

Site & Landscape Survey

Leith Academy Primary School Boiler House & Chimney Historic Building Survey

Report No. 3307



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Thumbnail Contact sheet: Bound at rear

1. INTRODUCTION

1.1 General

This report presents the results of an historic building survey undertaken by CFA Archaeology Ltd at Leith Academy Primary School, Edinburgh (NGR: NT 27138 75899, Fig. 1) during June 2015. The work was commissioned by the City of Edinburgh Council. John Lawson at the City of Edinburgh Council Archaeology Service (CECAS) requested that a Level 2 building survey be carried out on the redundant boiler house, chimney and canopy prior to their demolition.

Following the demolition of the buildings an archaeological watching brief will be carried out on ground breaking works in order to fulfil the planning condition. The results of this work will form the subject of a separate report.

1.2 Background

Leith Academy Primary School was constructed between 1895-8. The school replaced an earlier school that was demolished in 1894. On the south side of the school there is a long, rectangular, four-storey gymnasium and workshop building that opened in c.1920 and is now derelict. Situated between the primary school and gymnasium is a boiler house with its partially detached chimney. On the north side of the boiler house there is a modern concrete shed. The chimney was incorporated into an open sided canopy structure supported on cast-iron pillars.

1.3 Objectives

The project's objectives were:

- 1. To carry out a rapid desk-based assessment and place the boiler house and related features in their historical context.
- 2. To carry out a standing building survey to Level 2 standard (English Heritage 2006), to include a photographic and written descriptive record of the buildings prior to their demolition.
- 3. To produce an illustrated Historic Building Survey report to include a colour plan of the boiler house, chimney and canopy.
- 4. To provide suitable mitigation for archaeological works if the results merit it.

2. METHODS

2.1 General

CFA followed the Charted Institute for Archaeologists' Standards and Guidance and Code of Conduct. CFA based its recording levels described on those described in English Heritage (2006).

2.2 Desk-based Assessment

A rapid desk-based assessment was conducted prior to fieldwork, in order to collate relevant information on the historic development of the buildings. Sources included the National Monuments Record of Scotland, Statutory List and examination of early map coverage for the area including the Ordnance Survey maps of Leith.

2.3 Historic Building Survey

Photographic Survey

CFA used a Nikon D300 to take digital photographs of buildings and specific architectural features. A photographic record was made of all internal and external elevations (Appendix 1). Selected representative images are incorporated into this report. A photographic location plan has been produced showing the orientation at which each photograph was taken (Fig. 3).

Standing Building Recording

CFA followed the *Descriptive Specification for Recording Historic Buildings* (English Heritage 2006). The Level 2 survey requirements are listed in Table 1.

Area	Measured survey	Photographic	
Boiler House	External elevation and floor	Internal Fixtures & Fittings	
	plan with annotations		
Boiler House Canopy	N/a	Internal and external shots	
Chimney stack	External elevation	External shots	

Table 1 list of building recording requirements

An internal floor plan of the boiler house and canopy was produced to show its plan form. The floor plan was based on a measured sketch using a Leica hand-held distometer and worked up to 1:50 scale and with control measurements obtained within the boiler room using an industry-standard, reflectorless Total Station (REDM).

An accurate survey of the external east-facing elevation of the boiler house and chimney stack was carried out using REDM Fig 4). The data was imported to AutoCAD2012. The resulting images have been processed to produce wireframe templates and combined with the digital photographic record and rectified where appropriate to produce final elevation drawings.

A written descriptive record of the building was made on pro-forma building recording forms and included a synthesis on the stone type, brick bond, blocking work and any other features of historical and architectural significance.

3. SURVEY RESULTS

3.1 Desk Based Assessment

Cartographic

Historical map regression analysis was carried out and selected enlarged map extracts have been produced that best show the broad historical changes that have occurred (Figs 2a-e). The footprint of the surveyed area is highlighted in red.

The 1852 First Edition Ordnance Survey map (Fig. 2a) shows Leith High School set within a rectangular property boundary. The boiler house and chimney had yet to be built. The 1896 Second Edition map (Fig 2b) shows that the High School, now labelled as *School* had been enlarged with outshot buildings added to its south-facing elevation. The 1909 Third Edition Ordnance Survey map (Fig 2c) now depicts the school as an *Academy* and the boiler house and canopy are depicted for the first time. The Ordnance Survey map of 1933 and 1948 (Figs. 2d and 2e) shows the same detail as the 1909 map sheet.

Statutory List

Historic Scotland's Statutory List records Leith Academy Primary School as a Group Category B listed building and includes its gate piers. The list mentions that the school was designed by George Craig in 1898. The list also mentions that a gymnasium and workshops built to the rear were opened in c.1920 and were also designed by George Craig. The architectural description does not mention the boiler house and chimney.

National Monuments Record of Scotland

The National Monuments Record of Scotland (NMRS) holds record NT27NE 571 for Leith Academy Primary School. The record mentions that George Craig was responsible for its construction between 1895-8, replacing the earlier High School built by Robert Burn between 1804-6 (see Fig 2a). A collection of six photographs and twenty-three drawings accompany the entry. None of these contain any architectural information relating to the boiler house and chimney.

3.2 Standing Building Survey

The following text first describes the upstanding buildings (yellow shaded area in Fig. 3) followed by an interior description of the boiler room and passage (blue shaded area in Fig. 3).

The Chimney

The chimney was attached to the west side of the boiler house (Fig. 5) and its footprint measured 2.57m by 2.57m. The red-painted brickwork was laid in English Garden Bond (EGB, 3:1). The chimney measured 22.8m high and incorporated both red and cream polychrome brickwork. At some point in the past the brickwork was strengthened by the addition of sixteen horizontal tie rods tied to vertical sections of angle iron located at each corner.

