

**RUNWAY REFURBISHMENT, RAF WADDINGTON,  
NORTH KESTEVEN, LINCOLNSHIRE**

**SCHEME OF ARCHAEOLOGICAL MONITORING  
AND RECORDING**

NGR: SK 98463 63399  
PCAS Job No.: 1478  
Site code: WRRM 15  
Archive acc. code: 2016.192

Report prepared for  
Carillion Construction Services

by

R. D. Savage

November 2016



Pre-Construct Archaeological Services Ltd  
47, Manor Road  
Saxilby  
Lincoln  
LN1 2HX  
Tel. 01522 703800  
Fax. 01522 703656  
e-mail [info@pre-construct.co.uk](mailto:info@pre-construct.co.uk)

©Pre-Construct Archaeological Services Ltd

## **Contents**

	Summary	1
<b>1.0</b>	Introduction	2
<b>2.0</b>	Site Location and Description	3
<b>3.0</b>	Geology and Topography	3
<b>4.0</b>	Archaeological and Historical Background	3
<b>5.0</b>	Methodology	4
<b>6.0</b>	Results	5
<b>7.0</b>	Conclusion	5
<b>8.0</b>	Effectiveness of Methodology	6
<b>9.0</b>	Acknowledgements	6
<b>10.0</b>	Site Archive	6
<b>11.0</b>	Bibliography	7

**Appendix 1:** Context Register

**Appendix 2:** OASIS summary

## **Figures**

**Fig. 1:** Site location plan at scale 1:25,000

**Fig. 2:** Plan drawings of the runway and the monitored groundworks at scales 1:10,000 and 1:5000

**Fig. 3:** Sections drawn within the monitored area on the north side of the main runway, at scale 1:20, with location plan at scale 1:500

**Fig. 4:** Sections drawn within the monitored area on the south side of the main runway, at scale 1:20, with location plans at scales 1:500 and 1:100

## **Plates**

**Pl. 1:** Working shot of the strip along the north side of the existing runway, looking south-west

**Pl. 2:** Topsoil strip at the beginning of groundworks on the taxiway, looking north

**Pl. 3:** Excavation at the north side of the taxiway, looking south-west

**Pl. 4:** View of the excavations at the north side of the runway, showing the disturbance caused by modern services

## **Summary**

*A targeted programme of archaeological monitoring and recording was carried out during the refurbishment and widening of the runway at RAF Waddington in Lincolnshire.*

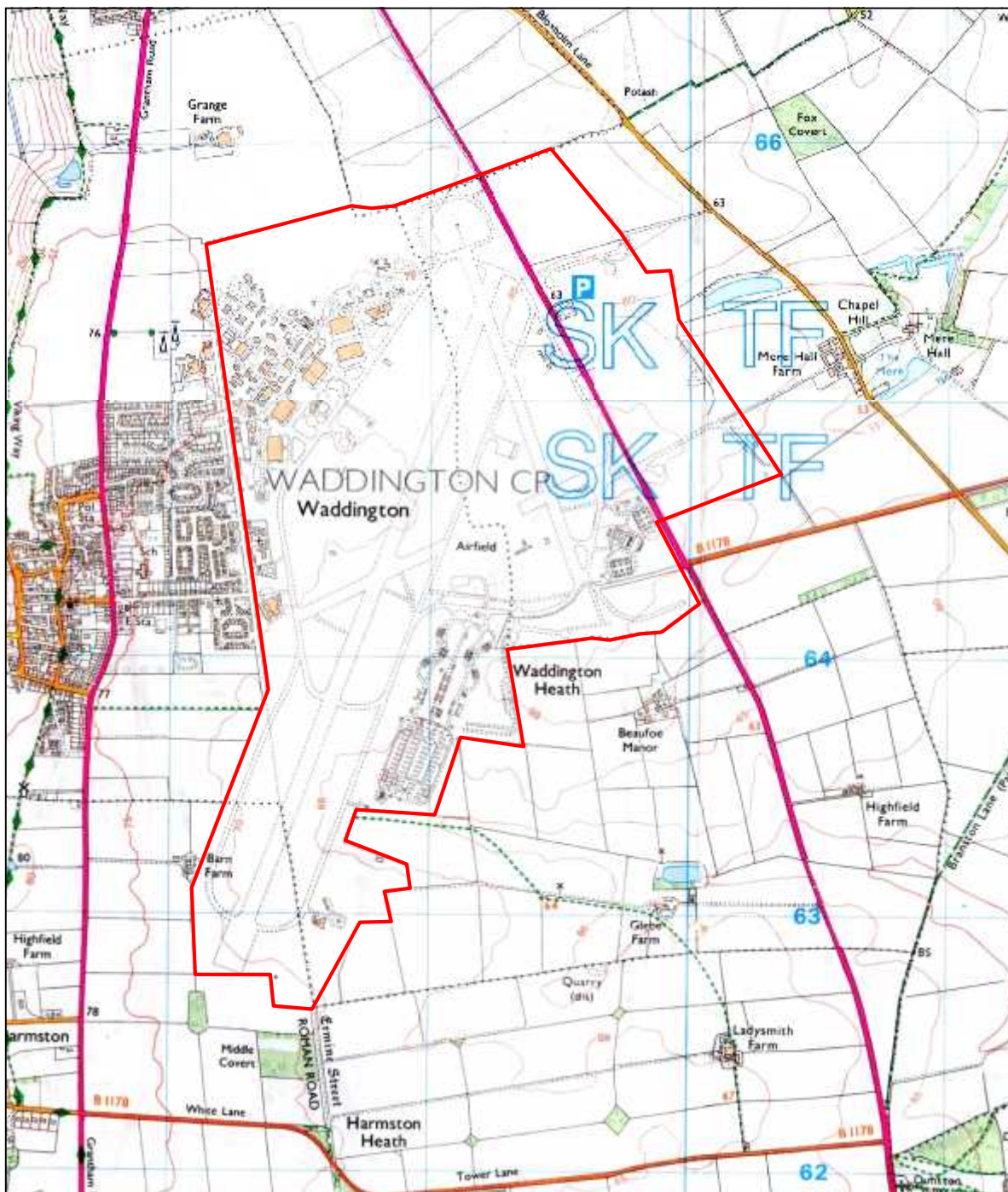
*The projected course of the major Roman road of Ermine Street runs across the airfield, crossing the south end of the runway at an oblique angle: archaeological monitoring was therefore targeted on this area, the last of three sections of runway to be replaced.*

