

SBD05-004

SHRUB HILL TRANSPORT DEPOT, EDINBURGH

Report on watching brief

for Places for People

15/00643/FUL

May 2017

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SHRUB HILL TRANSPORT DEPOT, EDINBURGH

REPORT ON AN ARCHAEOLOGICAL WATCHING BRIEF

An archaeological watching brief was carried out during groundworks associated with redevelopment of the site of the former Shrub Hill Transport Depot in Edinburgh. The watching brief recorded the remains of a tunnel associated with a late 19th century steam power plant for a cable driven tram system. The tunnel ran from the engine room at the back of the site across to the former tram line along Leith Walk. Features within the tunnel recorded during the fieldwork indicate that it had been roofed and further modified after it went out of use as a cable shaft in 1922. Half partition walls within the tunnel suggests that could have been converted to be used as a bomb-shelter during the Second World War. A small booklet titled 'A Guide to Edinburgh Air Raid Shelters' confirms this as it shows the location of a shelter on the north-west side of Leith Walk within the area of the Shrub Hill Tramway Depot.

1 INTRODUCTION

Headland Archaeology (UK) Ltd was commissioned by Places for People to carry out a targeted archaeological watching brief during the ground works associated with redevelopment at the site of the former Shrub Hill Transport Depot, Edinburgh. The watching brief comprised the third phase of a programme of archaeological work undertaken at the site. It followed on from earlier Desk-based assessments and a programme of historic building survey (Goode 2000 & Geddes 2008) and a subsequent intrusive archaeological evaluation (Bain 2008).

The watching brief was carried out during September 2015 and October 2016 during excavations along the projected line of a cable tunnel. The tunnel ran from a late 19th century steam power plant at the back of the site across to the former tram line along Leith Walk (Illus 1). The power plant drove the trams using a cable system that ran east into the Leith Walk line.

This report details the results of the watching brief.

2 BACKGROUND

The power station at Shrub Hill became active in 1899. It was one of three power stations in

Edinburgh that powered the cable driven tram network in the 1st quarter of the 20th century and was located at the tram depot that had been established at Shrub Hill in 1871. Eventually the tram system was converted to electric power and the Shrub Hill power station was shut down in 1922.

3 METHODOLOGY

3.1 Monitoring

The removal of the roof of the tunnel were carried out under direct archaeological supervision.

The outline of the tunnel was recorded using a differential GPS. Additional detail within the tunnel was added by running a measuring offsets from a tape up through the middle of the tunnel. The measurements were used to record a more detailed plan of the structure plotted to Ordnance Survey National Grid coordinates.

A full photographic record was kept, using digital photographs. The photographic record is presented in Appendix 1.

4 RESULTS

2015 Monitoring Works

The 2015 watching brief monitored the excavations along the west end of the tunnel extending some 87m east from the power plant. This section of the tunnel was 1.56m wide and 2.9m high. The sides of the tunnel were built from bricks and it had a flat concrete roof (Illus 2).

The tunnel was aligned north-west to south-east and had a marked dog-leg 10m from its junction with the power plant building to the west. Some 50m from the west end was a square manhole leading into the tunnel.

This segment of the tunnel was completely removed during as part of construction work in this area.

2016 Monitoring Works

During October 2016 the watching brief monitored work affecting the east end of the tunnel extending in under the pavement along Leith Walk. During this work a 40m long segment of the tunnel was surveyed. In order to reach formation level the top of the tunnel was removed and infilled leaving only a 6m long segment of the tunnel fully intact.

The east segment of the tunnel was also built from bricks. It was 1.56m wide at the west end and had a

brick-built vaulted roof making it some 3.6m high (Illus 3). It had a slight but clear bend in the alignment at the east end of the site (Illus 1, 3).

There were several features within the tunnel that indicated that it had been modified since it was used to house the cable from the power plant.

Most significantly, the tunnel was fully blocked by a brick wall located under the pavement of Leith Walk. A one brick wide wall was built up against the middle of the blocking wall. It was 1.85m high and extended 1.05m out from the wall (Illus 4).

Located at the crown of the bend were two partition walls set 1m apart and extending over half way across the tunnel from opposite sides. Out from the end of these were single brick walls ranging 1m along the middle of the tunnel in opposite directions (Illus 5). The two partition walls were not keyed into the sides of the tunnel and must have been inserted at a later stage.