The Canopy

The canopy (Figs. 6 & 10) measured c.11m by 5.4m. It had open sides and its pitched roof was supported by four cast-iron pillars measuring 2.8m high with roll-moulded capitals. Each pillar was 3.5m apart and carried a timber transom-beam that supported the A-frame roof rafters. The rafters were built into sockets cut into the north-facing wall of the gymnasium building and supported by a single corbel projecting off the chimney (Fig. 4).

The Modern Shed

A modern concrete pent-roofed shed measuring 3.8m by 2.2m by 2.2m was set back from the line of the east-facing elevation of the boiler house. The shed walls were rendered with pebble-dash. The shed had double-leaved blue-painted doors on its east-facing elevation (Figs. 7-8).

The Boiler House

The exterior of the boiler house comprised a stone-built rectangular building measuring 6m long, 3.5m wide and 3m high and had no fenestration. It was constructed of snecked and rusticated sandstone blocks with ashlar quoins. The north-facing elevation was mostly hidden by the modern shed. Situated between the shed and the chimney was a door leading down into the interior of the boiler house. The door surrounds were ashlar sandstone and surmounted by snecked stonework. The east-facing elevation (Figs. 4, 7-8) incorporated the gable wall of the boiler house and the aforementioned stonework. The south-facing elevation was constructed of rough-dressed sandstone and was covered with cement render (Fig. 9).

Boiler House Interior

The interior north-facing elevation of the boiler house measured 11.7m and was constructed of dressed sandstone blocks with droving. The wall partly flanked 19 stone steps (Fig. 11) and then continued eastwards where it attained a height of 3.5m (Fig. 12).

The interior east-facing elevation of the boiler house included part of the brick-built chimney and an abutting sandstone wall on the right of the door entrance. A narrow room measuring 7.3m by 2.6m was situated on the north side of the steps. The room's north and south-facing elevations were stone built with droving. On the east-facing elevation at the end of the room was the base of the chimney (Fig. 13). Here a small cast-iron door was surmounted by double relieving arch built of refractory bricks.

This type of brick had also been used to partly face the base of the chimney. A partially collapsed circular opening approximately 0.5m in diameter was visible above the door. The brickwork used to form the opening had fallen inwards and its outer edges were heavily stained with coal-tar. The opening was probably the main exhaust outlet from a coke fired heating boiler that had since been removed. The door probably served as a damper mechanism controlling air flow and necessary draw for the boiler.

The interior west-facing elevation of the boiler house (Fig. 14) comprised a brick-built wall measuring 5m long and 3m high with two phases of construction. The lowest section incorporated EGB (3:1) whilst the brickwork above had been laid in stretcher bond. This wall formed a partition wall for a coke bunker that had been fed via a steel chute, the remains of which could still be seen. The internal dimensions of the bunker measured 4.7m long and 2.6m wide.

The boiler room ceiling was constructed of reinforced shuttered concrete supported at the east end by two cast-iron pillars that were the same type used to support the canopy building.

Boiler House Passage

Leading northwards from the boiler house was a passage measuring 17.6m long and 1m wide (Fig. 15). The passage had stone-built walls with the same droved stonework as the boiler room interior. The passage carried the central heating pipe-work between the boiler house to the cellars below the primary school. Mid-way along the passage was a small stone-built vaulted arch.

4. DISCUSSION

The boiler house, chimney and canopy were built shortly after 1898 and certainly before 1909 according to the Ordnance Survey maps. The boiler house was built around the chimney stack and the canopy was then added to its exterior. The two castiron columns used to support the boiler house ceiling are identical to those that support the canopy, showing that the two buildings are contemporary.

The droved stonework recorded within the interior of the boiler house is normally found on the exterior of buildings and it is possible that the stone could have been salvaged from Leith High School.

The internal coke bunker wall was heightened in the past by adding more brickwork to its west-facing elevation effectively increasing its capacity to store more fuel. Although there is no foundation plinth surviving to help locate the position of the boiler it appears to have probably been a large 'Lancashire type' boiler judging by the size of the circular opening on the chimney's base. The aforementioned damper door controlled the updraft required for the solid-fuel boiler to work efficiently.

The external canopy served mainly as a playground shelter. The canopy was also connected to a later sheltered walkway (prentice) leading from the front of the primary school and round to the rear and then directly into the gymnasium.

5. CONCLUSION

The Level 2 standing building survey has recorded the architectural character and plan form of the boiler house, chimney and canopy and it is recommended that no further work is required prior to its demolition, although it is recognised that the decision for any further recording work lies with CECAS.

A summary statement for publication in *Discovery and Excavation in Scotland* and OASIS, will be sufficient to disseminate the results of the work at a later stage.

In line with the Written Scheme of Investigation, copies of the report will be lodged with the CECAS Sites and Monuments Record and the National Monuments Record of Scotland.

6. REFERENCES

Bibliographic

English Heritage 2006 Understanding Historic Buildings – A Guide to Good Recording Practice. London.