*No archaeological features were seen, nor were any deposits pre-dating the construction of the airfield: it seems most likely that the ground levelling and consolidation works required to extend the runway beyond the original Second World War A-pattern in order to accommodate larger aircraft in the 1960s and 1970s extended over a wider area than the immediate footprint of the runway itself, and obliterated all trace of the Roman road.*

## 1.0 Introduction

Pre-Construct Archaeological Services Ltd. (PCAS) was commissioned by Carillion Construction Ltd. to carry out a scheme of archaeological monitoring and recording on all development groundworks associated with the refurbishment and widening of the runway at RAF Waddington in Lincolnshire.

The projected course of the major Roman road of Ermine Street runs across the airfield, crossing the south end of the runway at an oblique angle: archaeological monitoring was therefore targeted on this area, the last of three sections of runway to be replaced.



**Figure 1:** Location plan of RAF Waddington Airfield (outlined in red) at scale 1:25,000. OS mapping © Crown copyright. All rights reserved. PCAS licence no. 100049278.

## 2.0 Site Location and Description (fig. 1)

The village of Waddington is located in the North Kesteven district of Lincolnshire, on the A607 approximately 7km to the south of Lincoln city centre. RAF Waddington airfield, an active military airfield first opened during the First World War, lies on the east side of Waddington village at the central NGR of SK 98463 63399, occupying much of a triangle formed by the A607, the A15 and the B1178 and extending a short distance across the A15. The airfield now has one long runway, oriented roughly north-north-east to south-south-west, although the remains of the typical layout of the Second World War airfield, with three runways in an A-shape, can still be traced on modern mapping; it is currently the operating base for six flying squadrons operating five different aircraft types, and is also home to a light aircraft flying club and the Lincolnshire and Nottinghamshire Air Ambulance (raf.mod.uk).

## 3.0 Topography and Geology

RAF Waddington is one of a chain of military airfields built during the First and Second World Wars on the crest of the Lincoln Edge, near its steep west-facing drop into the clay vale; Waddington Airfield overlooks the confluence of the rivers Brant and Witham. Its runways are generally at a height of between 65m and 70m above sea level.

The British Geological Survey records no drift geology on any part of the airfield: it is situated on the exposed solid limestone of the Lincoln Edge, with portions of the airfield situated variously on the Upper, Lower or Crossi Bed Lincolnshire Limestone (BGS, 1973).

## 4.0 Archaeological and Historical Background

On the south side of the airfield, an earthwork in the shape of two parallel banks was seen from the air in 1930, and its presence subsequently confirmed by a visit. The feature ran north-eastwards from the north side of the B1178 near Harmston to the southern boundary of RAF Waddington, and was interpreted as a double-ditched prehistoric boundary; it had been ploughed out by the 1960s (HER ref. 60339). The cropmark of a possible prehistoric enclosure has been identified directly to the east of the earthwork (HER ref. 61895).

