

Kinneil Woods, Falkirk:

Archaeological Support for Antonine Wall Access Improvements

Risk Assessment Method Statement

by Liam McKinstry

issued 25th August 2016

on behalf of Central Scotland Green Network Trust



Quality Assurance

This report covers works which have been undertaken in keeping with the issued brief as modified by the agreed programme of works. The report has been prepared in keeping with the guidance of Rathmell Archaeology Limited on the preparation of reports. All works reported on within this document have been undertaken in keeping with the Chartered Institute for Archaeologists' Standards and Policy Statements and Code of Conduct.

Signed

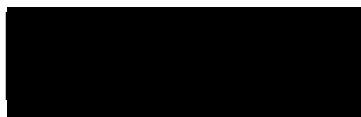


Date

...25th August 2016..

In keeping with the procedure of Rathmell Archaeology Limited this document and its findings have been reviewed and agreed by an appropriate colleague:

Checked



Date

...25th August 2016....

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Introduction

1. This Risk Assessment Method Statement (RAMS) describes methodology and health and safety considerations related to a programme of archaeological works required by Central Scotland Green Network Trust in support of access improvement work for a footpath along a stretch of the Antonine Wall at Kinneil, Falkirk.
2. These works will comprise:
 - a. the surveying and inspection of the entire area encompassed by the footpath access improvement work (Sections A-C and E)
 - b. excavation of three hand excavated test pits (two 1m broad and 4m long, one 1m broad and 3m long) within a specific area of the footpath access improvement works (Section B and C).
3. The test pits will be excavated until either naturally occurring subsoil or Roman period deposits are identified or the excavation can no longer be safely advanced due to the depth of works (1000mm depth).
4. The works detailed above are within a Scheduled Monument, designated under the terms of the Ancient Monuments and Archaeological Areas Act 1979. The designated site is known as the 'Antonine Wall and fortlet, 430m E to 850m WSW of Kinneil House' (Index No 2210). Further this site is an element of the Frontiers of the Roman Empire (Antonine Wall) World Heritage Site, recognised to be of International significance. The works detailed within this document can only be conducted where valid Scheduled Monument Consent is held. Works will also comply with the principles of the Supplementary Planning Guidance for the Frontiers of the Roman Empire (Antonine Wall).
5. Within this document there are two main sections:
 - ❖ Archaeological Method Statement – detailing the archaeological work to be conducted to satisfy the client; and
 - ❖ Project Management – explaining site management issues and how a safe working environment will be delivered.
6. Both sections are supported by Appendices and other supporting documentation.

Historical Background

7. For the archaeological and historical background on this location please review the supporting document:

RA16026 Kinneil Woods Timeline

Rathmell Archaeology

8. Rathmell Archaeology Ltd through our offices in Ayrshire and Dundee provide a wide range of archaeological services throughout Scotland to developers, their agents, conservation groups and government agencies. Established in February 2003 we are a growing service provider bringing enthusiasm and innovation to our industry, underpinned by our professional experience.
9. Rathmell Archaeology has a strong reputation for delivering works to a high standard and to schedule. All team members are used to successfully working to set schedules to meet our client's needs. Our project team has considerable cumulative experience that will prove invaluable in delivering the project competently and to schedule.
10. Our staff have a broad range of experience, and as an organisation we have, in addition, a proven track record in running complex projects which span multiple years as well as the analysis of the materials from such sites and their publication.

Standards

11. This methodology has been designed in accordance with current best archaeological practice and the appropriate national and regional standards and guidelines including:
 - ❖ Code of Conduct (Chartered Institute for Archaeologists 2000);
 - ❖ Standard and Guidance (Chartered Institute for Archaeologists);
 - ❖ Treasure Trove in Scotland: A code of Practice (Scottish Government 2008);
 - ❖ Frontiers of the Roman Empire (Antonine Wall) Supplementary Planning Guidance.
12. The archaeological works will be carried out with due regard to all appropriate health, safety and environmental legislation and guidance, including:
 - ❖ Health and Safety at Work Act 1974;
 - ❖ Avoiding Danger from Underground Services HSG47;
 - ❖ FAME Safety Manual.

Archaeological Method Statement

13. All works will comply with the Chartered Institute for Archaeologists' Standards and Policy Statements and Code of Conduct and Historic Environment Scotland Policy Statements.

Surveying and Inspection

14. The surveying and inspection will involve a photographic and measured sketch record of the site before the proposed works commence along with locating all of the archaeological works by DGPS equipment (Leica GS50) allowing real-time correction to Ordnance Survey National Grid and Datum.

Test Pits

15. The test pits within Section B and C will be marked out at the agreed location prior to excavation and enclosed within an appropriately sized fence enclosing them if left open overnight, typically formed of road pins driven into the ground and orange mesh netlon fencing. This fencing will also serve to cordon off steep slope edges to ensure the safety of staff members whilst working around the test trenches. No deep trench (>600mm standing section) will be left open overnight.
16. Similar fencing with appropriate signage will also be used to close off the footpath to the general public due to the confined nature of the footpath and the surrounding trees to ensure safety.
17. Tarpaulins will be laid for spoil management close to the trenches. Any large tree roots (more than 300mm in diameter) exposed during the excavation of the test trenches will be wrapped in hessian material so as to avoid damage while the excavation is ongoing. The test pit location will be scanned with a Cable Avoidance Tool (CAT) prior to excavation and then again during excavation.
18. The turf and gravel footpath surface will be lifted and laid aside within the spoil management area. Hand excavation will then be conducted to reduce the level of the pit to the shallower of: the upper surface of the natural subsoil, the upper surface of a significant archaeological horizon from the Roman period or 1000mm from the current ground surface. This process will avoid disruption to known Roman strata in keeping with the Frontiers of the Roman Empire (Antonine Wall) Supplementary Planning Guidance
19. Should the potential archaeological features include funerary deposits that include

human skeletal material then all works on that area will be halted and the local constabulary and Historic Environment Scotland notified.