Some 5m to the east of the partition walls was a side access to the tunnel. It had a full sized door opening in the north wall leading into a short passage up towards the north-west out from the tunnel (Illus 6).

In the south wall towards the east end of the tunnel were a series of iron rungs providing access into a square man-hole built into the roof of the tunnel (Illus 7). The top of the opening was situated beneath the pavement and was not exposed.

During the demolition it became clear that the partition walls were not fully keyed into the tunnel walls. A piece of graffiti was exposed cut into the whitewash of the tunnel wall that had been obscured by the partition wall against the north side of the tunnel (Illus 8).

A series of wall anchors were located along the north wall of the tunnel. They were set in three tiers; at the top, in the middle and at the base of the wall. The comprised rectangular iron plates with two anchoring bolts (Illus 9).

5 DISCUSSION

The Shrub Hill depot is depicted on maps from 1888 onwards. It shows the tram lines sidings curving into the depot from Leith Walk.

The early editions of the Ordnance Survey maps shows the layout of the tram depot and the tram lines leading into it in great detail. The layout of the tramlines within the depot area are slightly altered between the 1877 and 1895 survey although the link-up to the Leith Walk line remains the same. However, on the 1905 survey there is a slight but clear change in the Leith Walk link-up. The curve onto the Leith Walk has a larger diameter and there is a slight bend in the tramline before it heads west towards the power plant (Illus 10).

The maps indicate that there was a change in the tramline layout that coincided with the transition from horse drawn to cable drawn trams. The later layout also follows the line of the tunnel surveyed during the watching brief indicated by the slight bend just west of Leith Walk.

However, for a cable within the tunnel to be able to pull a tram, it would have to have a gap at the top to allow it to be connected to the trams. It is therefore clear that the tunnel was roofed and covered up after the cable system was abandoned in 1922.

There was clear indication of this at the west end where the tunnel had a flat concrete roof that was clearly not part of the original feature.

In contrast the vaulted roof at the east end was built using similar bricks as in the walls and appeared at first to be part of the original design. However the partition walls and the blockage wall at the east end, built using similar bricks, indicated that the tunnel had been vaulted over at a later stage.

Another indication that the structure originally had not been vaulted, was the wall anchors situated along the north wall to prevent the wall being pushed into the cavity of the tunnel. Such measures would be less important if the gap at the top was covered by a vault.

The half partition wall within the tunnel suggests that could have been converted to be used as a bomb-shelter during the Second World War. The overlapping half walls recorded within the tunnel would deflect the force of a blast should a bomb penetrate either end of the tunnel.

A small booklet titled 'A Guide to Edinburgh Air Raid Shelters' have been reproduced on the EdinPhoto web site. The booklet shows the location of the air raid shelters in Edinburgh including a shelter on the north-west side of Leith Walk within the area of the Shrubhill Tramway Depot. An arrow indicate the entrance on the north-east side corresponding to the one recorded during the watching brief.

6 REFERENCES

- Bain K 2008 *Shrubhill Transport Depot, Edinburgh. Results of Archaeological Evaluation*. Headland Archaeology Ltd, unpublished report.
- Geddes G.2008 *Shrubhill Transport Depot Phase 1 Archaeological Mitigation*. Headland Archaeology Ltd, unpublished report.

Gooder J 2000 *Shrub Place Edinburgh: Desk-based Assessment*. AOC Archaeology Group, project number 3222, unpublished report.

