIVERSITY

on behalf of
University of Salford

Lower Irwell
Salford
Greater Manchester

plant macrofossil and pollen assessment

report 3979
November 2015

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For the purposes of this assessment cut numbers which appear in the main body of the text in square brackets are written without brackets prefixed by the letter F; e.g. [103] becomes F103. (JSR 24/02/16).

1. Summary

The project

1.1 This report presents the results of palaeoenvironmental assessment of bulk and column samples taken during archaeological works at Lower Irwell, Salford, Greater Manchester.

1.2 The works were commissioned by University of Salford, and conducted by Archaeological Services Durham University.

Results

1.3 The bulk samples comprise small birch, elm and oak charcoal fragments, but other diagnostic palaeoenvironmental remains are absent. Pollen is preserved in some of the deposits in the column samples, with preservation generally better from slot [129] than [103]. The pollen assemblages are broadly similar, with the results indicating an open landscape supporting a mixed economy of arable and pastoral farming. Alder and willow occupied the river banks and floodplain, with mixed deciduous woodland on the surrounding valley slopes. Microscopic charcoal reflects episodes of burning at or near the site.

Recommendations

1.4 The assessment has shown that pollen is well preserved in certain levels within the linear feature. While further counting would provide a more detailed picture of the palaeoenvironment, this would only be appropriate if absolute dating can be established for the fills. No further analysis is recommended for the bulk samples. Some of the charcoal fragments may be suitable for radiocarbon dating.

2. Project background

Location and background

2.1 Archaeological works were conducted by University of Salford on land within the meander of the River Irwell, adjacent to Castle Irwell Student Village, Broughton, Salford, Greater Manchester. Bulk and column samples were taken in order to investigate a linear feature identified during the evaluation. This report presents the results of plant macrofossil assessment of bulk samples of context (122) from F113, context (119) from F112 and context (127) from F125. Pollen assessment was undertaken on column sample <35> from F103 and column samples <36> and <39> from F129.

Objective

2.2 The objective of the scheme of works was to assess the plant macrofossil and pollen evidence within samples from the linear feature in order to establish their potential to provide information about the feature and the palaeoenvironmental conditions at the site and surrounding area.

Dates

2.3 Samples were received by Archaeological Services on 17th September 2015. Assessment and report preparation was conducted between September and November 2015.

Personnel

2.4 Assessment and report preparation was conducted by Dr Charlotte O'Brien. Sample processing was by Dr Helen Drinkall and Laura Wesolowski.

Archive

2.5 The site code is **CIS15**, for **Castle Irwell 2015**. The flots and pollen preparations are currently held in the Palaeoenvironmental Laboratory at Archaeological Services Durham University awaiting collection.

3. Plant macrofossil assessment

Methods

3.1 The bulk samples were manually floated and sieved through a 500 μ m mesh. The residues were examined for shells, fruitstones, nutshells, charcoal, small bones, pottery, flint, glass and industrial residues, and were scanned using a magnet for ferrous fragments. The flots were examined at up to x60 magnification for charred and waterlogged botanical remains using a Leica MZ7.5 stereomicroscope. Plant nomenclature follows Stace (1997).

3.2 Charcoal fragments were identified where possible. The transverse, radial and tangential sections were examined at up to x600 magnification using a Leica DMLM microscope. Identifications were assisted by the descriptions of Schweingruber (1990) and Hather (2000), and modern reference material held in the Palaeoenvironmental Laboratory at Archaeological Services Durham University.

3.3 The works were undertaken in accordance with the palaeoenvironmental research aims and objectives outlined in the regional archaeological research framework and resource agendas (Brennand *et al.* 2006, 2007; Hall & Huntley 2007; Huntley 2010), which have highlighted the need to investigate deposits likely to comprise information of past vegetation, land use and the exploitation of natural resources for North West England.

Results

3.4 The bulk samples produced small flots containing low quantities of coal/coal shale and roots. A few small fragments of charcoal were recorded, with the identifiable fragments being a piece of birch in context (119), and a piece of oak and elm in context (127). The elm charcoal is suitable for radiocarbon dating, but the birch may be too small to provide a date. Waterlogged and carbonised plant macrofossils were absent from the samples. The results are presented in Appendix 1.