20. On completion of the excavation and recording of the test pit, it will be reinstated with the arisings from the excavation, compacted and then the turf and gravel footpath surface reinstated.
21. Should there be a requirement to expand any individual test pit to either (i) cope with ground conditions or (ii) to ensure sufficient archaeological information is recovered this must be agreed in advance with Historic Environment Scotland. Should such circumstances arise Rathmell Archaeology will liaise with Historic Environment Scotland, explain the scenario and request permission to vary the extent.

Excavation Protocol

22. Where archaeological excavation is agreed as the appropriate response within the test pits (ie where the strata is <1000mm and is not from the Roman period) the features will be cleaned using hand tools to define surviving archaeology. The exposed archaeology will then be excavated and recorded.
23. After the cleaning and planning the sampling strategy will be finalised. This will take into account the project aims and the type, quality and quantity of remains revealed. The excavation sampling strategy will seek to maintain the following levels, but Historic Environment Scotland will take the final decision on the appropriate levels of sampling to be applied in any single case and may insist on 100% excavation of any archaeological features to be destroyed by the development proposals:
 - a. all structures and all zones of specialised activity (e.g. funerary, ceremonial, industrial, agricultural processing) will be fully excavated and all relationships recorded;
 - b. ditches and gullies will have all relationships defined, investigated and recorded. All terminals will be excavated. Sufficient lengths of the feature will be excavated to determine the character of the feature over its entire course; the possibility of re-cuts of parts of the feature, and not the whole, will be considered. This will be achieved by a minimum 10% sample of each feature (usually a 1m section every 10m);
 - c. sufficient artefact assemblages will be recovered (where possible) to assist in dating the stratigraphic sequence and for obtaining ample ceramic groups for comparison with other sites;
 - d. all pits, as a minimum, will be half-sectioned. Usually at least 50% (by number) of the pits will be fully excavated. Decisions as to which pits will be fully excavated will be taken in the light of information gained in the half-sectioning taking into consideration, amongst other things; pit function, artefact content and location;
 - e. for post and stake holes where they are clearly not forming part of a structure (see above) 50% (by number) will be half-sectioned ensuring that all relationships are investigated. Where deemed necessary, by artefact content, a number may demand full excavation;
 - f. for other types of feature such as working hollows, quarry pits, etc the basic requirement will be that all relationships are ascertained. Further investigation will be a matter of on-site judgment, but will seek to establish as a minimum their extent, date and function; and
 - g. for layers, an on-site decision will be made as to the limits of their excavation. The factors governing the judgment will include the possibility that they mask earlier remains, the need to understand function and depositional processes, and

the necessity to recover sufficient artefacts to date the deposit and to meet the project aims.

24. The test pits have been set at a breadth of 1m, this breadth is to allow sufficient width to enable the sound comprehension of linear features that are running perpendicular to the lone of the trench in plan. Should it be appropriate to section these features, a narrower working width is anticipated of 0.5m. This narrower section would seek to maintain a common section line on one side with the larger test pit.

Recording Methodology

25. The recording system will be based on the Museum of London's *Archaeological Site Manual* (1994). All recording will be in keeping with the recording system which will, at minimum, detail that:
 - ❖ all contexts, small finds and environmental samples will be given unique numbers;
 - ❖ small finds will be individually bagged and then located by context and by test pit; and
 - ❖ all recording of contexts, samples and activities will be undertaken on *pro forma* record sheets.
26. The location of the work area will be surveyed after opening to record its location. All survey data will be three-dimensional, to an appropriate resolution for purpose.
27. Plans of archaeological features will be recorded with sufficient accuracy to depict general layout at 1:100. Additionally 1:20 plans of all the individual features will be prepared and sections drawn at 1:10. Spot heights and those of individual features will be recorded relative to Ordnance Datum. Representative measured sections of the side of the test pit will be prepared as appropriate showing the sequences and depths of deposits.
28. A photographic record (SLR colour digital, >7 megapixel resolution) will be maintained during the course of the fieldwork with the addition of colour print photographs taken of significant archaeological features. Each image of an archaeological detail will include an appropriate scale, north arrow and header board. The topic of images will include:
 - ❖ the site prior to commencement of fieldwork;
 - ❖ the site during work, showing specific stages of fieldwork;
 - ❖ the layout of archaeological features;
 - ❖ individual features and, where appropriate, their sections; and
 - ❖ groups of features where their relationship is important.
29. All finds (artefacts and ecofacts) visible during on-site works will be collected and processed. Finds will be appropriately packaged and stored under optimum conditions, as detailed in the RESCUE/UKIC publication *First Aid for Finds* (Watkinson and Neal 1998).
30. Archaeological deposits will be sampled systematically in accordance with Rathmell Archaeology Limited standard environmental sampling practice. All investigated features believed to be significant and of anthropic origin will be sampled along with a selection of natural features and topsoil to provide control samples. Bulk samples, a minimum of 10 litres but up to 30 litres if possible, will be taken for wet sieving and flotation.
31. Should the potential archaeological features identified include funerary deposits (i.e. human skeletal material regardless of whether cremated or not) then all works on that area will be halted with the local constabulary, Client and Archaeological Curator notified.