http://www.edinphoto.org.uk/0_b/0_books_-_edinburgh_air_raid_shelters.htm p16-17

7 APPENDICES

7.1 Appendix 1 – Site registers

Photographic register

Photo No.	Digital file name	Facing	Description
001	SBD05-04-001.JPG	SE	View towards partition from the NW
002	SBD05-04-002.JPG	ESE	View towards partition from inside the tunnel
003	SBD05-04-003.JPG	ESE	View towards blocked end of tunnel from the SE side of the partition
004	SBD05-04-004.JPG	ESE	View towards blocked end of tunnel from side access
005	SBD05-04-005.JPG	WNW	Top of tunnel seen from E edge of site
006	SBD05-04-006.JPG	WNW	Top of tunnel exposed at E edge of site
007	SBD05-04-007.JPG	SE	Blocked entrance into side access
008	SBD05-04-008.JPG	SE	View into side access
009	SBD05-04-009.JPG	SE	View into side access
010	SBD05-04-010.JPG	ESE	NE end of tunnel as exposed through construction work
011	SBD05-04-011.JPG	SE	NE end of tunnel as exposed through construction work
012	SBD05-04-012.JPG	SE	View into the tunnel from the NW
013	SBD05-04-013.JPG	ESE	View towards blocked end of tunnel
014	SBD05-04-014.JPG	NW	View towards partly demolished NW end from inside the tunnel
015	SBD05-04-015.JPG	WNW	Upper part of tunnel exposed at E edge of site
016	SBD05-04-016.JPG	WNW	Upper part of tunnel fully exposed
017	SBD05-04-017.JPG	NW	Upper part of tunnel fully exposed
018	SBD05-04-018.JPG	N	Upper part of tunnel exposed in E part of site
019	SBD05-04-019.JPG	NNW	Upper part of tunnel exposed in E part of site
020	SBD05-04-020.JPG	SW	Upper part of tunnel exposed in E part of site
021	SBD05-04-021.JPG	NW	Services cut through the roof of the tunnel towards the SE end
022	SBD05-04-022.JPG	NW	View from the E end of the tunnel. Iron rungs leading up to manhole on the wall to the left
023	SBD05-04-023.JPG	ESE	Brick wall blocking tunnel at E end
024	SBD05-04-024.JPG	SE	Iron rungs leading into square shaft providing access into the tunnel
025	SBD05-04-025.JPG	SE	Iron rungs leading up to square shaft providing access into the tunnel
026	SBD05-04-026.JPG	ESE	View towards the E end of the tunnel. Services cut through the roof of the tunnel in the background. Iron rungs leading up to manhole on the wall to the right.
027	SBD05-04-027.JPG	ESE	View towards the E end of the tunnel from half partition wall near the middle.
028	SBD05-04-028.JPG	WNW	View towards the E end of the tunnel from the side entrance.
029	SBD05-04-029.JPG	NW	View into side entrance on the N side