4. Pollen assessment

Methods

4.1 Pollen assessment was undertaken on six samples through column sample <35>, two samples from column sample <36>, and five samples from column sample <39>. These were from slots F103 and F129 which comprised of sand, silt and clay layers (Appendix 2). Sample <35> was sampled at 0.18m (context 124), 0.30m (context 123), 0.48m (context 116), 0.80m (context 115), 1.00m (context 115) and 1.16m (context 114) below the top of the column. From sample <36>, assessment was undertaken at 0.14m (context 137) and 0.36m (context 137) below the top of the column. From sample <39>, assessment was undertaken at 0.06m (context 138), 0.11m (context 138), 0.22m (context 140), 0.37m (context 141) and 0.45m (context 142) from the top of the column. A sample was also assessed from each of the bulk samples from contexts (122), (119) and (127).

4.2 Pollen was extracted from 2ml of sediment from each level, using standard techniques of sodium hydroxide digestion, followed by heavy liquid separation (Moore *et al.* 1991). A *Lycopodium* spore tablet was added in order to facilitate calculation of total pollen concentrations. Each tablet has an average of 18583 spores per tablet. The pollen was mounted in silicone fluid and scanned at up to x600 magnification. At least four traverses of a 24 x 24mm coverslip were scanned for each sample. Plant nomenclature follows Stace (1997). The results are presented in Appendix 3.

Results

F103

4.3 Pollen is generally poorly preserved in column sample <35>, although it is well preserved in the grey brown clay (context 116) and moderately well preserved in the overlying orange brown sandy clay (context 123). The samples contain similar pollen assemblages dominated by herbaceous taxa (>70% of the total land pollen). This predominantly comprises Poaceae (grasses), *Plantago lanceolata* (ribwort plantain), *Taraxacum*-type (dandelion-type), Caryophyllaceae (pinks) and Apiaceae (carrot family), with lower frequencies of other herbaceous taxa including *Aster*-type (daisy-type), Brassicaceae (cabbage family), *Centaurea*-type (knapweed-type), Chenopodiaceae (goosefoots), *Cirsium*-type (thistle-type), Cyperaceae (sedges), *Filipendula* sp (Meadowsweets) and *Rumex* sp (docks). Cereal-type pollen grains were noted in contexts (116) and (123).

4.4 *Corylus avellana* (hazel) is the most frequently recorded of the tree/shrub taxa, with others including *Alnus glutinosa* (alder), *Betula* sp (birch), *Pinus* sp (pines), *Quercus* sp (oaks), *Calluna vulgaris* (heather) and *Salix* sp (willows). A single *Ulmus* sp (elms) pollen grain was noted from context (116). Spores of *Pteridium aquilinum* (bracken) and other ferns are abundant. A few *Polypodium vulgare* (polypody) and *Sphagnum* spores are also present. Microscopic charcoal is present throughout the column sample.

F129

4.5 Pollen is generally better preserved in the column samples from F129 than F103, although pollen was sparse in context (141), a silty sand. Pollen concentration is higher in the lower section (sample <39>) than the upper section (sample <36>), with the greatest concentration being in context (138), a silty clay. The pollen assemblages are generally similar throughout F129, although fern spores are more abundant in the upper section <36> than the lower section <39>. As with F103, herbaceous taxa are abundant, although they form a slightly lower proportion of the total land pollen (between 33-69%) than in F103. A similar range of herbs are present, again dominated by Poaceae, *Plantago lanceolata* and *Taraxacum*-type. Cereal-type pollen grains were noted in all of the samples.

4.6 *Corylus avellana* forms the largest component of the tree/shrub taxa and was recorded at up to 48% of the total land pollen in context (138). *Salix* sp and *Alnus glutinosa* are also present, with low frequencies of *Betula* sp, *Pinus* sp, *Ulmus* sp, *Calluna vulgaris* and *Hedera helix* (ivy). Microscopic charcoal is present throughout the samples from F129.