Sites with buried human skeletal material are protected. The removal of a body from the grave is not considered theft; rather Scots common law recognises the offence of *crimen violati sepulchre* (violation of sepulchre). In essence, the crime is the disturbance of the corpse without permission. Hence, excavation will only proceed with the agreement of all parties.

Technical site reporting

32. The preliminary reporting of the on-site works will be as follows:
- a. Data Structure Report presenting the results of the on-site archaeological works and incorporating assessment of the materials recovered. In addition a narrative would explain the character of the archaeology investigated and compare this to comparable archaeology;
 - b. Preparation of a DES entry and OASIS form including grey literature upload; and
 - c. Preparation of the project archive including finds.
33. As this project will be multiphase, an initial version of the Data Structure Report will be prepared on the conclusion of the first on-site works – anticipated to be the Foundation Test Pits (see above). With the completion of each subsequent stage of on-site works a new version of the iterative report will be produced, expanding its remit to cover the latest works.
34. The Data Structure Report detailing the findings of the archaeological works will be prepared within four weeks of the completion of each stage of works and will consist of:
- ❖ a non-technical summary of the findings of the excavation;
 - ❖ a descriptions of the methodologies, geology and findings of the excavation;
 - ❖ location plan, area plans and sections of the excavated archaeological features;
 - ❖ interpretation of the archaeological features exposed and their context;
 - ❖ photographs to include general site images and key archaeological features; and
 - ❖ recommendations for analysis and publication of the material recovered.
35. A full draft of each version of the Data Structure Report will be circulated to the Client and Archaeological Curator (Historic Environment Scotland) for comment. The OASIS online report form for the fieldwork will be updated but only completed on the conclusion of all on-site works. A digital copy of the final version of the report will be uploaded to the OASIS site.
36. Following completion of fieldwork and acceptance of the final version of the report, an ordered archive of both object and paper elements will be prepared according to the recommendations in *Archaeological Archives A guide to best practice in creation, compilation, transfer and curation* (Brown 2007) and *Standards in the Museum Care of Archaeological Collections* (Museums and Galleries Commission 1992). The archive will be created in accordance with the identified repository's deposition and archiving standards. The procedures of documentations and declaration to the Treasure Trove Unit will be followed in keeping with their Practice Guide for reporting artefacts recovered. These tasks will be concluded within 3 months of the completion of the on-site works.

Project Management

Management of Health, Safety and Environment

37. Overall responsibility for health, safety and environment lies with the Project Manager. The Senior Archaeologist shall manage health, safety and environment on a daily basis

on site, and will update the Project Manager on the progress of the works on (at least) a daily basis. Prior to the commencement of any works, all site staff and sub-contractors will receive a local induction and shall be informed of the identified hazards at the site.

38. All sub-contractors shall be expected to carry out their activities in accordance with the site rules and good industry practice. The Project Manager is responsible for ensuring that all accidents, incidents and near misses are reported and, investigated, and that any necessary changes are made to this document.
39. The archaeological works shall be overseen by a Senior Field Archaeologist from Rathmell Archaeology Ltd, who will be in full time attendance for the duration. The Senior Field Archaeologist will be the central point of liaison between all parties for the archaeological field team.
40. Prior to commencement of the excavation the Senior Archaeologist shall re-asses the hazards to ensure that each location is safe to excavate and shall ensure that service clearance has been undertaken. Once this has been undertaken the Senior Archaeologist shall instruct the excavation to proceed.

Risk Assessment

41. The activities that require risk assessment in relation to the activities of Rathmell Archaeology Ltd personnel have been identified and a project specific risk assessment has been undertaken (see Appendix A below).

Inspection and Certification

42. The Senior Field Archaeologist will obtain and collate copies of CSCS Cards and other relevant certificates for equipment and staff. All such certificates will be held by the Senior Archaeologist.
43. Any equipment that has been identified as unsafe will be removed from site and replaced.

Timetable

44. The timetable for the works will be notified to all parties when it has been developed. Historic Environment Scotland will be provided with 2 weeks' notice of any works within the Scheduled Monument. The Falkirk Community Trust will also be kept informed of the progress of works.
45. The reporting would be completed within four weeks of the completion of on-site works. The full draft of the report will be circulated digitally to all parties for comment prior to being finalised.

Project team

46. The lead field archaeologist for the project from Rathmell Archaeology Ltd will be Mr Thomas Rees, an experienced field archaeologist. The archaeologist responsible for supervising the field team and undertaking the excavation will be Mr Liam McKinstry, an experienced field archaeologist.
47. Before commencing work on site all staff will undertake Induction – covering the review of this RAMS document. Site safety Tool Box Talks will be undertaken every Tuesday morning before the commencement of site works while volunteer staff will be given an induction refresh every morning. All professional site staff will hold a valid CSCS card. The minimum Personal Protective Equipment requirement is:

- ❖ Hi-visibility clothing – double banded yellow hi-visibility vest to EN471;
- ❖ Safety Helmets to comply with EN 397 where appropriate;
- ❖ Robust work boots; and

- ❖ Protective gloves EN388.

48. Additional to these mandatory items additional task specific PPE shall be worn when specified within the task specific method statement.