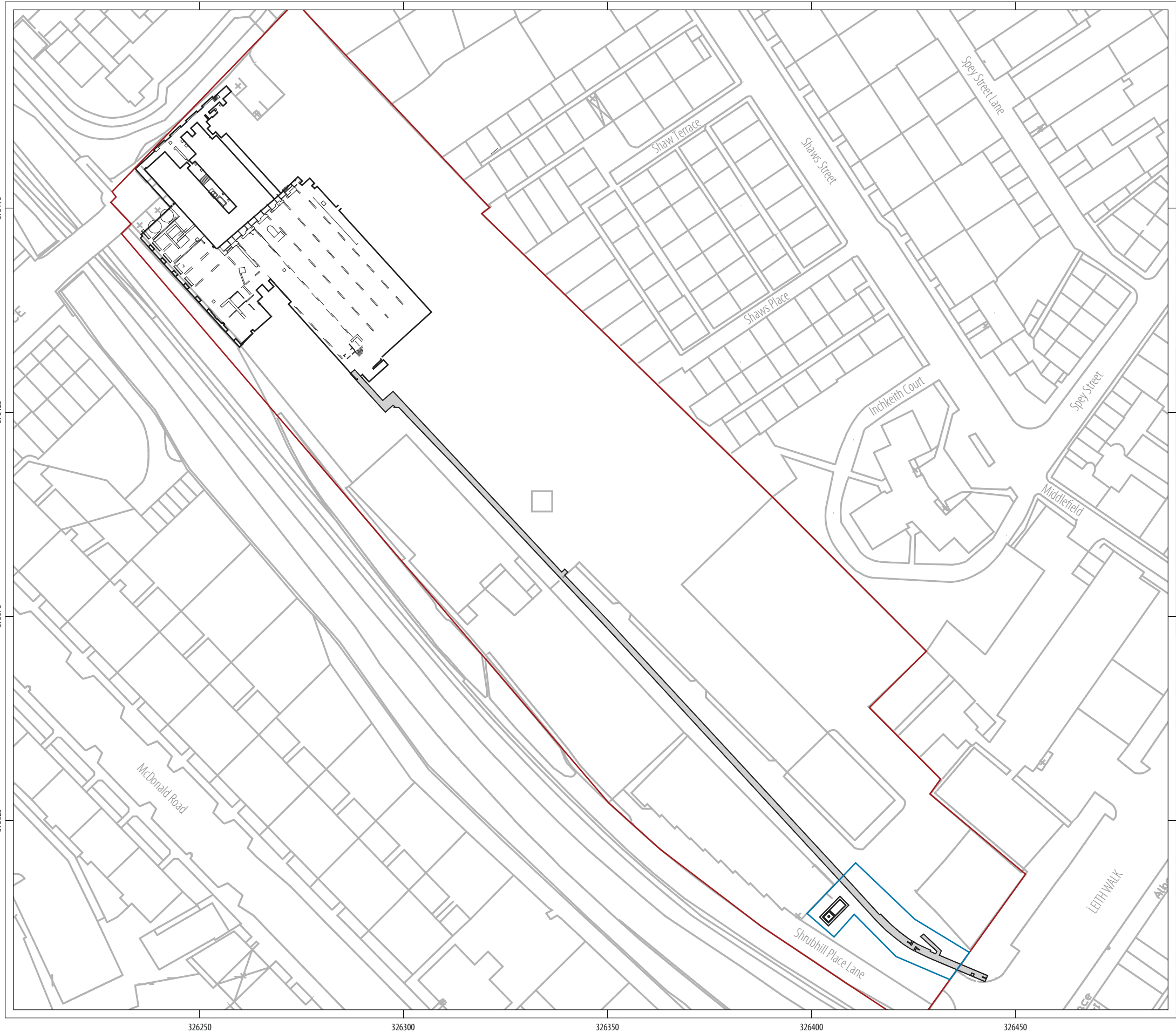
030	SBD05-04-030.JPG	NE	Opening into side entrance on the N side
031	SBD05-04-031.JPG	NNE	Opening into side entrance on the N side
032	SBD05-04-032.JPG	WNW	Metal grill covering hole into drain? Below the floor of the tunnel
033	SBD05-04-033.JPG	WNW	View towards half partition walls near the middle of the tunnel from the E
034	SBD05-04-034.JPG	ESE	View towards half partition walls near the middle of the tunnel from the W
035	SBD05-04-035.JPG	ESE	View towards half partition walls near the middle of the tunnel from the W
036	SBD05-04-036.JPG	ESE	View towards half partition walls near the middle of the tunnel from the W
037	SBD05-04-037.JPG	ESE	Suspended pipe along the N side of the tunnel to the NW of the partition walls
038	SBD05-04-038.JPG	WNW	Suspended pipe along the N side of the tunnel and a rectangular drain cover in the W part of the tunnel
039	SBD05-04-039.JPG	NW	Slight offset in the N side of the tunnel
040	SBD05-04-040.JPG	NW	Electrical cable and small brackets on the wall towards the W end of the tunnel
041	SBD05-04-041.JPG	ESE	View towards half partition walls from the W end of the tunnel
042	SBD05-04-042.JPG	S	General view of the fuel tank located west of tunnel
043	SBD05-04-043.JPG	E	General view of the fuel tank located west of tunnel
044	SBD05-04-044.JPG	NW	General view of the site
045	SBD05-04-045.JPG	E	View of the tunnel's walls exposed after the removal of roof
046	SBD05-04-046.JPG	SE	Detail of the west wall of the tunnel
047	SBD05-04-047.JPG	E	Detail of the west wall of the tunnel and the starting point of wider area
048	SBD05-04-048.JPG	E	Detail of the bricks vaulted roof of tunnel
049	SBD05-04-049.JPG	E	Detail of the interior of the tunnel with partition walls in the background
050	SBD05-04-050.JPG	NE	Remains of polygonal structure made of bricks at east of the tunnel
051	SBD05-04-051.JPG	SW	Detail of the aforementioned polygonal structure
052	SBD05-04-052.JPG	SE	Working shot of the vaulted roof removal
053	SBD05-04-053.JPG	SE	Working shot of the vaulted roof removal
054	SBD05-04-054.JPG	S	Detail of one of the partition walls
055	SBD05-04-055.JPG	SE	General shot of the removal works
056	SBD05-04-056.JPG	SE	Working shot of the vaulted roof removal
057	SBD05-04-057.JPG	SE	Detail of the second partition wall
058	SBD05-04-058.JPG	SE	General shot of exposed tunnel
059	SBD05-04-059.JPG	SE	Detail of the iron lungs on west wall of tunnel
060	SBD05-04-060.JPG	SE	Detail of the sewer metallic lid on the tunnel floor
061	SBD05-04-061.JPG	S	Remains of structures around the man hole at east of tunnel
062	SBD05-04-062.JPG	ESE	The tunnel end at Leith Walk