Cartographic

Ordnance Survey 1852 First Edition, Town Plan Sheet 17 25" to the mile

Ordnance Survey 1897 Second Edition, Edinburghshire Sheet III NE 25" to the mile

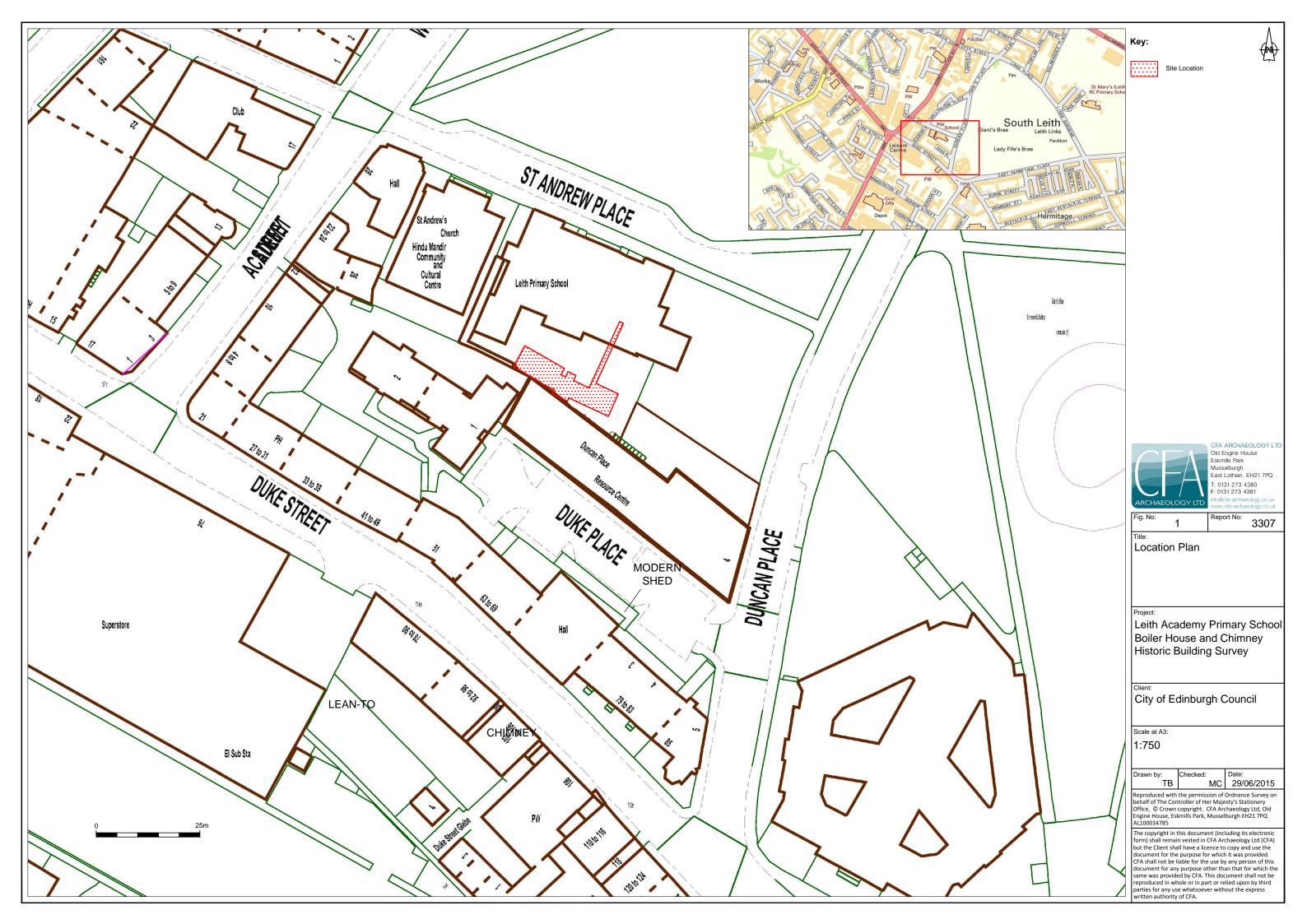
Ordnance Survey 1909 Third Edition, Edinburghshire Sheet III NE 25" to the mile

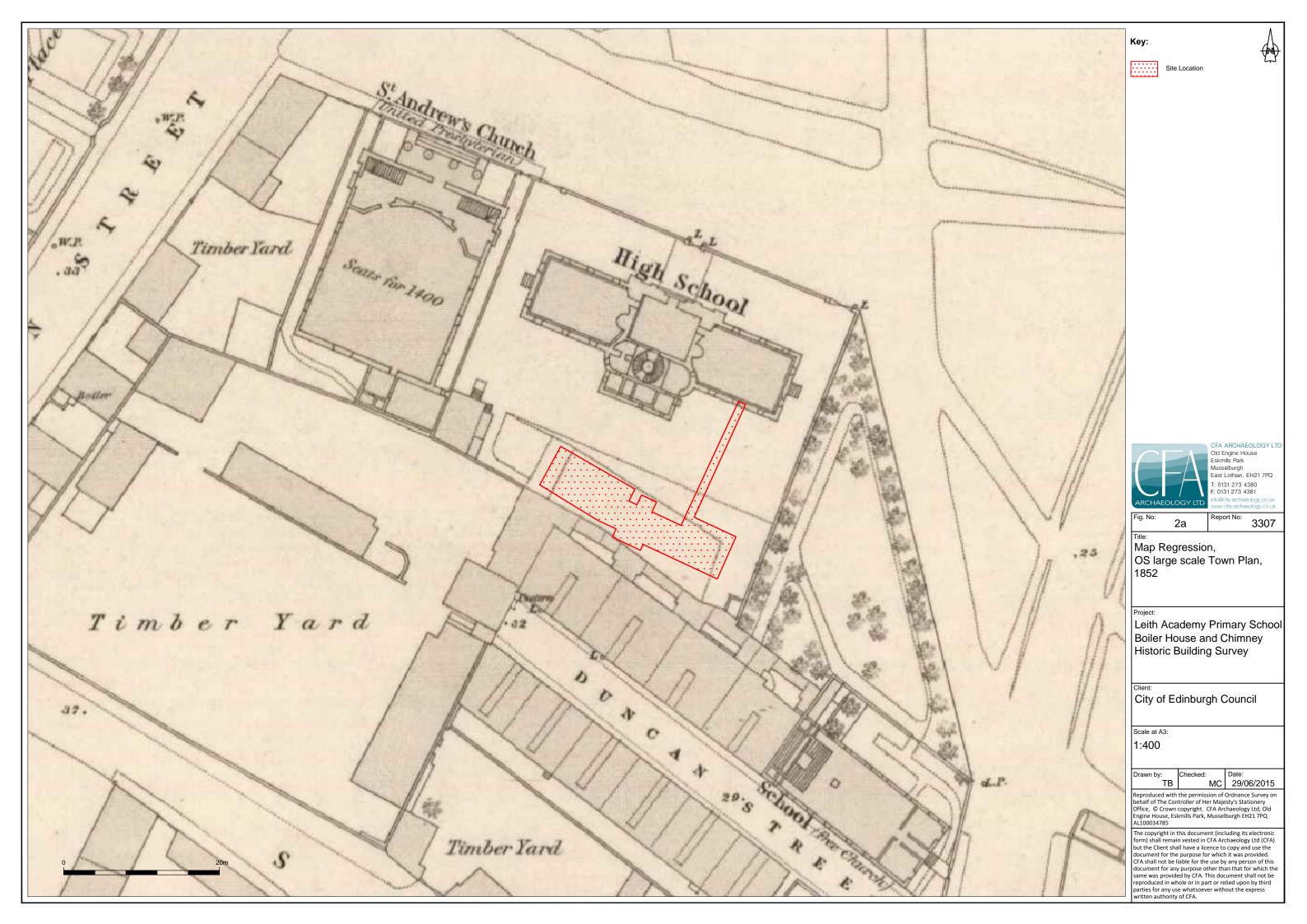
Ordnance Survey 1933 Edinburghshire Sheet III NE, 25" to the mile