Welfare and the Control and Disposal of Waste

49. Welfare will be provided through the use of public facilities.
50. Due to the nature of the work little to no waste should be produced.

Insurance

51. Rathmell Archaeology is fully indemnified and all necessary insurances can be presented on request. A summary of insurances held is presented below:

- ❖ *Public Liability Insurance* - [REDACTED]
- ❖ *Employer's Liability Insurance* - [REDACTED]
- ❖ *Professional Indemnity Insurance* - [REDACTED]

Working Arrangements

52. Working hours will be between 08:00 and 17:00 hours. Access to all work areas will be via an agreed route on site.
53. Welfare facilities are available as listed below:

Equipment/Facility	Location
First Aid Kit	First Aid kit will be held with the company van
Mobile Phone	All Rathmell personnel to have phones with them
Clean Water Supply	Bottled water held on-site
Toilet & Hand Washing Facilities	Local public facilities
Storage / Changing Facilities	Not required

Fire and Emergency

54. In the event of a fire the alarm will be raised verbally:
- ❖ Alert everyone on the site and retreat to a pre-determined muster point. Muster point will be determined on site at commencement of works; and
 - ❖ Call the emergency services.

Security

55. Access to the site when not in use will be restricted by the secure fencing, warning signs alerting the public to the danger of deep excavations will be erected on the boundary.

Storage and use of Hazardous Substances

56. No hazardous substances are anticipated to be used on site.

Incident Reporting and Emergency Plan

57. In the event of a significant accident, incident, including environmental incident or near miss (i.e. injury, illness due to contaminant exposure, damage to underground services) occurring on site, the following additional procedures will be followed:
- ❖ If minor injury remove casualty (if applicable) to a safe area and treat with first aid or remove to local A&E Department;
 - ❖ If major injury or incident call the emergency services;
 - ❖ Inform the Senior Field Archaeologist of the problem and record incident in local accident book (if available); and
 - ❖ Notify the Rathmell Archaeology Ltd Project Manager by the quickest possible means, who will identify if there is a need to notify the HSE or other parties (i.e. Client, sub-contractor organisation).
58. Everyone on site will be encouraged to report all near misses and hazards, using the local accident book.

Health, Safety and Environmental Responsibilities

59. Any person found to be interfering with or abusing any item provided for health, safety and welfare, or indulging in horseplay, may be liable for dismissal from site or disciplinary action. This also applies where interference or recklessness relating to environmental control measures leads to environmental damage or harm.
60. The use of drugs and alcohol are strictly prohibited. Any person found under the influence of drugs or alcohol at any point during the working day will be asked to leave the site.

Appendix A - Site Risk Management

61. Rathmell Archaeology Ltd applies the following risk management approach:
- ❖ Eliminate the hazard;
 - ❖ Reduce the hazard;
 - ❖ Isolate the hazard from people;
 - ❖ Control through safe working practice;
 - ❖ Personal protective equipment; and,
 - ❖ Discipline through audits and monitoring.
62. Risks are considered by determining a risk rating. The managed risk is that which remains after the implementation of risk abatement and control measures.
63. All staff (professional and volunteer) must be given an induction prior to commencement of works which will be recorded. Through signing the safety induction sheet staff concur that this has taken place and they have been made aware of the hazards (known and inferred) and how they must respond.

Anticipated Ground and Groundwater Conditions

64. No particular ground stability issues are anticipated, although the presence of soft spots cannot be ruled out. The site is located on a narrow path surrounded by dense tree growth and at the northern path edge the ground drops away sharply and care will have to be taken by staff while working there.

Potential Contaminants and Risk of Exposure

65. No significant forms of contamination are anticipated. Given the method of investigation and the appropriate use of PPE the risks from potential contaminants are expected to be low.

Obstructions and Services

66. Obstructions in the ground are not expected. No underground or overhead services, both statutory & private, are known to be present at the site. Copies of statutory service plans will be held on site and will be made available on site. All excavation locations will be cleared for services prior to excavation using CAT surveying.

Contacts and Emergency Provisions

	Key Contacts	Person or Agency	
Rathmell Archaeology Ltd	Consultant Archaeologist	Thomas Rees	
	Archaeologist	Liam McKinstry	
Client	Central Scotland Green Network Trust	Tommy Samuel	
Curator	Falkirk Community Trust	Geoff Bailey	
Curator	Historic Environment Scotland	Simon Stronach	
Services	Electricity	SP Energy Networks	
	Gas	National Grid Gas	
	Water	Scottish Water	
	Sewerage	Scottish Water	
	BT	BT Openreach	
Emergency/First Aid Provisions			
	Police	Commissioner Street, Bo'ness, West Lothian EH51 9AF	
	Fire	Linthgow Road, Bo'ness, EH51 0QG	
	A&E Hospital	Stirling Rd, Larbert FK5 4WR	
	First Aid Kits	In van	
	Environmental Protection Agency	SEPA	