Bulk samples

4.7 Pollen is very poorly preserved in the bulk samples. The few grains in context (119) comprise of *Corylus* sp, *Salix* sp, Poaceae, cereal-type, *Plantago lanceolata*, *Taraxacum*-type and fern spores (including *Pteridium*). A single grass pollen grain was recorded in context (122), and a few pollen grains of *Salix* sp and Cyperaceae and fern spores were noted in context (127).

5. Discussion

5.1 Pollen preservation was variable throughout the fills of the linear feature, with the fine-grained clays allowing better preservation than the more sandy layers. The presence of intrusive pollen cannot be ruled out, particularly as root penetration was noted throughout column sample <36>, however, no non-native species were observed. Pollen in slots F103 and F129 provide a largely similar picture of the surrounding landscape as the feature infilled. The assemblages suggest a broadly open landscape, with some nearby *Corylus* scrubland. *Alnus*, *Betula* and *Salix* are likely to have occupied the damp-ground habitats along the riverbanks and floodplain, with *Quercus* and *Ulmus* favouring more well-drained soils on the valley slopes. The few *Calluna vulgaris* pollen grains may derive from occasional heather bushes near the site or more regional areas of heathland. The identification of *Quercus*, *Ulmus* and *Betula* charcoal from the bulk samples confirms the availability of these woodland resources in the local landscape.

5.2 The presence of cereal-type pollen, grasses and herbs associated with agriculture such as *Plantago lanceolata*, *Taraxacum*-type, Ranunculaceae and Chenopodiaceae indicate there were open areas supporting arable farming and herb-rich pasture for grazing (cf. Behre 1986). The high levels of *Pteridium* recorded in some of the samples may reflect nearby areas of hill pasture. Peaks of microscopic charcoal have often been found to correlate with phases of intensive human activity in all cultural periods (Innes 2002), and therefore its presence throughout the column samples may relate to the use of fire for woodland clearance and/or human activities associated with settlement.

5.3 The low values of *Ulmus* pollen suggest that the sediments post-date the elm-decline, an event which has been dated to between 6347-5281 cal yr BP (Parker *et al.* 2002). The assemblages show some similarities with the Middle to Late Bronze Age pollen sequences recorded in a palaeochannel within the River Irwell valley at Burrs Countryside

Park, Bury (Smith *et al.* 2010). As at Castle Irwell, *Alnus* and *Corylus* carr was found to have occupied the damp valley floor, with mixed deciduous woodland present on the surrounding slopes. However, in contrast to Castle Irwell, the Bronze Age landscape reconstructed at Burrs features dense woodland with limited evidence for human activity such as clearance and farming. Although precise dating of the deposits is not possible from the pollen assemblages, the evidence for extensive clearance and agriculture recorded at Castle Irwell, may suggest the deposits date to some period from the Iron Age onwards.

5.4 This assessment can provide little conclusive information about the nature of the linear feature. While some of the fine-grained deposits have provided sufficiently anoxic conditions to allow the preservation of pollen, the absence of peaty organic remains such as those recovered in the palaeochannel at Burrs indicates that the feature was not fully waterlogged in a manner characteristic of a cut off former river channel which held permanently standing or slow flowing water. The absence of permanently standing water is also supported by the absence of obligate aquatics in the pollen and plant macrofossil assemblages.

6. Recommendations

6.1 The assessment has shown that pollen is well preserved in certain levels within the linear feature. While further counting would provide a more detailed picture of the palaeoenvironment, this would only be appropriate if absolute dating can be established for the fills. No further analysis is recommended for the bulk samples. Some of the charcoal fragments may be suitable for radiocarbon dating.