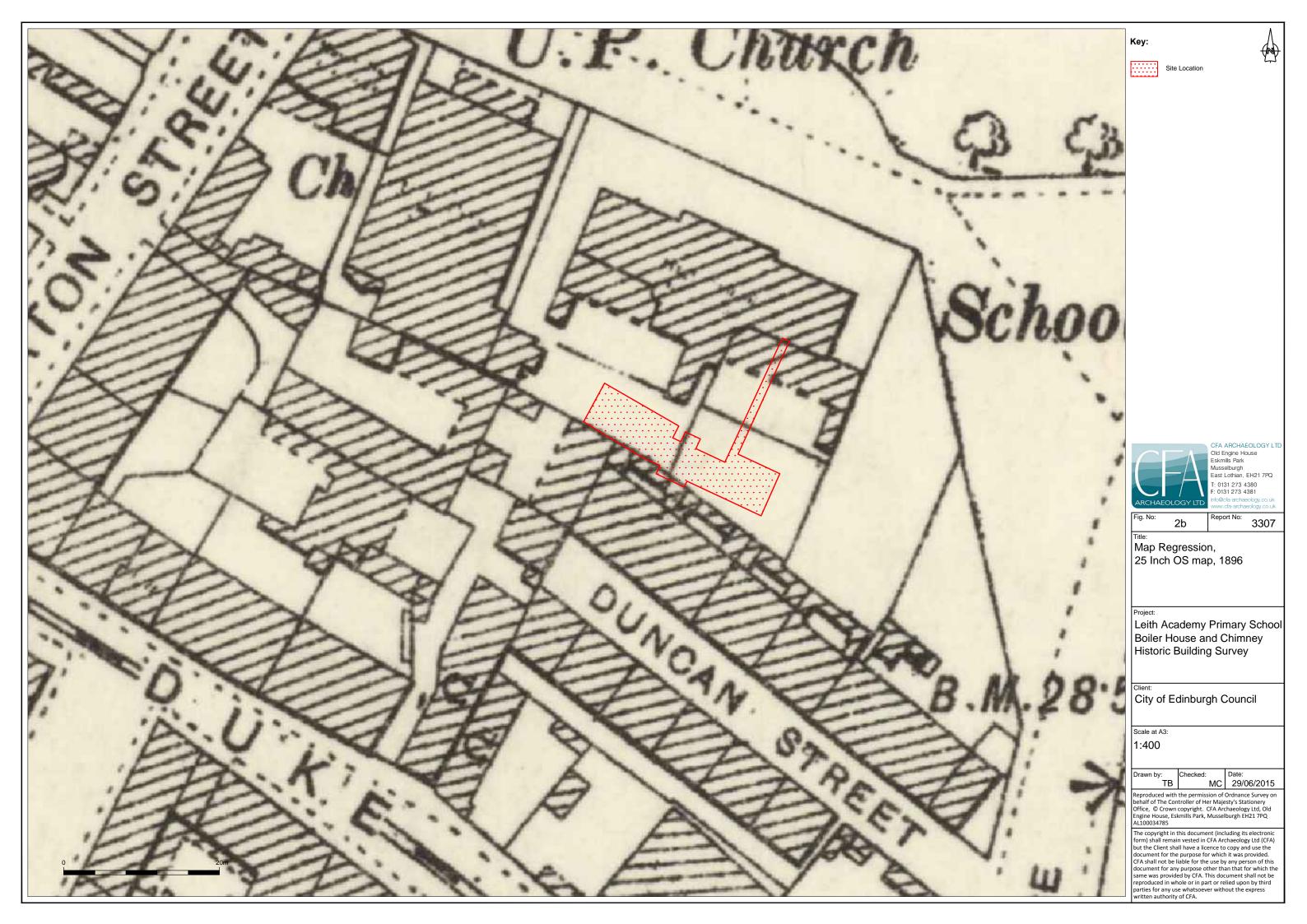
Ordnance Survey 1948 Edinburgh. Leith Sheet 36/2775 NW, 25" to the mile