Assessment of Risk and Actions

	Potential Hazard	Unmanaged Risk	Actions	Risk Group	Managed Risk
1	Utilities; strike hazard (underground)	High	a. Ensure staff check service drawings to locate underground services prior to excavation; b. A 2m buffer zone either side of any underground services to maintained where no works happen; c. Buffer zone to be achieved by marking out prior to excavation; d. Check with CAT all ground before machining commences; e. Assume all services exposed are live; f. No services (i.e. cables) are to be handled or touched; g. Staff to follow <i>HSE Working Sheet 1 – Utilities</i> (attached to this RAMS);	Staff	Low
2	Excavation edge collapse	High	a. Stability of all edges to the excavation to be assessed on individual basis for stepping or battering during excavation; b. Regardless of (a) above, no excavation is to be cut deeper than 1m without stepping or battering; c. Staff member must assess stability of test pits before entering at any depth.	Staff	Low
3	Excavation flooding	Moderate	a. Staff member must assess presence or absence of water before entering any excavation; b. Do not enter excavations where the bed of the area is not visible; c. Do not enter water; d. Where flooding occurs excavation areas should be pumped dry and filled in as a matter of priority.	Staff	Low
4	Public Roads; hazard	Low	a. Care to be taken when joining / leaving public	Staff	Very low

	from movement		b.	roads; Staff will ensure they have changed out of inappropriate PPE to ensure safe driving.		
5	Trip/Fall, uneven/steep sloping ground	Moderate	a.	Walk with care and ensure appropriate footwear is worn.	Staff	Low
			b.	Fencing used to cordon off steep slope edges close to working area to ensure staff safety		
6	Manual Handling; impact from manual labour	Moderate	a.	All Staff to receive Manual Handling training prior to the commencement of work;	Staff	Low
			b.	Staff will be reviewed during the works to recognise manual handling risks;		
			c.	Staff will wear appropriate PPE;		
			d.	Staff to follow <i>HSE Working Sheet 9 – Manual Handling</i> (attached to this RAMS);		
7	Public; hazard to self	Low	a.	Public will be excluded through use of a fence and clear signage.	Public	Very Low
			b.	No deep excavation (greater than 750mm) will be left open overnight		
8	Other Site users; hazard from operations	Low	a.	Project officer will liaise with other land users to ensure no overlap of site use.	Staff	Very low
9	Danger of infection from rats or vermin	Moderate	a.	Staff will wear gloves as appropriate, wash hands before and after working;	Staff	Low
			b.	Wash hands before eating;		
10	Danger of adverse impact on ecology	Low	a.	Ensure any wild animal activity reported;	Environment	Low
			b.	Do not disturb hedgerows or standing trees.		