The course of the major Roman road of Ermine Street runs through RAF Waddington. Ermine Street, which originally connected London and Lincoln, and was later continued northwards to the legionary fortress of York, is followed by modern minor roads and tracks past the east side of Navenby (where it is known as High Dyke) across Coleby Heath and Harmston Heath to the southern boundary of the airfield, from where it is followed by a short length of the Waddington parish boundary, which crosses the south end of the runway at an oblique angle (fig. 1). Further to the north, the western boundary of the airfield also follows the projected line of the Roman road; to the north of the airfield the route continues, but, apart from a short stretch running along the course of the Grantham Road (A607), it can no longer be identified on modern mapping until it reappears as the High Street in Lincoln. However, the route has been traced on the ground: a gazetteer of Roman roads notes that *'At Waddington a large aerodrome borders the road, which, however, still exists although closed to public traffic, and then for ½ mile past Waddington Grange Farm the line is represented by hedgerows, and then by a broad ridge across the last field, rejoining the present Grantham Road at the first houses on the east side...'* (Margary, 1973, pp.228-9). A Roman coin of Licinius I (AD 308-324) has been found within Waddington village a short distance to the west of the airfield (HER ref. 61221), and a scatter of Romano-British pottery was identified in the field behind the Officers' Mess of the airfield, between the course of Ermine Street and the modern A607 (HER ref. 61265), but no works in the immediate area have encountered the Roman road.

The village of Waddington is first documented in the Domesday Book, when it already had a church and two mills; the place-name is Old English – ‘the farmstead or village belonging to or named after a man called *Wada*’ (HER ref. 61214). The Anglo-Saxon origin of the settlement is attested to by the discovery, on the south side of the historic core of the village, of a cemetery containing eleven burials, one of which could be dated by its grave goods to the sixth century AD. The original discovery was made in 1947; archaeological work carried out in 1999 a short distance to the east of the known cemetery site encountered four further burials, interpreted as being of 7<sup>th</sup>-century date and related to the cemetery previously discovered (Francis, 2013). Evidence of the medieval settlement has been recorded in and around the modern village, chiefly in the form of the ridge-and-furrow earthworks left by the strip ploughing of medieval open fields, although some medieval pottery has also been retrieved (HER ref. 61214); a scatter of medieval pottery was also found in the field behind the Officers’ Mess of the airfield, in association with a scatter of Romano-British pottery (HER ref. 61266).

Early post-medieval Waddington had a racecourse, located on the Heath in the area where the RAF base is now situated: horse racing is known to have taken place here from at least the reign of James I (beginning of the 17<sup>th</sup> century). The inn names of The Horse and Jockey and The Three Horse Shoes recall a time when the racehorses and their riders came from a distance and lodged in the village. Racing probably ceased when Waddington Heath was enclosed in 1772 (HER ref. 61237). Archaeological monitoring of new development within Waddington village recorded numerous intercutting limestone quarry pits of late post-medieval date, indicating that limestone was being extracted here in the 19<sup>th</sup> century (HER ref. 61214).

The military airfield at Waddington was opened in 1916 for use as a Royal Flying Corps training airfield. It was briefly closed between 1920 and 1926, but was re-opened as part of a programme of RAF expansion, initially continuing to use the buildings and hangars from the First World War, but being extensively redeveloped in 1936. Waddington served as a bomber airfield during the Second World War, and in spite of its only being equipped with grass runways, it was selected to pioneer the use of Lancaster bombers in 1941; concrete runways were eventually laid in 1943. Many damaged Lancasters were repaired at the Avro factory at Bracebridge Heath, and were then brought by road to a hangar at RAF Waddington for reassembly and air testing before being reallocated to Lincolnshire squadrons. Both the RAF base and Waddington village were attacked by a German raider in 1941: six bombs hit the airfield, destroying a number of buildings, and two parachute mines exploded in the village, destroying the village church and nineteen houses. RAF Waddington remains in service to the present day: during the 1980s, Vulcan bombers from this airfield served in the Falkland Islands conflict (Otter, 1996, pp. 239-48). The Lincolnshire HER notes that Second World War pillboxes may still be *in situ* on the airfield (HER ref. 61249).

## 5.0 Methodology

The runway refurbishment works took place in three phases, in order to keep the airfield in use for smaller aircraft: the monitored section formed the final phase of the works. The works consisted of digging up each section of the runway in turn, levelling the contours and laying a new runway, with an electrical supply for lighting and other facilities. As the existing runway was not being removed to its full depth, monitoring took place on the strips to either side, where topsoil was being removed in order to extend the width of the runway, and on the excavation of the associated cable



**Plate 1:** Working shot of the strip along the north side of the existing runway, looking south-west.

trenching. The monitored zone extended to 70m either side of the projected centre line of the Roman road, and the strips varied from 5m to 14.5m in width. Excavations were carried out using a wheeled 360° excavator fitted with a toothless ditching bucket (plate 1).

All features and deposits seen were recorded on standard PCAS context recording sheets, and the progress of the groundworks noted on standard PCAS site diary sheets. Sample sections were drawn at intervals at a scale of 1:20, and plotted on scale 1:500 location plans. A digital photographic record was maintained throughout the monitoring project: selected photographs are reproduced in this report.