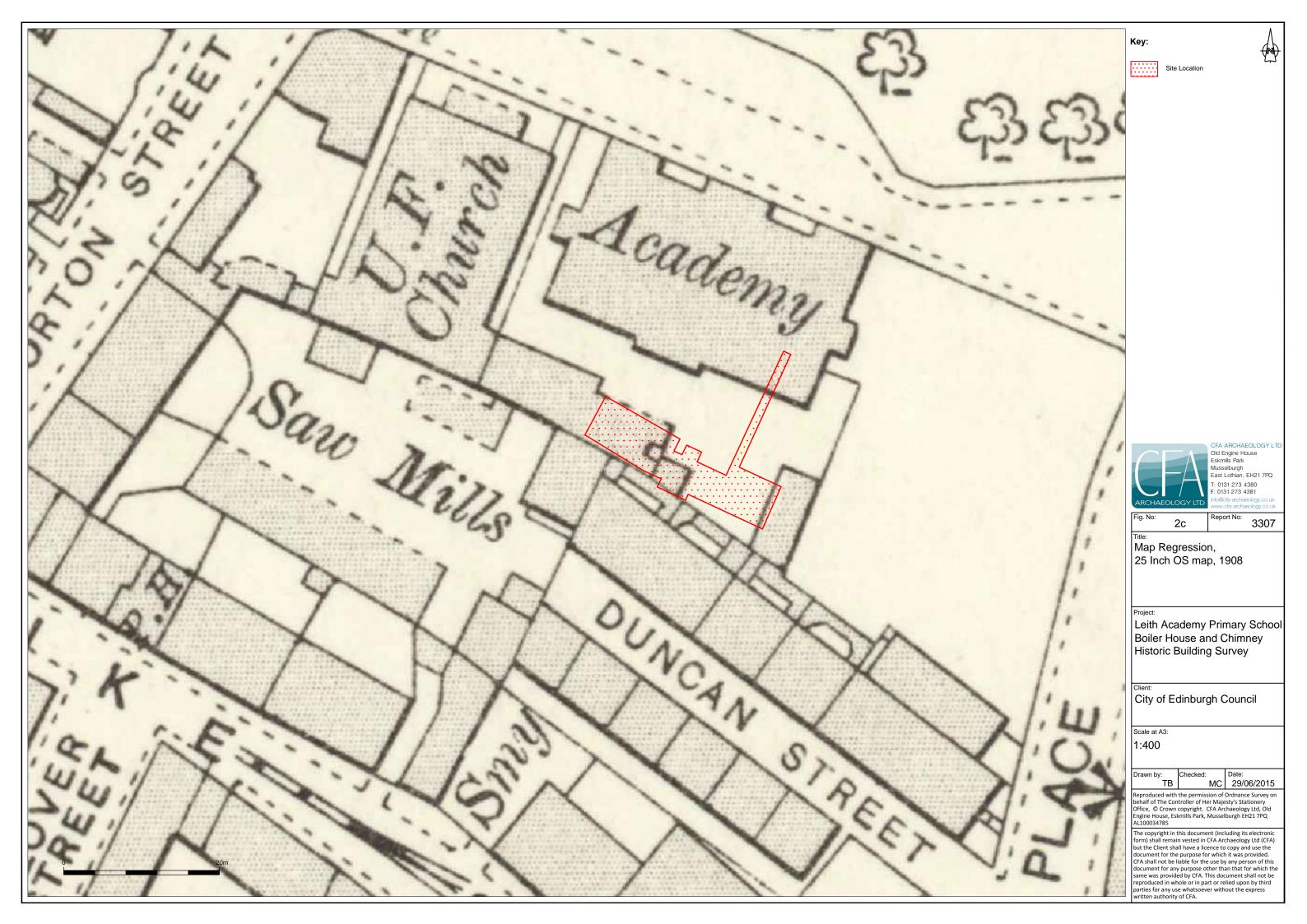
APPENDIX 1: PHOTOGRAPHIC REGISTER

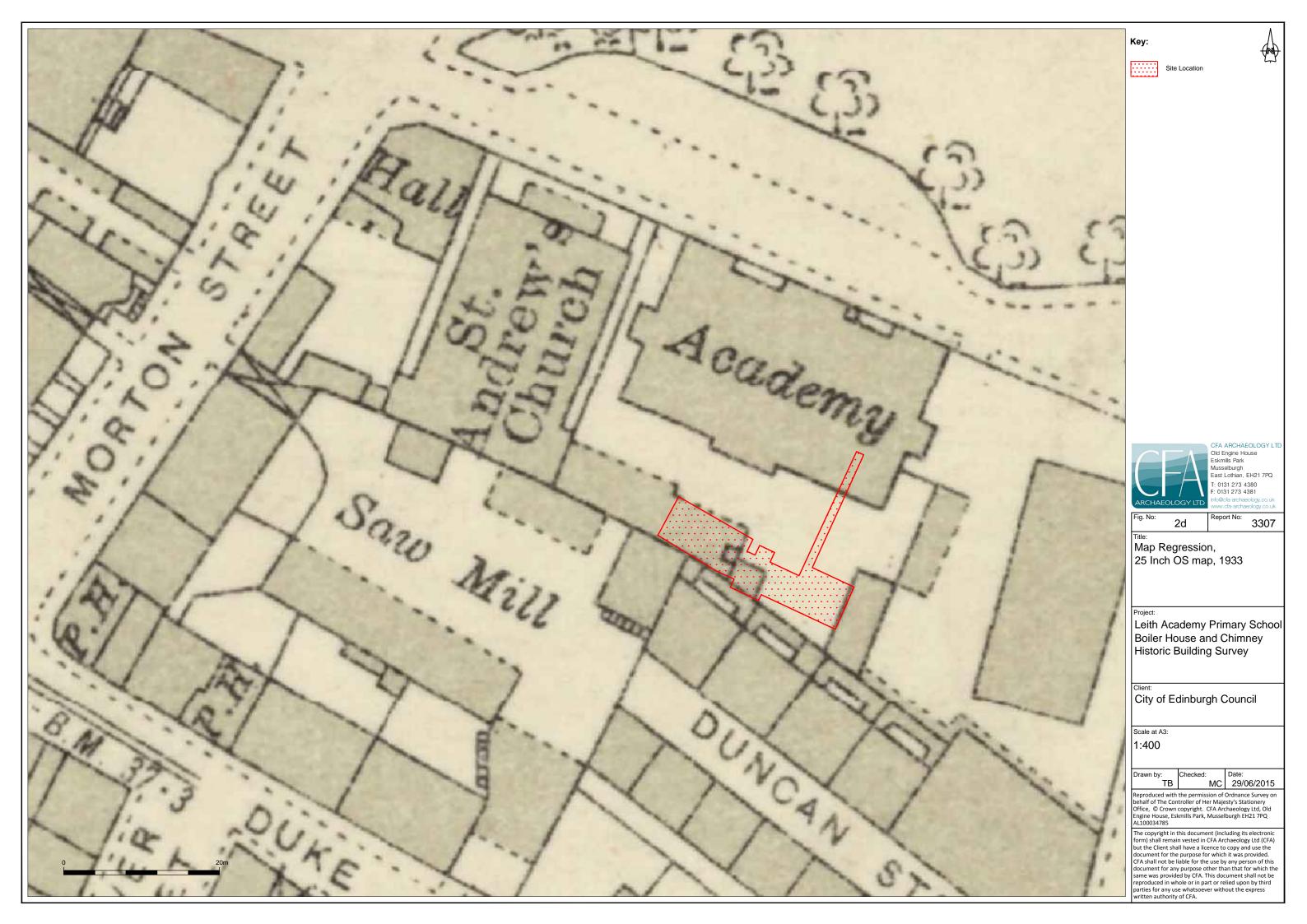
Photo No.	Description	Facing
001-018	Consecutive shots of the north-facing elevation of the canopy building	South
019-020	Exterior north-facing wall of the 1920 Gymnasium building supporting	South
	the canopy roof	
021	East-facing elevation showing the chimney and shed	West
022	Canopy roof rafters and sarking	East
023	Canopy roof rafters and sarking	West
024-026	Base of the chimney, general shot	East
027	Gap between the chimney and the 1920 Gymnasium building	East
028-029	The base of the chimney and entrance to the boiler room	South-west
030	Access to the boiler house door between the chimney and modern shed	South
031-032	West-facing elevation of the modern shed	East
033	East-facing wall formed by the chimney and abutting boiler house wall	West
034	Boiler house, south-facing wall flanking the stone steps	North
035	Boiler house, looking directly down the stone steps	Oblique
036	Boiler house, looking up the stone steps	Oblique
037	Boiler house, north-facing elevation	South
038	Boiler house, north-west-facing corner	South-east
039	Boiler house, north-facing elevation of the boiler room	South
040	Boiler house, north-facing elevation of the boiler room	South
041	Boiler house, east-facing elevation of the internal room with refractory	West
	lined wall and damper door at the base of the chimney	
042	Boiler house, damper door on the east-facing elevation of the boiler	South-west
	room	
043	Boiler house, internal room, south-facing elevation	North-east