063	SBD05-04-063.JPG	ESE	Services cut into the roof of the tunnel beneath Leith Walk pavement
064	SBD05-04-064.JPG	ESE	General shot of the tunnel with the remains of the partition walls on both sides
065	SBD05-04-065.JPG	NNE	Detail of the east wall partition wall with graffiti (9)
066	SBD05-04-066.JPG	NNE	Graffiti exposed after the removal of partition wall on east side of tunnel
067	SBD05-04-067.JPG	ESE	Iron shafts in east wall of tunnel
068	SBD05-04-068.JPG	E	Remains of the cables holders on the tunnel wall
069	SBD05-04-069.JPG	NW	General shot of tunnel once exposed entirely
070	SBD05-04-070.JPG	NE	Location of the small corridor leading to the man hole at east of tunnel
071	SBD05-04-071.JPG	NW	General view of the structures at east of tunnel
072	SBD05-04-072.JPG	NW	Details of the small corridor leading to the man hole at east of tunnel
073	SBD05-04-073.JPG	SE	General shot of tunnel once exposed entirely
074	SBD05-04-074.JPG	SE	General shot of tunnel once exposed entirely

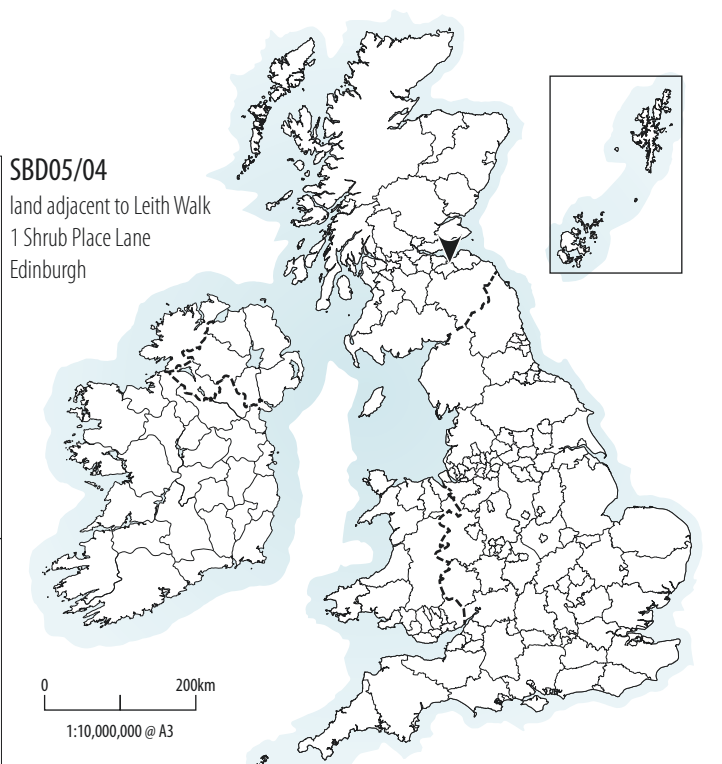
7.2 Appendix 2 – Discovery and Excavation in Scotland entry

Please delete this section if you are not working in Scotland or if for other reasons not applicable.

LOCAL AUTHORITY:	City of Edinburgh
PROJECT TITLE/SITE NAME:	Shrub Hill Transport Depot, Edinburgh
PROJECT CODE:	SPD05/04
PARISH:	Edinburgh
NAME OF CONTRIBUTOR:	Magnar Dalland
NAME OF ORGANISATION:	Headland Archaeology
TYPE(S) OF PROJECT:	Watching Brief
NMRS NO(S):	NT27NE 841
SITE/MONUMENT TYPE(S):	None
SIGNIFICANT FINDS:	None
NGR (2 letters, 8 or 10 figures)	NT 2640 7505
START DATE (this season)	06/10/2016
END DATE (this season)	12/10/2016
PREVIOUS WORK (incl. DES ref.)	
MAIN (NARRATIVE) DESCRIPTION: (May include information from other fields)	An archaeological watching brief was carried out during groundworks associated with redevelopment of the site of the former Shrub Hill Transport Depot in Edinburgh. The watching brief recorded the remains of a tunnel associated with a late 19th century steam power plant for a cable driven tram system. The tunnel ran from the engine room at the back of the site across to the former tram line along Leith Walk. Features within the tunnel recorded during the fieldwork indicate that it had been roofed and further modified after it went out of use as a cable shaft in 1922. Half partition walls within the tunnel suggests that could have been converted to be used as a bomb-shelter during the Second World War. A small booklet titled 'A Guide to Edinburgh Air Raid Shelters' confirms this as it shows the location of a shelter on the north-west side of Leith Walk within the area of the Shrub Hill Tramway Depot.
PROPOSED FUTURE WORK:	None
CAPTION(S) FOR ILLUSTRS:	None
SPONSOR OR FUNDING BODY:	Places for People
ADDRESS OF MAIN CONTRIBUTOR:	13 Jane Street, Edinburgh EH6 5HE
EMAIL ADDRESS:	Magnar.dalland@headlandarchaeology.com
ARCHIVE LOCATION (intended/deposited)	NMRS