Monitoring of the runway strips began on June 29<sup>th</sup>, 2015 and continued intermittently as the progress of the groundworks required; the last of the monitored groundworks took place on 14<sup>th</sup> July 2016. The archaeological monitoring was undertaken by Ben Wheeliker and Simon Savage.

## 6.0 Results (figs. 3-5)

The natural limestone bedrock 004 was exposed at the base of the deeper excavations. Along the north side of the runway, this was overlain by modern deposits: made ground and concrete 003 and brick rubble 105, with the existing runway surface above. On the south side of the runway and along the taxiway, only subsoil 101 and topsoil 100 were recorded. Abundant stone was observed in the subsoil during the initial strip of the taxiway groundworks, but excavation to greater depths showed that this stone was derived from the underlying natural bedrock and did not constitute the remains of a road surface (plates 2 and 3). Buried services, such as drains and electric cables, were frequently encountered throughout the groundworks (plate 4).



**Plate 2:** Topsoil strip at the beginning of groundworks on the taxiway, looking north. The break in the line of trees on the horizon, almost directly on the line of the north arrow, shows the course of Roman Ermine Street. The abundant stone in the topsoil strip proved on deeper excavation to be natural in origin.

No archaeological features were seen, nor were any deposits pre-dating the construction of the airfield.

## 7.0 Conclusion

As Ermine Street is known to have been constructed on an *agger* (raised causeway), it was unlikely that recognisable traces of the road surface would have survived the construction of the runway. However, the road would also have been flanked by drainage ditches from which the *agger* construction material would have been extracted, and it seemed possible that these ditches might have been exposed by the groundworks. No trace of the ditches was in fact found: it seems most likely that the ground levelling and consolidation works required to extend the runway beyond the original Second World War A-pattern in order to accommodate larger aircraft in the 1960s and 1970s extended over a wider area than the immediate footprint of the runway itself, and obliterated all trace of the Roman road.



**Plate 3:** Excavation at the north side of the taxiway, looking southwest, showing the natural stone.



**Plate 4:** View of the excavations at the north side of the runway, showing the disturbance caused by modern services.

## 8.0 Effectiveness of Methodology

The methodology employed during this project achieved its primary objective, ensuring that any archaeological remains that might have been present on the site would not have been destroyed unrecorded, while causing the minimum of disruption to the construction process.

## 9.0 Acknowledgements

PCAS Ltd would like to thank Carillion Construction Services for this commission.

## 10.0 Site Archive

The project archive is currently held at the offices of PCAS Ltd. in Saxilby, Lincolnshire while being prepared for deposition, and will be deposited with the Lincoln City and County Museum ('The Collection') by February 2017. Following deposition, the archive will be available for public consultation under the LCNCC accession number 2016.192.



## 11.0 Bibliography

British Geological Survey (BGS), 1973, *Lincoln: England and Wales Sheet 114, Solid and Drift Geology 1:50,000 Provisional Series*. BGS, Keyworth, Nottingham.