044	Boiler house, south-facing corner of the boiler room	North
045	Boiler house, south-facing corner of the boiler room and passage	North
046	Boiler house passage, general shot	North
047-048	Boiler house passage, general shot towards the mid section	North
049	Boiler house passage, ashlar vaulted arch and pipework	North
050	Boiler house passage, general shot towards the end	North
051	Boiler house, south-facing elevation at the east end	South
052	Boiler house, west-facing wall of the brick-built coke bunker	South-west
053	Boiler house, passage alongside the coke bunker	West
054-055	Boiler house, interior shot of the coke bunker	South
056	Boiler house, steel chute and supporting steelwork for the coke bunker	Oblique
057	Boiler house ceiling comprising reinforced concrete	Oblique
058	Boiler house, small wooden door between the stone steps and the internal	Oblique
	room	
059	General view of the modern shed, canopy and chimney	South-west
060	East-facing elevation of the modern shed	West
061	General view of the exterior of the boiler house stonework	South-west
062	Gap between the boiler house and the 1920 Gymnasium	West
063	East-facing elevation of the boiler house	West
064-067	General view of the boiler house and chimney	West
068	Modern shed, interior walls	North-west
069	Modern shed, interior walls	South-west
070	Gymnasium entrance and rafters of the canopy building	South
071-072	The pitched gable of the canopy building and the chimney stack	East
073	General view of the east end of the canopy building	East