Appendix B – Supporting Documents and References

Supporting Documents

Site location

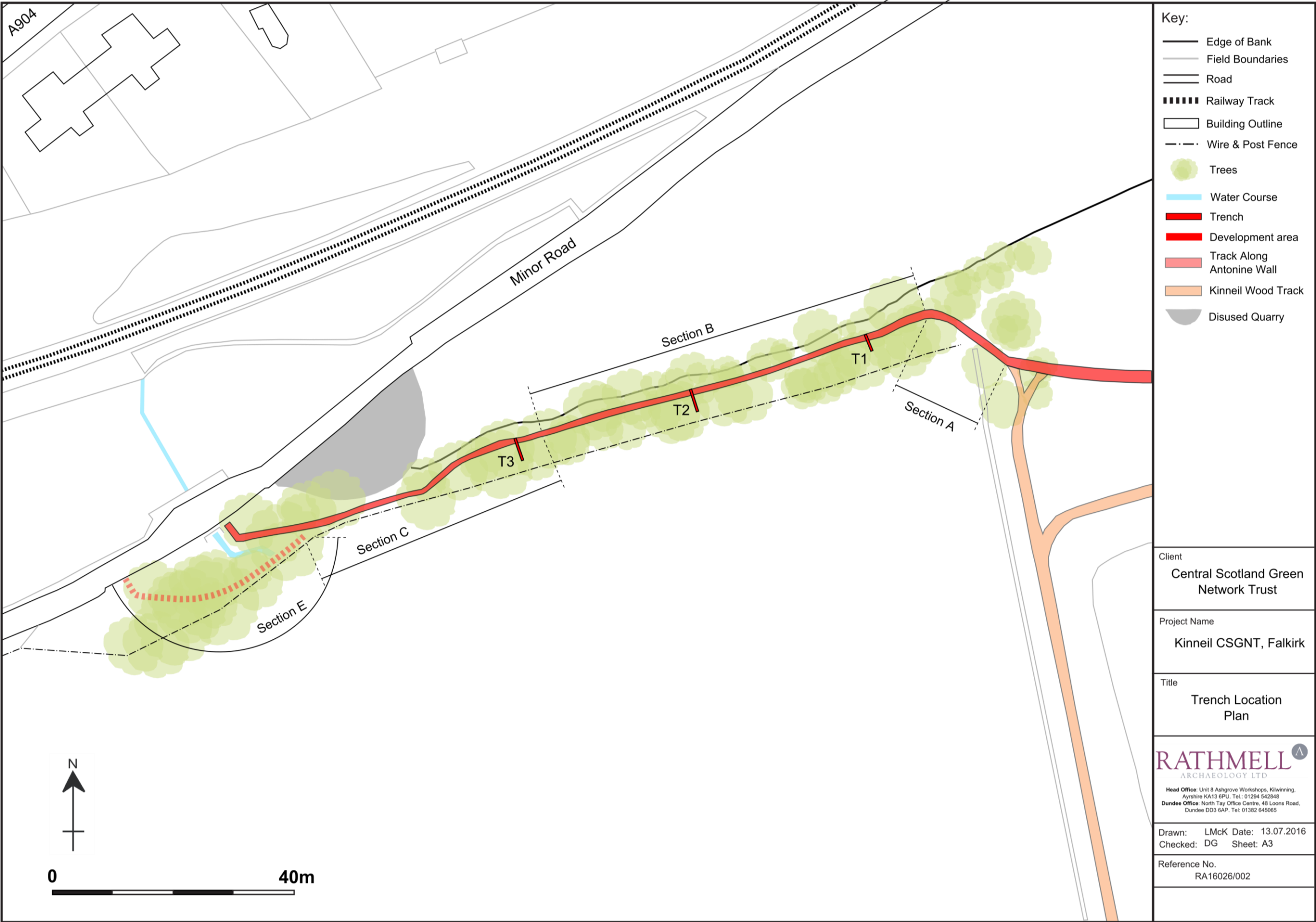
Trench Layout

Nearest A&E

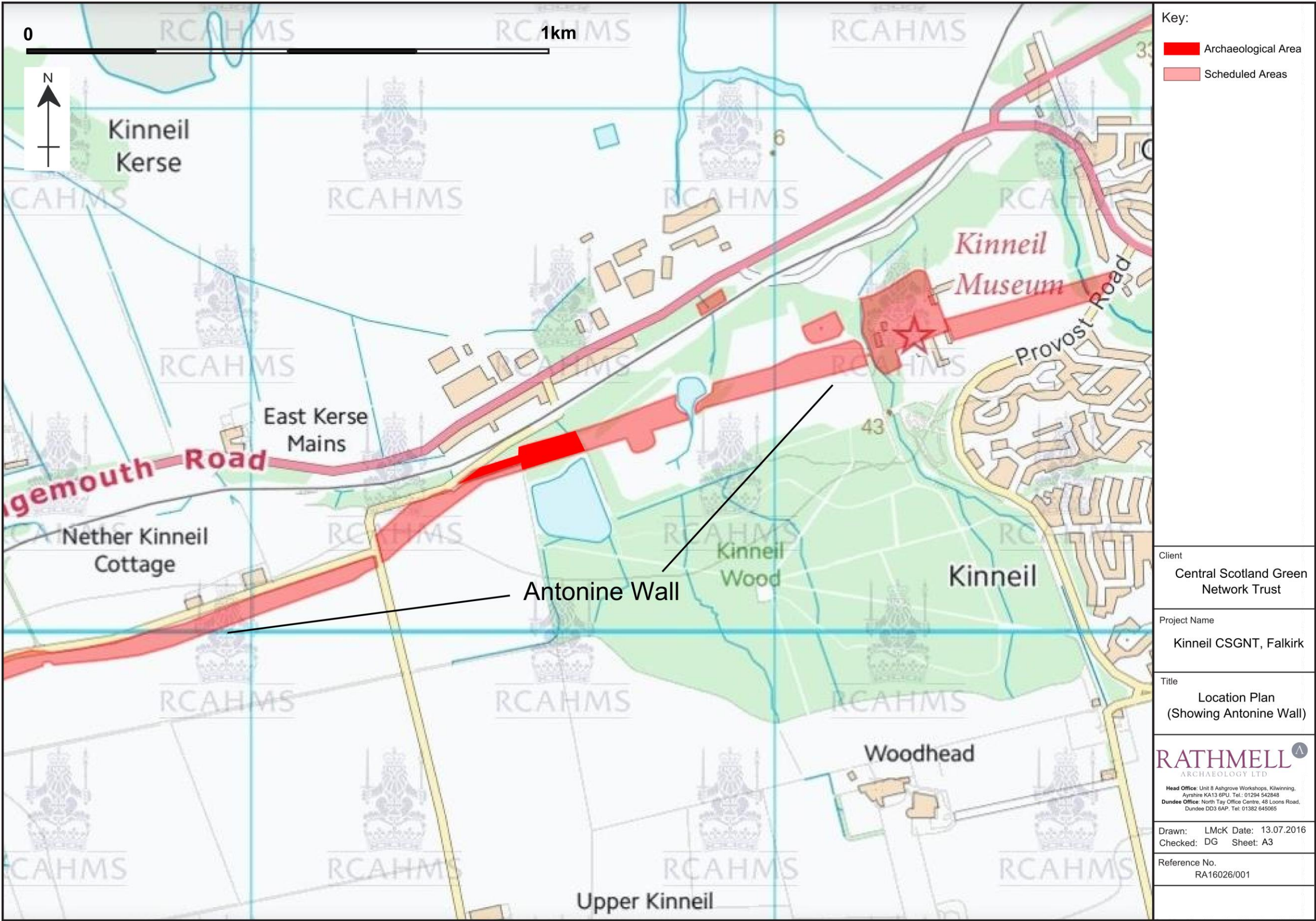
HSE Working Sheet 1 – Utilities

HSE Working Sheet 9 – Manual Handling

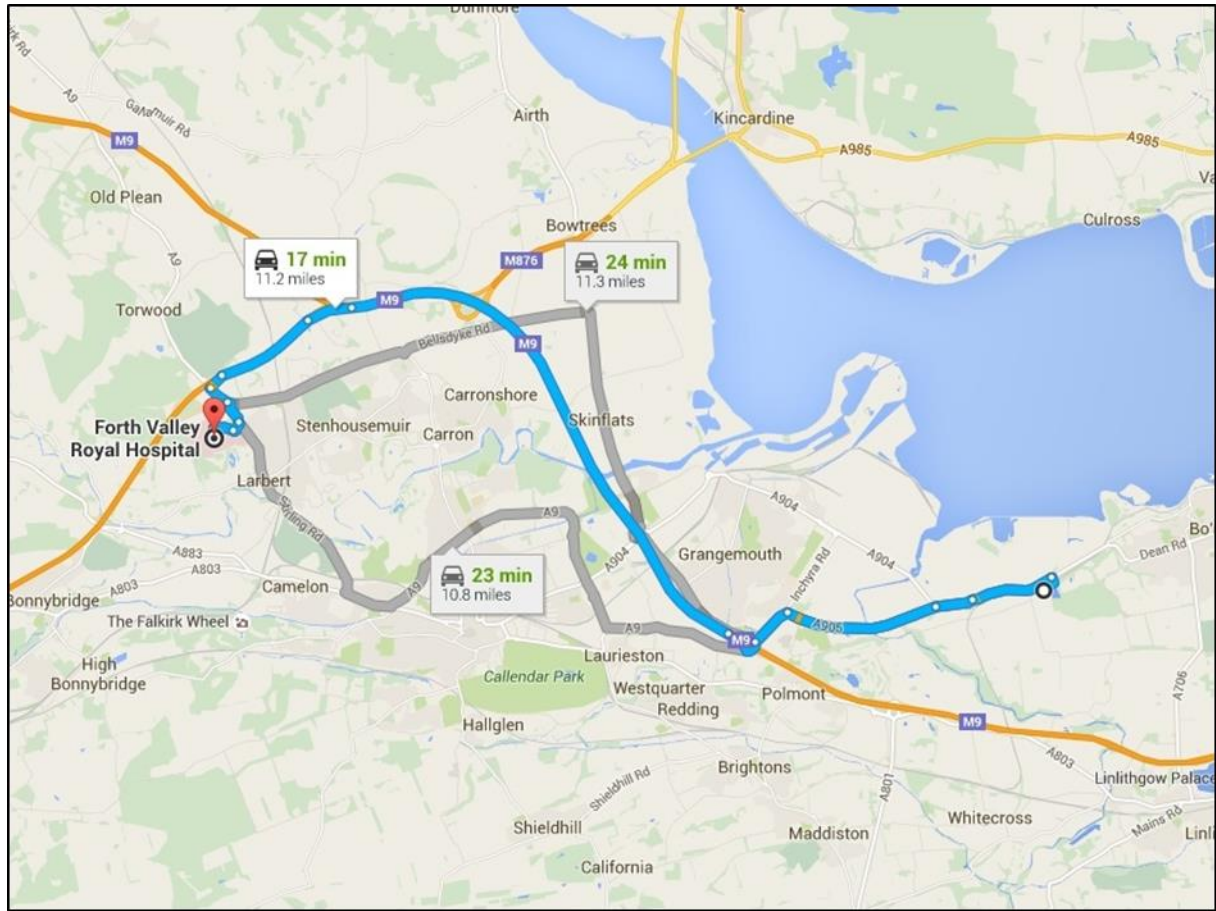
Trench Layout



Site Location



Nearest A&E Route



Get on M9 in Grangemouth from Grangemouth Rd/A904 and A905

- | | | |
|---|--|----------------|
| ↑ | 1. Head north-east towards Grangemouth Rd/A904 | 7 min (3.6 mi) |
| ↙ | 2. Turn left onto Grangemouth Rd/A904 | 0.2 mi |
| ⦿ | 3. At the roundabout, take the 1st exit and stay on Grangemouth Rd/A904 | 0.8 mi |
| ⦿ | 4. At the roundabout, take the 1st exit onto A905 | 0.4 mi |
| ⦿ | 5. At the roundabout, take the 1st exit onto Inchyra Rd/A905 | 1.5 mi |
| ⦿ | 6. At the roundabout, take the 3rd exit onto the M9 slip road to Stirling/Kinross Br./Glasgow/M876 | 0.4 mi |

Continue on M9 to Larbert. Take the exit for A9 from M876

- | | | |