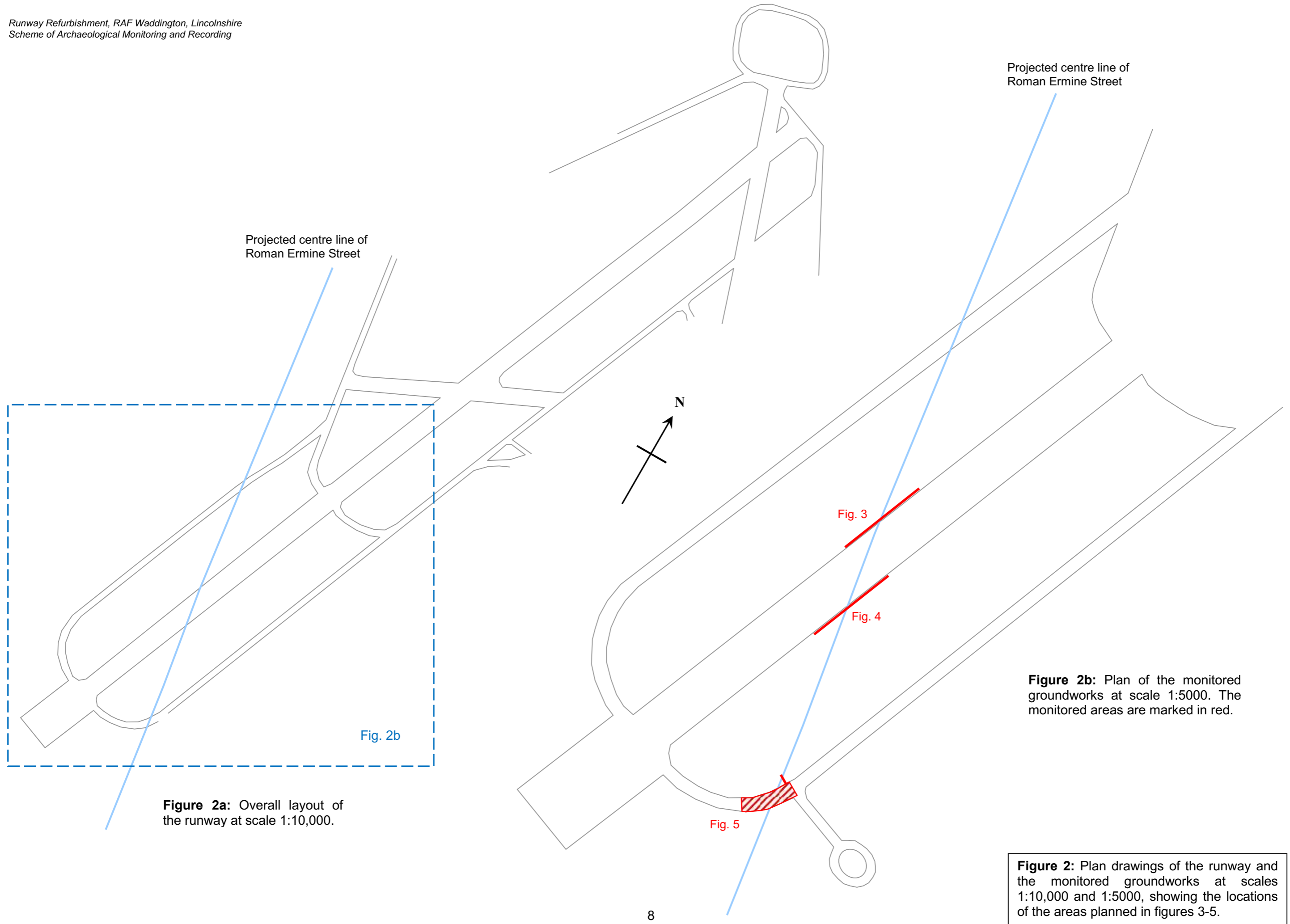
Francis, K. D., 2013, *Specification for a Scheme of Archaeological Monitoring and Recording: Land at Kestlin Diesels Services, Bar Lane, Waddington, Lincoln, Lincolnshire LN5 9SA*. Unpublished document produced for Pre-Construct Archaeological Services Ltd.

Margary, I. D., 1973, *Roman Roads in Britain (3<sup>rd</sup> edition)*. John Baker, London.

Ordnance Survey, 2006, *Lincoln, Sleaford, Metheringham and Navenby: 1:25,000 scale Explorer series no. 272*. The Ordnance Survey, Southampton.

Otter, P., 1996, *Lincolnshire Airfields in the Second World War*. Countryside Books, Newbury.

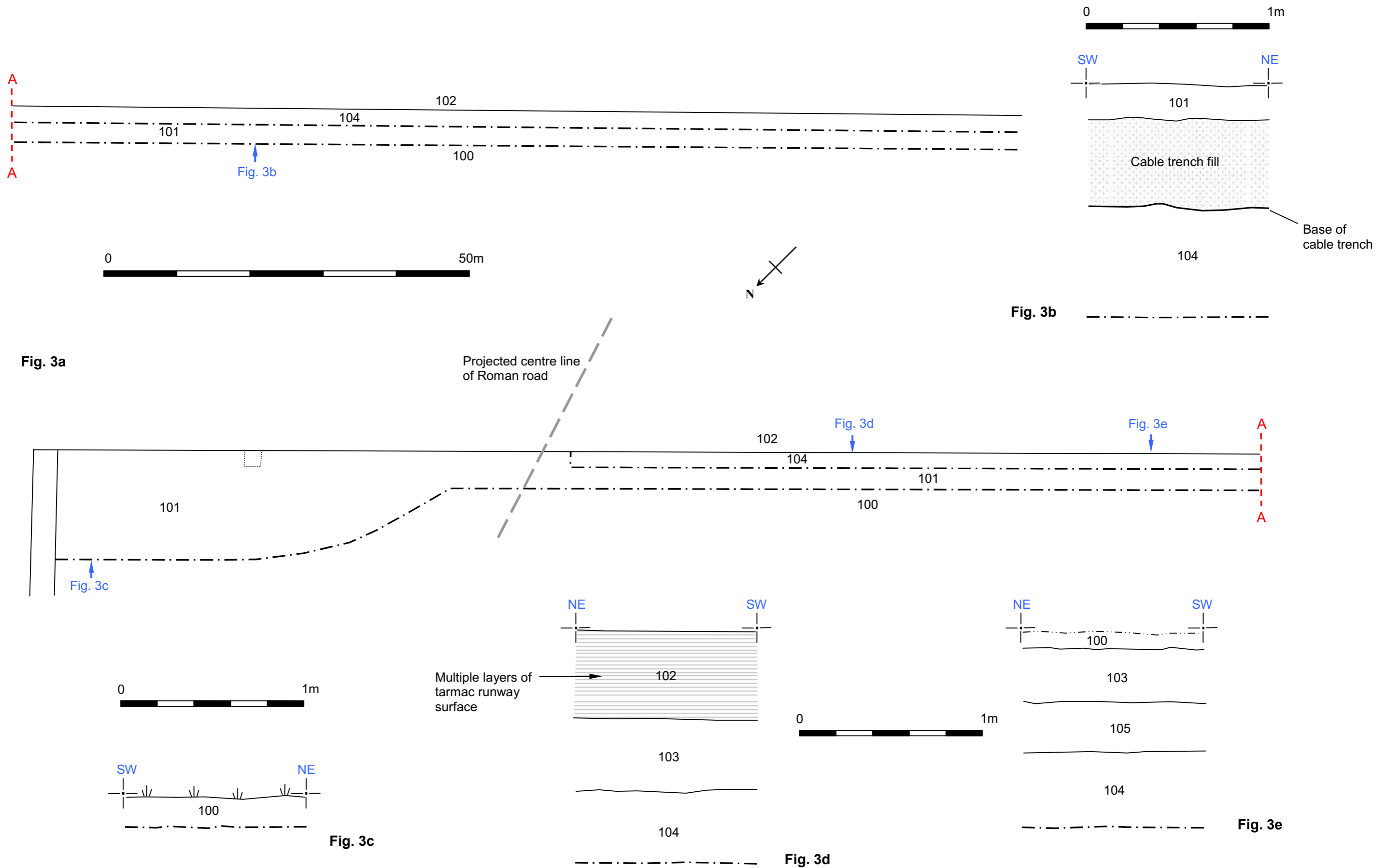
RAF Waddington station information available online at <http://www.raf.mod.uk/rafwaddington>.