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Appendix 1: Data from plant macrofossil assessment

Sample	25	26	27
Context	122	119	127
Feature number	113	112	125
Feature	Linear	Linear	Linear
Material available for radiocarbon dating	-	(✓)	✓
Volume processed (l)	5	6	1
Volume of flot (ml)	10	10	2
<i>Flot matrix</i>			
Charcoal	-	+	+
Coal / coal shale	(+)	(+)	(+)
Roots	+	+	(+)
<i>Identified charcoal (✓ presence)</i>			
<i>Betula</i> sp (Birches)	-	✓	-
<i>Quercus</i> sp (Oaks)	-	-	✓
<i>Ulmus</i> sp (Elms)	-	-	✓

[(+): trace; +: rare; ++: occasional; +++: common; ++++: abundant
(✓) may be unsuitable for dating due to small size]

Appendix 2: Stratigraphic data

Slot	Sample	Context	Description	Munsell colour code	Depth below top of column (m) / (mOD)	
					Top	Bottom
103	35	124	Mid brown sandy clay	7.5YR 4/6	0 (29.03)	0.23 (28.80)
		123	Orange brown sandy clay	5YR 4/6	0.23 (28.80)	0.33 (28.70)
		116	Grey brown clay	7.5YR 4/3	0.33 (28.70)	0.52 (28.51)
			Large rounded stone		0.52 (28.51)	0.67 (28.36)
		115	Red brown sandy silt	5YR 4/4	0.67 (28.36)	1.10 (27.93)
		114	Red brown silty sand	5YR 3/4	1.10 (27.93)	1.17 (27.86)
129	36	137	Grey brown silty clay. Root penetration throughout	7.5YR 5/3	0 (29.09)	0.46 (28.56)
	39	138	Light grey silty clay	7.5YR 5/1	0 (28.55)	0.12 (28.43)
		140	Mid red brown silty clay with charcoal flecks	5YR 5/6	0.12 (28.43)	0.34 (28.21)
		141	Orange brown silty sand	5YR 4/6	0.34 (28.21)	0.45 (28.10)
		142	Light grey silty clay	7.5YR 5/1	0.45 (28.10)	0.46 (28.09)

Appendix 3a: Data from pollen assessment – [F103]

Sample	35	35	35	35	35	35
Context	124	123	116	115	115	114
Depth below top of column sample (m)	0.18	0.30	0.48	0.80	1.00	1.16
Volume processed (ml)	2	2	2	2	2	2
<i>Tree taxa</i>						
<i>Alnus glutinosa</i> (Alder)	-	2	4	3	-	2
<i>Betula</i> sp. (Birches)	-	-	-	2	-	-
<i>Pinus</i> sp. (Pines)	-	1	1	-	-	-
<i>Quercus</i> sp. (Oaks)	2	3	4	3	-	4
<i>Ulmus</i> sp. (Elms)	-	-	1	-	-	-
<i>Shrub taxa</i>						
<i>Calluna vulgaris</i> (Heather)	-	2	1	-	-	-
<i>Corylus avellana</i> (Hazel)	2	16	10	5	1	4
<i>Salix</i> sp (Willows)	-	2	-	2	-	-
<i>Herbaceous taxa</i>						
Apiaceae undiff. (Carrot family)	-	3	7	3	-	-
Aster-type (Daisy-type)	1	1	4	2	-	2
Brassicaceae undiff. (Cabbage family)	-	1	-	-	-	-
Caryophyllaceae undiff. (Pink family)	-	10	7	1	-	-
<i>Centaurea</i> -type (Knapweed-type)	-	-	4	-	-	1
Cereal-type	-	5	1	-	-	-
Chenopodiaceae undiff. (Goosefoot family)	-	1	-	-	-	-
<i>Cirsium</i> -type (Thistle-type)	-	-	1	-	-	-
Cyperaceae undiff. (Sedge family)	-	1	2	-	-	-
<i>Filipendula</i> sp. (Meadowsweets)	-	2	3	4	-	1
<i>Plantago lanceolata</i> (Ribwort plantain)	-	4	21	1	-	3
Poaceae undiff. (Grass family)	1	25	61	13	-	5
<i>Rumex</i> sp. (Docks)	-	-	-	1	-	1
<i>Taraxacum</i> -type (Dandelion-type)	-	9	14	9	1	5
<i>Spores</i>						
<i>Polypodium vulgare</i> (Polypody)	-	3	2	1	-	1
<i>Pteridium aquilinum</i> (Bracken)	7	56	29	26	-	13
Pteridophyta (monolete) undiff. (Ferns)	9	95	54	21	7	20
<i>Sphagnum</i> sp. (Sphagnum moss)	-	-	1	-	-	-
Other						
Total land pollen counted	6	88	146	49	2	28
Concentration of land pollen (grains/ml of sediment)	3484	38935	135656	14687	743	13693
<i>Exotic (Lycopodium) spores</i>	16	21	10	31	25	19
Microscopic charcoal	Present	Present	Present	Present	Present	Present
Pollen concentration	Low	Moderate	Good	Low	Low	Low
Pollen preservation	Poor	Good	Good	Poor	Poor	Poor
Unidentified pollen grains	1	2	-	-	-	-