SBD05/04
land adjacent to Leith Walk
1 Shrub Place Lane
Edinburgh

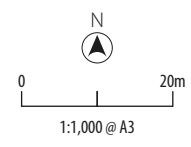


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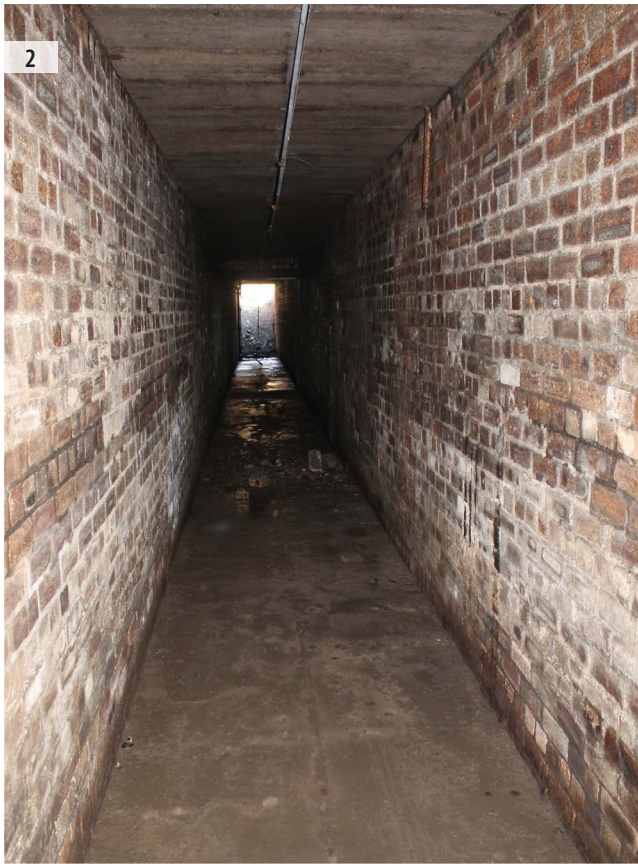


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- KEY
- development boundary
 - watching brief area
 - tunnel extent