**Figure 2a:** Overall layout of the runway at scale 1:10,000.

**Figure 2b:** Plan of the monitored groundworks at scale 1:5000. The monitored areas are marked in red.

**Figure 2:** Plan drawings of the runway and the monitored groundworks at scales 1:10,000 and 1:5000, showing the locations of the areas planned in figures 3-5.



**Figure 3:** Sections drawn within the monitored area on the north side of the main runway, at scale 1:20, with location plan at scale 1:500.

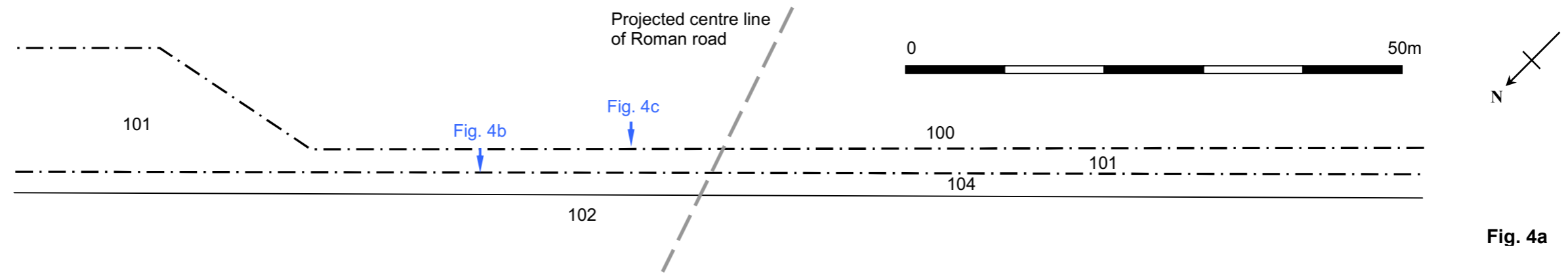


Fig. 4a

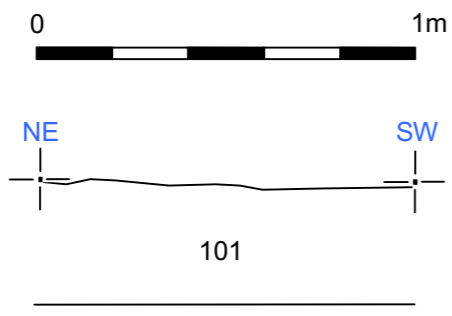


Fig. 4b

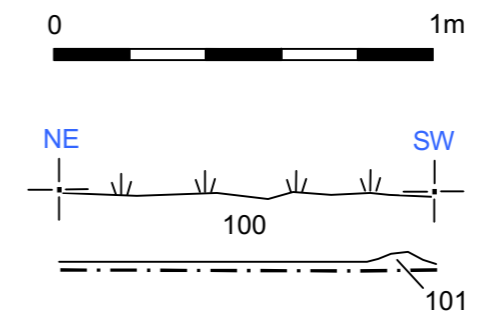


Fig. 4c

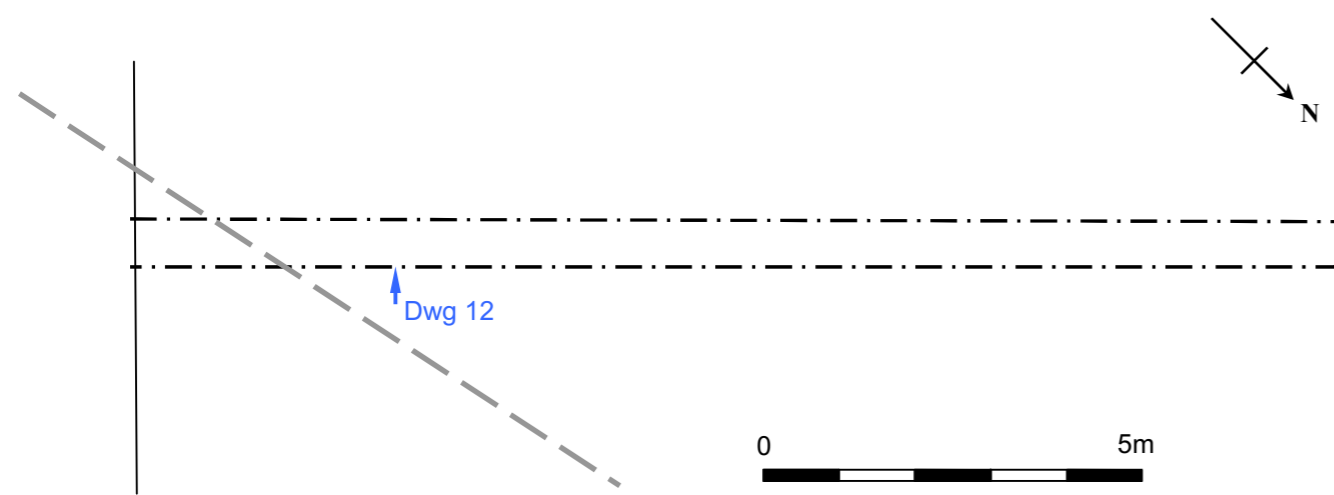
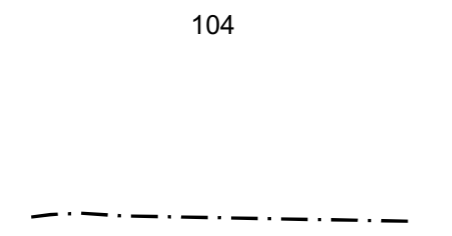


Fig. 4d

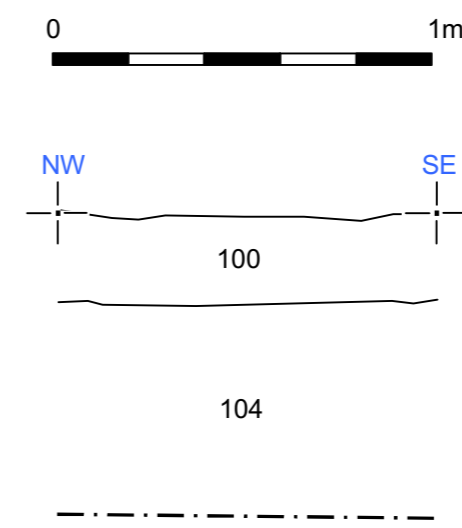
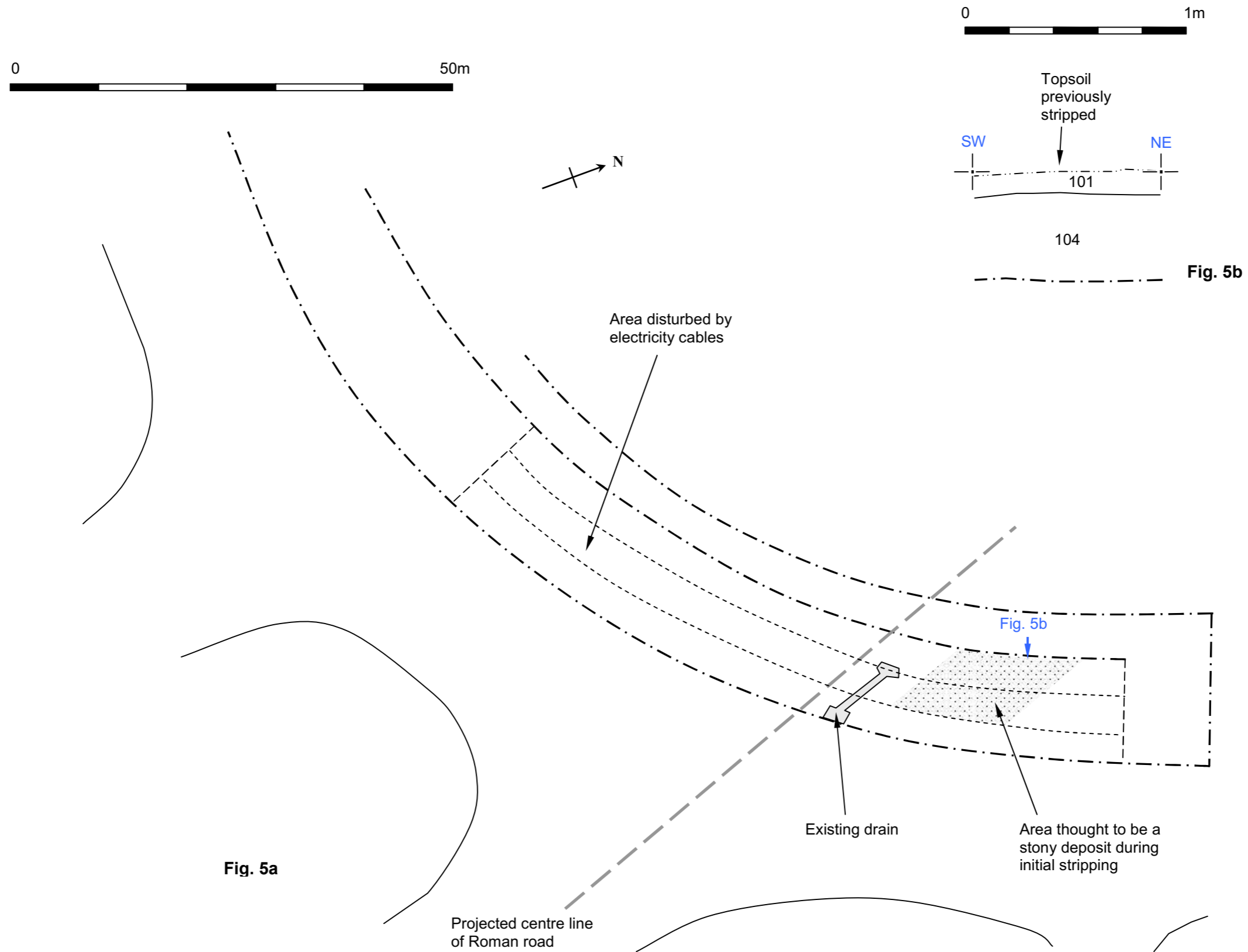