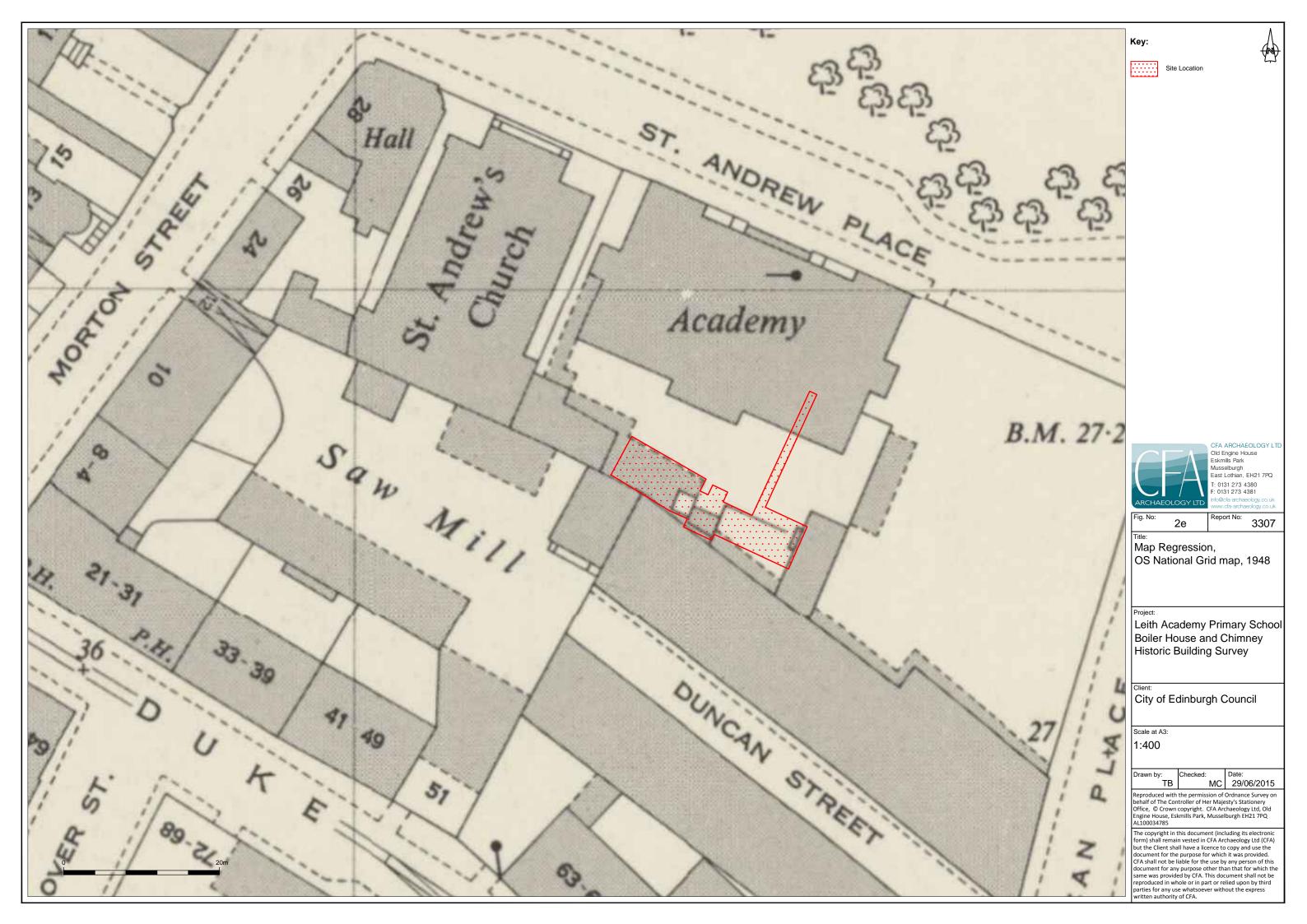


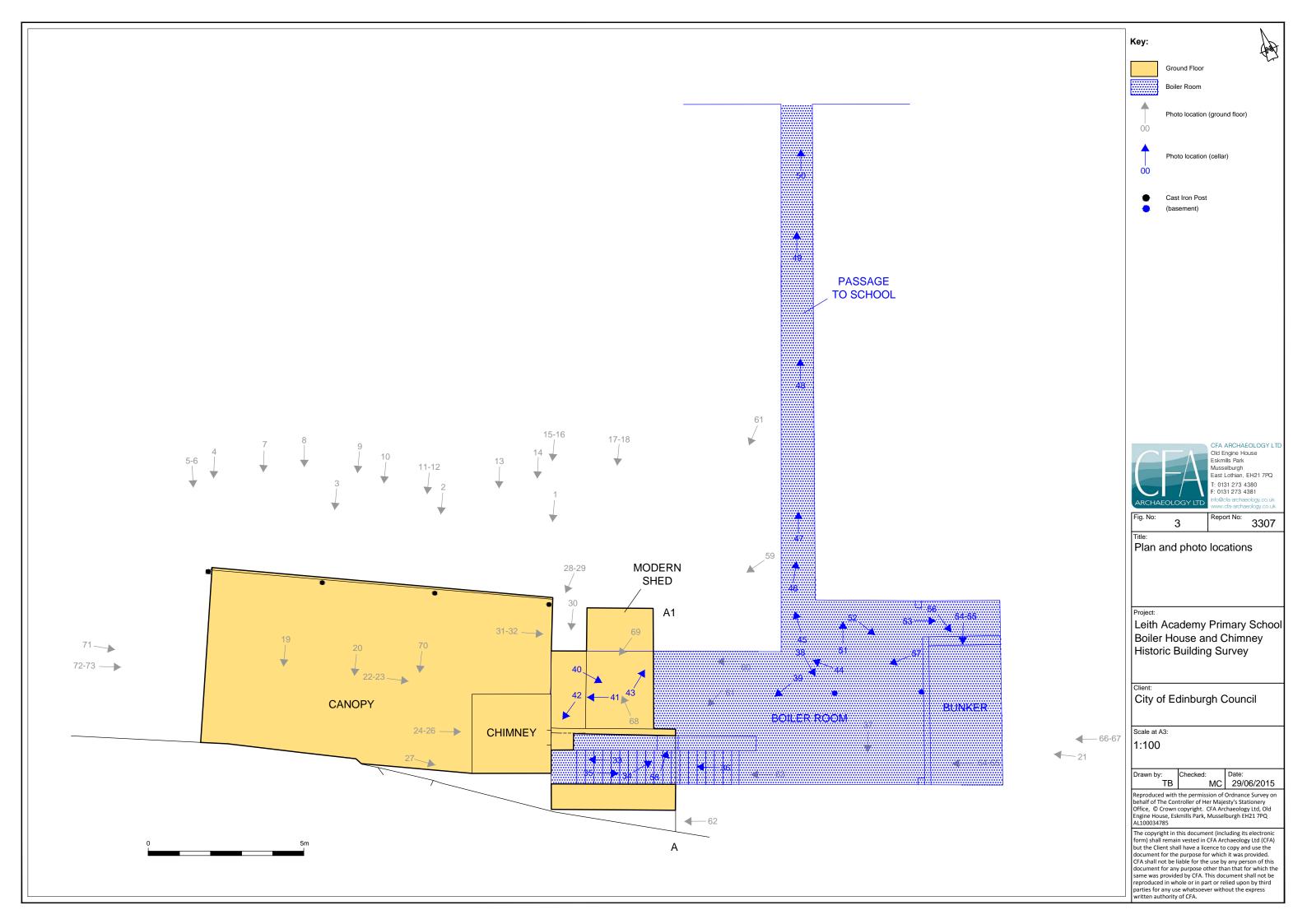












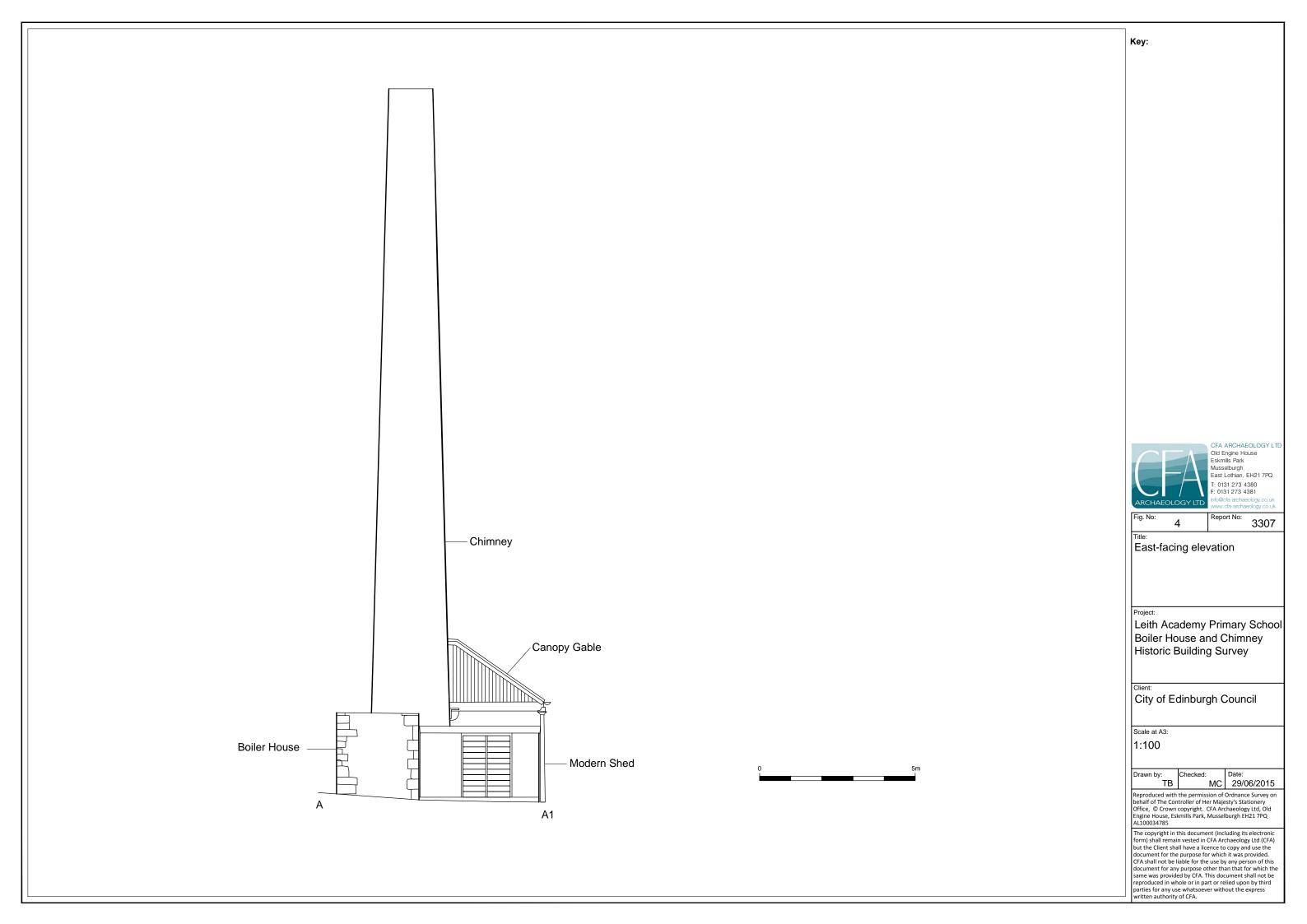




Fig. 5 - North-facing elevation of the boiler house partially hidden behind a modern shed



Fig. 6 - North-facing elevation with canopy and chimney



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Fig. 7 - East-facing elevation with boiler house and chimney



Fig. 8 - Detailed shot of the east-facing elevation of the boiler house



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Fig. 9 - Part of the south-facing elevation of the boiler house



Fig. 10 - West-facing elevation of the canopy



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Fig. 11 - Boiler room, interior stone steps