Appendix 3b: Data from pollen assessment – [F129]

Sample	36	36	39	39	39	39	39
Context	137	137	138	138	140	141	142
Depth below top of column sample (m)	0.14	0.36	0.06	0.11	0.22	0.37	0.45
Volume processed (ml)	2	2	2	2	2	2	2
<i>Tree taxa</i>							
<i>Alnus glutinosa</i> (Alder)	8	6	9	9	8	-	3
<i>Betula</i> sp. (Birches)	1	-	-	-	-	-	-
<i>Pinus</i> sp. (Pines)	2	-	-	-	-	-	-
<i>Quercus</i> sp. (Oaks)	2	2	1	1	11	-	7
<i>Ulmus</i> sp. (Elms)	-	1	-	-	-	-	-
<i>Shrub taxa</i>							
<i>Calluna vulgaris</i> (Heather)	-	1	1	-	-	-	1
<i>Corylus avellana</i> (Hazel)	19	29	33	57	20	-	56
<i>Hedera helix</i> (Ivy)	-	3	-	-	-	-	-
<i>Salix</i> sp (Willows)	4	8	16	11	2	-	9
<i>Herbaceous taxa</i>							
<i>Anthemis</i> -type (Chamomile-type)	2	-	1	4	1	-	3
Apiaceae undiff. (Carrot family)	-	1	-	-	-	-	2
<i>Aster</i> -type (Daisy-type)	3	3	2	-	4	1	2
Caryophyllaceae undiff. (Pink family)	-	-	-	-	-	-	1
<i>Centaurea</i> -type (Knapweed-type)	-	1	-	-	-	-	-
Cereal-type	1	3	6	8	2	1	5
Chenopodiaceae undiff. (Goosefoot family)	-	-	-	-	1	-	1
<i>Cirsium</i> -type (Thistle-type)	-	-	1	-	-	-	-
Cyperaceae undiff. (Sedge family)	1	-	-	-	-	-	1
<i>Hypericum</i> -type (St John's Wort-type)	-	-	-	-	-	-	1
<i>Plantago lanceolata</i> (Ribwort plantain)	4	2	6	2	4	-	4
Poaceae undiff. (Grass family)	26	47	32	21	61	4	35
Ranunculaceae undiff. (Buttercup family)	-	-	3	1	2	-	2
<i>Rumex</i> sp. (Docks)	-	-	1	1	4	-	3
Saxifragaceae undiff. (Saxifrage family)	-	-	-	-	1	-	-
<i>Taraxacum</i> -type (Dandelion-type)	13	12	1	2	1	-	6
<i>Spores</i>							
<i>Polypodium vulgare</i> (Polypody)	1	3	-	-	-	-	5
<i>Pteridium aquilinum</i> (Bracken)	12	4	3	2	-	-	7
Pteridophyta (monolete) undiff. (Ferns)	53	32	-	1	2	-	2
<i>Sphagnum</i> sp. (Sphagnum moss)	-	-	-	-	1	-	-
<i>Other</i>							
Total land pollen counted	86	119	113	117	122	6	143
Concentration of land pollen (grains/ml of sediment)	30733	39489	209988	217421	47231	2934	88579
<i>Exotic (Lycopodium) spores</i>	26	28	5	5	24	19	15
Microscopic charcoal	Present	Present	Present	Present	Present	Present	Present
Pollen concentration	Moderate	Moderate	Good	Good	Moderate	Low	Good
Pollen preservation	Poor	Poor	Good	Good	Moderate	Poor	Good
Unidentified pollen grains	1	-	-	-	-	-	4