Fig. 4e

**Figure 4:** Sections drawn within the monitored area on the south side of the main runway, at scale 1:20, with location plans at scales 1:500 and 1:100.



**Figure 5:** Plan of the monitored area of taxiway at scale 1:500, with sample section at scale 1:20.

## **Appendix 1: Context Summary**

<b>Context No.</b>	<b>Type</b>	<b>Description</b>	<b>Finds/Dating</b>
100	Layer	Friable to loose mid-brown sandy silt topsoil, 0.20m deep	Modern
101	Layer	Mid- to light brown friable sandy silt subsoil, containing frequent limestone brash; disturbed by frequent modern services	None
102	Layer	Existing tarmac runway surface	Modern
103	Layer	Bedding layer for runway surface 102: mixture of sandstone hardcore and broken concrete	Modern
104	Layer	Limestone bedrock	Solid geology
105	Layer	Deposit of crushed, burnt red brick rubble	Modern

## Appendix 2: OASIS Summary

# OASIS DATA COLLECTION FORM: England

[List of Projects](#) | [Manage Projects](#) | [Search Projects](#) | [New project](#) | [Change your details](#) | [HER coverage](#) | [Change country](#) | [Log out](#)

## RAF Waddington - Pre-Construct Archaeological Services Ltd

OASIS ID - preconst3-269496

### Versions

View	Version	Completed by	Email	Date
View 1	1	Mrs. R. D. Savage	rachel@pre-construct.co.uk	22 November 2016
View 2	2	Mrs. R. D. Savage	rachel@pre-construct.co.uk	22 November 2016
View 3	3	Mrs. R. D. Savage	rachel@pre-construct.co.uk	29 November 2016

### Completed sections in current version

Details	Location	Creators	Archive	Publications
Yes	Yes	Yes	Yes	1/1

### Validated sections in current version

Details	Location	Creators	Archive	Publications
No	No	No	No	0/1

### File submission and form progress

Grey literature report submitted?	Yes	Grey literature report filename/s	preconst3-269496_1.doc [2,252.00kb]
Report release delay specified?	Yes	Release delay	Release into ADS library once signed off
Boundary file submitted?	No	Boundary filename	
HER signed off?		NMR signed off?	

[Upload images](#)   [Upload boundary file](#)   [Request record re-opened](#)   [Printable version](#)

Email Lincolnshire HER about this OASIS record

## OASIS:

Please e-mail Historic England for OASIS help and advice

© ADS 1996-2016 Created by Jo Gilham and Jen Mitcham, email Last modified Tuesday 9 August 2016

Site only: <http://www.oasis.ac.uk/form/formet1.cfm?oid=preconst3-269496> for this page