|---|---------------------------------------|----------------|
| ⤴ | 7. Merge onto M9 | 7 min (6.8 mi) |
| ↘ | 8. Take the M876 exit towards Glasgow | 5.2 mi |
| ↑ | 9. Continue onto M876 | 0.4 mi |
| ↘ | 10. Take the A9 exit | 1.0 mi |
| | | 0.2 mi |

Continue on Stirling Rd/A9 to your destination

- | | | |
|---|---|----------------|
| ↙ | 11. Turn left onto Stirling Rd/A9 | 3 min (0.8 mi) |
| ⦿ | 12. At the roundabout, take the 3rd exit and stay on Stirling Rd/A9 | 0.2 mi |
| ⦿ | 13. At the roundabout, take the 3rd exit | 0.3 mi |
| | ▲ Restricted-usage road | 486 ft |
| ↘ | 14. Turn right | 92 ft |
| | ▲ Restricted-usage road | 62 ft |
| ↘ | 15. Turn right | 62 ft |
| | ▲ Restricted-usage road | 0.2 mi |
| ↙ | 16. Turn left | 0.2 mi |
| | ▲ Restricted-usage road | 246 ft |
| ↙ | 17. Turn left | |
| | ▲ Restricted-usage road | |

HSE Working Sheet 1 - Utilities

74. The following HSE Working Sheet has been compiled for your safety and to reduce potential damage to underground and overhead services.