Appendix 14: X ray fluorescence results

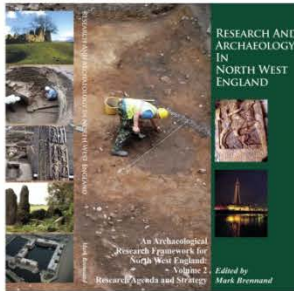
SAMPLE				Zr	Zr Error	Sr	Sr Error	Rb	Rb Error	Th	Th Error	Pb	Pb Error	As	As Error	Zn	Zn Error	Cu	Cu Error	Ni	Ni Error	Fe	Fe Error	Mn	Mn Error	Fe/Mn
NCS 73308 - standards				53.517	1.364	23.769	0.958	8.672	0.86	4.148	0.671	23.316	2.149	22.66	1.988	33.835	3.518	30.241	5.525	152.277	12.279	23002.01	112.078	843.161	30.489	
Lab number	Sample Number	Context	Description																							
10	21	104	3L sample (104) Bag	221.11	2.409	74.795	1.575	78.834	1.866	6.304	0.807	18.744	2.209	9.184	1.811	50.911	4.228	39.244	6.119	145.298	13.106	35519.71	146.647	852.118	33.029	42
11	22	109	10L sample (109) Bucket	186.792	2.254	56.204	1.406	54.323	1.612	5.434	0.769	14.271	2.082	7.862	1.706	29.115	3.839	33.943	6.086	154.796	13.281	37706.27	152.084	1054.806	35.567	36
6	30	114	1L proxy sample of (114) Bag for column 35	137.674	1.898	54.693	1.318	68.412	1.673	3.727	0.691	12.74	1.887	4.858	1.506	26.479	3.36	23.944	5.472	144.276	12.201	18524.66	101.555	527.986	26.637	35
1	31	115	1L proxy sample of (115) Bag for column 35	167.854	2.033	56.781	1.329	74.848	1.721	4.77	0.72	16.669	1.997	6.175	1.602	32.687	3.503	27.73	5.468	122.595	11.936	22608.32	111.245	791.874	29.826	29
8	32	116	1L proxy sample of (116) Bag for column 35	205.872	2.239	61.917	1.398	75.876	1.753	5.333	0.762	31.035	2.416	9.598	1.945	39.493	3.712	30.222	5.621	123.699	12.15	24183.68	116.739	1122.913	33.916	22
15	26	119	10L bulk sample of (119) at SE section 1 Tub	180.301	2.201	61.939	1.446	70.141	1.772	5.654	0.779	17.707	2.147	9.776	1.784	48.325	4.127	32.806	5.951	133.51	12.856	30073.21	134.286	465.763	27.594	65
14	25	122	10L bulk sample of (112) in [113] 1 Tub	384.251	3.011	57.235	1.402	58.385	1.645	6.077	0.784	13.892	2.046	8.9	1.7	39.352	3.921	38.316	6.049	149.373	12.994	30640.91	135.538	939.481	33.507	33
3	33	123	1L Proxy sample of (123) for column 35	211.789	2.277	62.976	1.414	74.167	1.755	5.541	0.757	18.699	2.114	9.441	1.742	37.666	3.767	32.658	5.716	136.106	12.401	29737.73	129.819	1000.045	33.106	30
7	34	124	1L Proxy sample of (124) for column 35	267.326	2.638	79.728	1.638	82.389	1.927	7.172	0.84	18.164	2.236	10.377	1.852	61.617	4.555	39.091	6.229	149.605	13.448	42244.99	161.68	1115.727	36.605	38