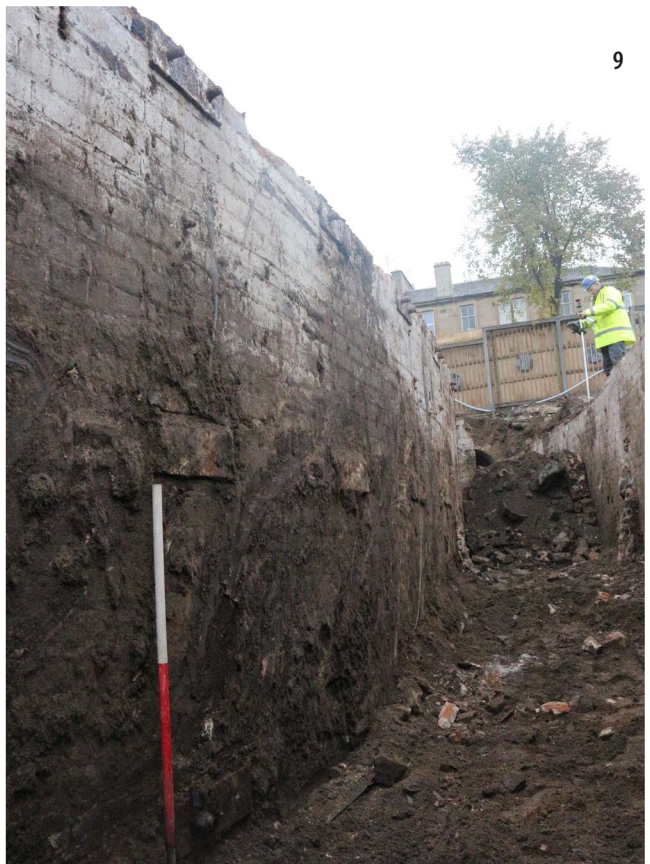


ILLUS 2 W end of tunnel with flat concrete roof, facing NW

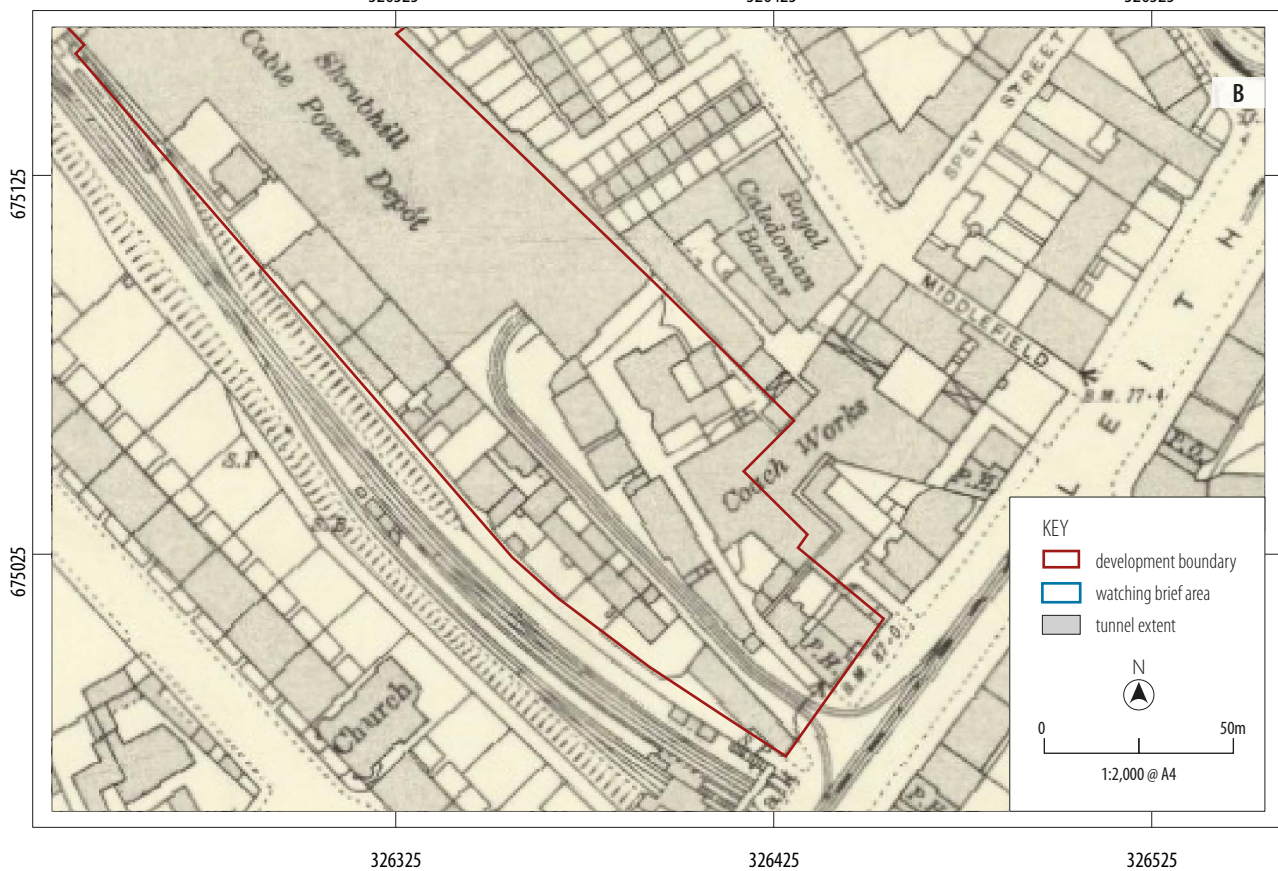
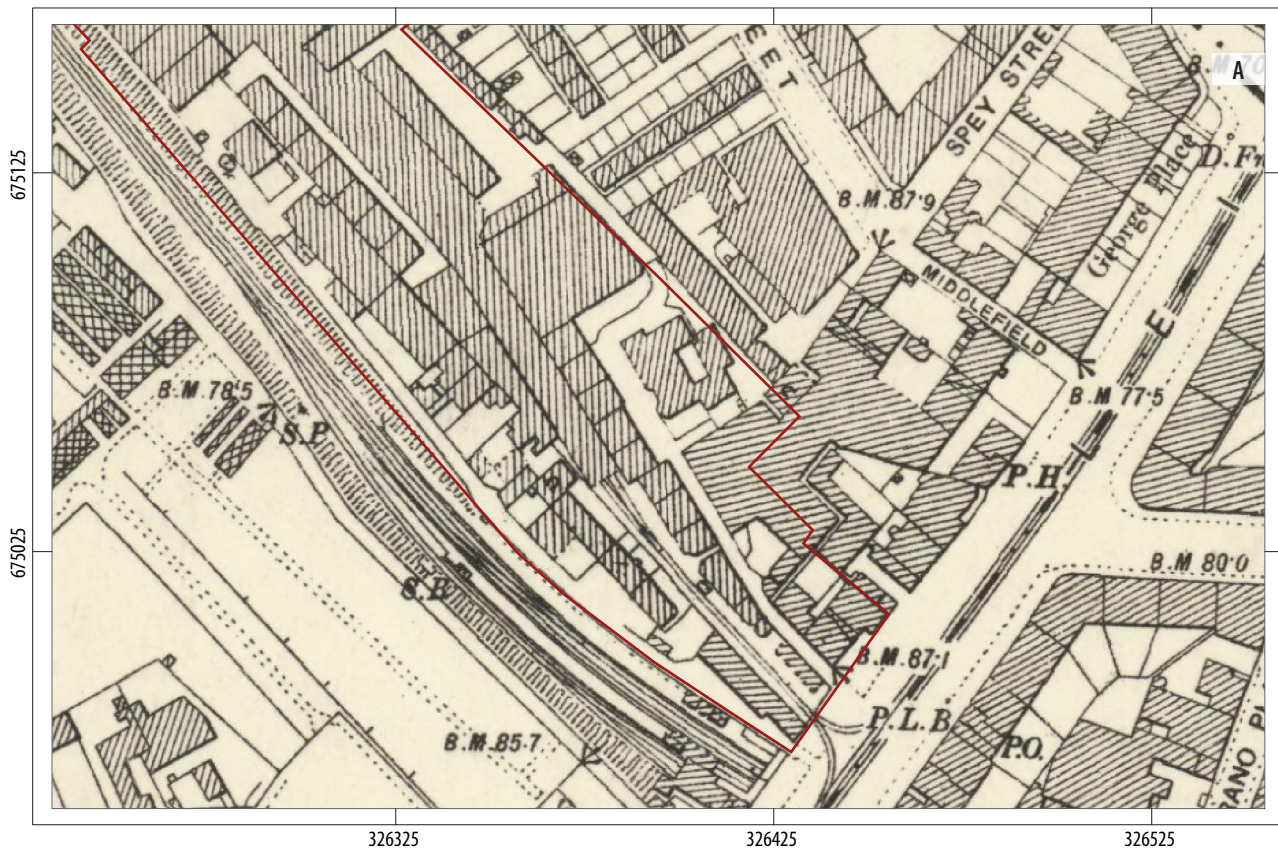
ILLUS 3 N segment of tunnel, facing ESE

ILLUS 4 Brick wall blocking tunnel at E end, facing SE

ILLUS 5 View towards partition walls near the middle of the tunnel, facing SE



ILLUS 6 View into side entrance on the N side of the tunnel, facing NW **ILLUS 7** Iron lungs leading into square shaft providing access into the tunnel, facing SE **ILLUS 8** Graffiti revealed behind the partition wall against the north side of the tunnel, facing NNE **ILLUS 9** Wall anchors along the N wall, facing ESE



ILLUS 10A & 10B Extracts of OS maps 1895 and 1912 showing slight change in the layout of the tramlines. Reproduced with the permission of the Trustees of the National Museum of Scotland