Fig. 12 - Interior north-facing elevation of the boiler room



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Fig. 11 - 12 Report: 3307 Drawn: TB CKD: MC Date: 30/06/15
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Fig. 13 - Interior east-facing elevation showing the chimney base and cast-iron door and wall faced with refractory brick



Fig. 14 - Interior west-facing elevation of the boiler room bunker



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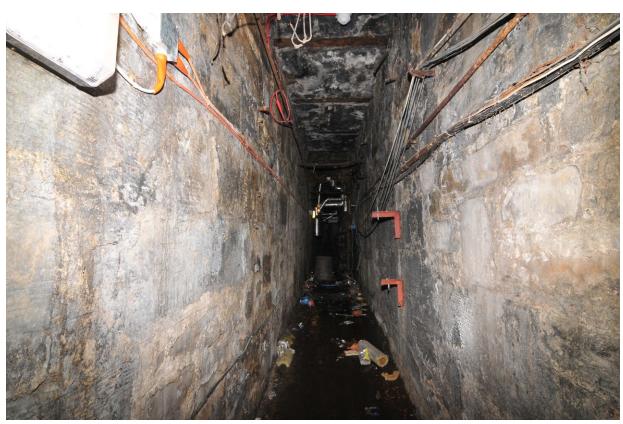


Fig. 15 - The passage interior leading north from the boiler room



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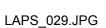
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