16	27	127	3L bulk sample of (127) in NW section of [125] 1 bag	233.303	2.46	78.918	1.609	80.432	1.876	5.769	0.79	15.594	2.111	9.781	1.759	45.943	4.101	33.695	6.012	153.204	13.139	33478.73	142.272	973.486	34.209	34
12	23	134	10L sample of (134) in [130] 1 tub	224.742	2.397	66.254	1.483	69.535	1.756	5.756	0.778	16.166	2.107	9.542	1.749	43.554	4.027	31.426	5.925	155.187	13.045	33161.39	140.537	851.453	32.525	39
13	24	136	3L sample of (136) in [130] 1 bag	253.268	2.476	59.684	1.4	60.875	1.643	5.597	0.758	14.598	2.003	5.561	1.603	38.092	3.741	27.443	5.711	134.573	12.508	21395.24	111.55	447.97	26.311	48
18	28	137	10L Bulk sample of (119) from [127] SE section 1 tub	213	2.307	65.001	1.447	76.006	1.79	6.316	0.782	15.717	2.049	7.986	1.676	56.425	4.13	28.693	5.714	124.671	12.421	25022.48	120.278	466.283	26.813	54
17	27	127	3L bulk sample of (127) in NW section of [125] 1 bag	229.143	2.366	91.423	1.656	117.091	2.142	6.872	0.811	19.147	2.133	6.539	1.697	76.512	4.404	39.459	5.808	107.068	12.082	21350.51	109.901	268.336	23.254	80
9	43	138	1L proxy sample of column 39 in [139] 1 bag	230.711	2.352	87.063	1.608	112.728	2.083	7.657	0.818	18.112	2.083	7.954	1.689	76.727	4.372	34.135	5.639	90.669	11.792	21700.34	109.905	237.507	22.563	91
2	42	140	1L proxy sample of column 39 in [139] 1 bag	158.497	2.167	99.491	1.804	131.909	2.367	8.743	0.901	19.519	2.293	9.027	1.857	83.319	4.924	43.244	6.292	121.768	13.202	40558.58	158.392	379.049	27.548	107
4	41	141	1L proxy sample of column 39 in [129] 1 bag	130.326	1.892	57.024	1.36	67.776	1.688	5.304	0.743	14.562	1.997	9.04	1.661	41.122	3.838	32.07	5.724	146.629	12.548	30703.96	132.027	388.259	25.856	79
5	40	142	1L proxy sample of column 39 in [129] 1 bag	169.576	2.024	58.831	1.336	65.649	1.618	5.552	0.725	13.132	1.869	5.007	1.491	43.306	3.62	32.411	5.488	132.253	11.85	16668.22	94.811	316.185	23.113	53
19	37	143	10L sample of (143) in [113] 1 tub	167.071	2.295	100.181	1.877	121.894	2.374	8.815	0.933	20.119	2.412	13.918	2.041	69.541	4.994	42.736	6.645	168.804	14.393	52246.39	186.297	832.817	35.397	63
				241		65		Geo		8.1		Low / geo		LOW		76		Geo		moderately		Geo		geo but		
				Ok		(Ba)		ssstone vs										Low (poll)		elevated?				a few slightly		
								shale?																elevated		
								ss= 40																	source?	
								sh = 140																	ss = low	
																									sh = high	