- ❖ Damage to underground services can cause fatal or severe injury;
- ❖ Damage to electricity cables can cause a flash leading to severe burns or even death;
- ❖ Underground Services can be found in roads, footpaths & on site;
- ❖ Overhead Services can cross any ground;
- ❖ Always assume underground services are present and always visually check for way markers and overhead services;
- ❖ Treat all services as live, despite their appearance/condition, especially in derelict structures;
- ❖ Accidents have happened because people have mistaken one service for another.

Before Starting Work

- ❖ Refer to D0010 'Technical Guidance – Utility Search'
- ❖ Make sure you have plans of the underground and overhead services lines for the area of your work;
- ❖ You may need to get permissions from certain utilities to excavated within set distances of the service line, CHECK;
- ❖ When working with overhead services, check the distance machines must refrain from approaching lines, goalposts may also need to set up to allow machines to track under overhead cable, height limiters may need to be installed on machines working in close proximity. CHECK;
- ❖ Remember, individual property services from the main to a building will not be shown;
- ❖ Always use a cable locator to trace cables both prior to and during your works. Plastic pipes cannot be located by cable locator; Cables with no electric current running through them cannot be located by cable locator
- ❖ Mark the position of cables using paint or other waterproof marking on the ground;
- ❖ Hand dig trial holes (as many as necessary) to accurately locate the position of services in the area of your work.

When You Start Work

- ❖ Always try to hand dig near buried services with insulated spades & shovels do not use picks or forks;
- ❖ Keep an eye open for further signs of services as work continues (way markers, sub stations, pumping stations etc), as there may be more than a single pipe/cable etc;
- ❖ Repeat checks with cable locators as excavations progress;
- ❖ Backfill around services with a fine soil or sand material;
- ❖ Report all damage to services immediately;

- ❖ DO NOT attempt to make repairs yourself;
- ❖ DO NOT use power tools within 500mm of the known position of any plant;
- ❖ DO NOT use service cables or pipes as a step or handhold when getting in/out of an excavation;
- ❖ DO NOT handle or attempt to alter the position of an exposed service;
- ❖ Cable/pipe depths can and do change due to various circumstances - NEVER assume depth without hand digging;
- ❖ Also look out for disturbed ground, cellars or bridges.

75. If you adhere to the above precautions your own safety will be greatly increased and in turn will help reduce the risk of damage to Services.

Further Reading

76. available from the H&S Advisor Douglas Gordon

- ❖ HSE Guidance 'Avoiding Danger from Underground Services'
- ❖ HSE Leaflet 'Avoidance of danger from overhead electric power lines'
- ❖ Scotland Gas Networks 'Safe working in the vicinity of Scotland Gas Networks high pressure gas pipelines and associated installations'
- ❖ INEOS 'Conditions and Restrictions for work in close proximity to INEOS Pipelines'

Prepared by Douglas Gordon

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HSE Working Sheet 9 – Manual Handling

77. The following safe working procedure has been compiled for your safety and to reduce potential damage to yourself through manual handling:

- ❖ Improper manual handling can lead to musculoskeletal disorders (MSD's);
- ❖ MSD's are for the most part painful though temporary, however can also become persistent lifelong ailments;
- ❖ Proper manual handling can reduce the chance of injury.

Shovelling

- ❖ Lift with your legs, not your back. Bend your knees and keep your back as straight as possible so that the lifting comes from your muscles, not your back. Never bend at the waist;
- ❖ Face the way you are shoveling, do not turn with a loaded shovel;

Step in the direction that you're throwing the spoil. This will help prevent the lower back from twisting and will help alleviate any back soreness that you might typically experience the day after a hard shoveling job;
- ❖ Create some distance between the hands. This will give you more leverage and make it easier to lift the spoil; and
- ❖ Don't overload your shovel, no need to shovel large amount at the one time.

Wheel barrowing

- ❖ Ensure the wheelbarrow is safe to use, wheel is not flat, barrow not overly corroded;
- ❖ Do not overload the barrow, several trips with smaller loads is better than one large load;
- ❖ Lift with your legs not with your back;
- ❖ Ensure barrow runs are safe, climbing at a safe angle (approx 30° or less); and
- ❖ When dumping the load, avoid twisting were possible as this will put undue pressure on your back.

Lifting large stone/loads

- ❖ Assess the load - Do not lift any stone/load that is too heavy or awkward in size or shape yourself, get someone else or several someone else's too help lift;
- ❖ Use a wheelbarrow were possible to move the stone/load;
- ❖ Check the route is clear before you lift and move;
- ❖ Ensure you can put it down safely at the other end;
- ❖ When lifting:
 - a. stand upright;
 - b. use your legs not your back to lift;
 - c. ensure a good grip; and
 - d. Keep the stone/load close to your body.
- ❖ When carrying:
 - a. Ensure you can see where you are going; and
 - b. Avoid bending, twisting and changing grip.

- ❖ When putting down:
 - a. Use your legs; and
 - b. Beware trapping finger/toes.



78. If you adhere to the above precautions your own safety will be greatly increased and in turn will help reduce the risk of damage to yourself.

Further Reading

79. Available from the H&S Advisor Douglas Gordon
- ❖ HSE Guidance 'Manual Handling Operations Regulation 1992'
 - ❖ HSE Leaflet 'Manual Handling Charts'

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Appendix C – Contact Details

80. Rathmell Archaeology can be contacted at our Registered Office or through the web:

Ayrshire Office:

Rathmell Archaeology Ltd www.rathmell-arch.co.uk

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