SAMPLE				Cr	Cr Error	V	V Error	Ti	Ti Error	Ca	Ca Error	K	K Error	Ba	Ba Error	Cs	Cs Error	Te	Te Error	Sb	Sb Error	Sn	Sn Error
NCS 73308 - standards				160.518	10.429	85.116	9.792	1267.159	38.748	5673.429	81.149	1159.891	66.164	277.508	18.32	14.601	1.076	149.152	19.529	110.215	14.673	50.618	9.281
Lab number	Sample Number	Context	Description																				
10	21	104	3L sample (104) Bag	63.423	10.72	80.468	14.708	4558.649	68.642	1764.215	70.314	19600.75	223.843	506.977	20.747	17.663	1.151	162.867	20.736	124.959	15.631	69.01	10.023
11	22	109	10L sample (109) Bucket	40.608	10.286	55.73	13.266	3420.395	60.933	2601.391	72.011	13192.58	183.663	389.006	19.756	13.087	1.112	114.938	20.038	67.031	14.816	45.144	9.595
6	30	114	1L proxy sample of (114) Bag for column 35	43.969	8.672	48.886	10.913	2976.059	50.197	1205.322	56.246	19827.6	196.634	520.549	19.753	18.58	1.094	174.261	19.761	110.447	14.7	70.486	9.518
1	31	115	1L proxy sample of (115) Bag for column 35	40.227	9.093	44.474	11.69	3337.672	54.422	1230.238	56.705	17645.25	191.861	494.54	19.579	16.418	1.083	153.227	19.561	87.076	14.473	63.721	9.429
8	32	116	1L proxy sample of (116) Bag for column 35	50.816	9.795	64.338	13.294	4016.347	61.847	1278.732	59.621	17608.56	199.599	436.559	19.296	13.08	1.072	155.456	19.61	96.228	14.558	56.578	9.319
15	26	119	10L bulk sample of (119) at SE section 1 Tub	64.852	10.176	82.153	13.466	3787.608	61.521	2248.842	69.963	17322.16	202.922	470.124	20.197	16.812	1.127	157.068	20.353	99.418	15.141	63.068	9.789
14	25	122	10L bulk sample of (112) in [113] 1 Tub	49.251	10.039	63.224	13.179	3666.627	60.866	1398.014	60.578	15086.94	191.224	454.764	19.86	16.21	1.112	183.336	20.308	100.875	14.956	57.658	9.61
3	33	123	1L Proxy sample of (123) for column 35	48.482	10.481	69.7	14.186	4191.23	65.918	1697.531	66.542	16970.23	206.342	422.055	19.313	14.1	1.082	142.084	19.61	89.371	14.568	58.512	9.396
7	34	124	1L Proxy sample of (124) for column 35	74.397	11.684	84.924	16.259	5143.95	76.261	2189.412	76.609	17769.4	224.258	447.355	20.446	14.149	1.138	153.67	20.7	103.03	15.451	55.755	9.842
16	27	127	3L bulk sample of (127) in NW section of [125] 1 bag	65.577	10.719	72.362	14.46	4336.015	67.314	2580.065	76.824	19406.26	221.189	523.018	20.421	17.346	1.126	176.496	20.425	98.807	15.051	65.913	9.791
12	23	134	10L sample of (134) in [130] 1 tub	61.276	10.416	73.832	14.001	4240.804	65.088	1434.666	63.231	16971.72	203.928	472.156	20.133	16.514	1.122	162.906	20.32	107.314	15.134	53.707	9.671
13	24	136	3L sample of (136) in [130] 1 bag	45.914	9.051	49.102	11.836	3484.293	55.276	1222.627	55.313	16103.9	183.771	437.745	19.544	16.383	1.1	154.186	19.856	111.194	14.882	58.197	9.49
18	28	137	10L Bulk sample of (119) from [127] SE section 1 tub	63.236	9.766	78.035	13.651	4632.135	64.177	1128.794	57.235	17052.08	195.078	450.641	19.866	16.123	1.113	157.259	20.131	108.118	15.048	63.398	9.662
17	27																						

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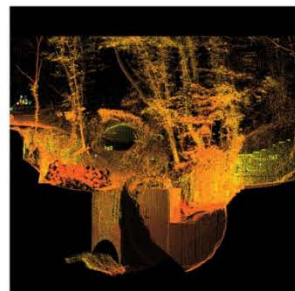
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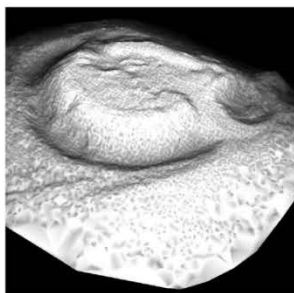
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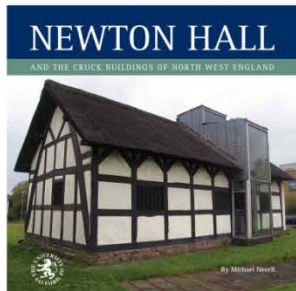
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