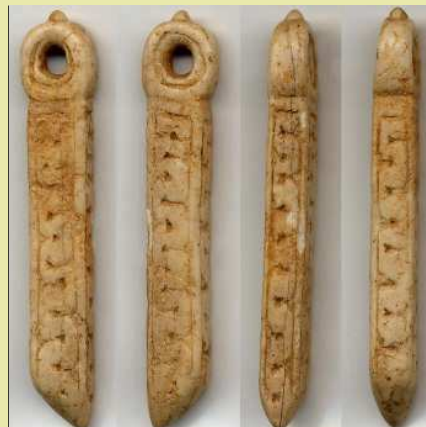


HERITAGE NETWORK

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STANBOROUGH SCHOOL Welwyn Garden City, Hertfordshire

HN1456

ARCHAEOLOGICAL PROJECT DESIGN

[Revision A]

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HERITAGE NETWORK

Registered with the Chartered Institute for Archaeologists

Managing Director: David Hillelson, BA MCifA

STANBOROUGH SCHOOL Lemsford Lane, Welwyn Garden City, Hertfordshire

Project ref.: HN1456
Planning refs.: 6/2017/2972/FULL and 6/2018/1956/FULL
HER consultation: 194/18
Museum ref.: WEWHM 2018.24

Archaeological Project Design

Prepared on behalf of Stanborough School

by

Chris Turner, BSc (Hons) MCifA

November 2018

[Revision A, 29 January 2019: Added Trench 7]

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1. Introduction

1.1 This Project Design has been prepared at the request of Lyster, Grillet and Harding Ltd, acting on behalf of Stanborough School, to cover a programme of archaeological work to be carried out as part of the development of Stanborough School, Lemsford Lane, Welwyn Garden City, Hertfordshire, AL8 6YR.

1.2 The programme of archaeological work is intended to cover the site of a new teaching block and that of a new music block. The teaching block is awaiting planning consent from *Welwyn Hatfield Borough Council* (WHBC) under application ref. 6/2018/1956/FULL, which is expected to be granted with the inclusion of a standard archaeological condition, issued under the provisions set out in the Ministry of Housing, Communities and Local Government's revised *National Planning Policy Framework* (NPPF). Planning consent for the new music block has been granted by WHBC (ref: 6/2017/2972/FULL), and has been subject to a standard archaeological condition (Condition 3), which states that:

No development shall take place until an Archaeological Written Scheme of Investigation has been submitted to and approved by the Local Planning Authority in writing. The scheme shall include an assessment of archaeological significance and research questions; and:-

- 1. The programme and methodology of site investigation and recording;*
- 2. The programme for post investigation assessment;*
- 3. Provision to be made for analysis of the site investigation and recording;*
- 4. Provision to be made for publication and dissemination of the analysis and records of the site investigation;*
- 5. Provision to be made for archive deposition of the analysis and records of site investigation; and*
- 6. Nomination of a competent person or persons/organisation to undertake the works set out within the Archaeological Written Scheme of Investigation.*

The development shall not be implemented other than in accordance with the programme of archaeological works set out in the approved Archaeological Written Scheme of Investigation.

The development shall not be occupied until the site investigation and post-investigation assessment has been completed in accordance with a programme set out in the approved Written Scheme of Investigation and provision made for analysis and publication where appropriate.

REASON: *To ensure that a historical record is kept of any archaeological finds due to the implementation of the development and to comply with the National Planning Policy Framework 2012 and Policy R29 of the Welwyn Hatfield District Plan 2005.*

1.3 The scheme of archaeological investigation on the site will include one or more stages of field investigation, together with analysis and report preparation, leading to the publication of the findings and the deposition of the project archive with an approved repository. The present document represents the *written scheme of investigation* required by Condition 3 and includes a research design, an outline of the investigative process that is to be followed, and a method statement for the first stage of investigation, as defined in advice provided by the

Historic Environment Team (HET) of Hertfordshire County Council, acting as adviser to WHBC. A mitigation strategy and further method statements may be prepared for subsequent stages of work.

1.4 The school lies at the south western edge of Welwyn Garden City, on the southern side of Lemsford Lane and to the west of Stanborough Road. The River Lea runs 250m to the south. The site covers existing hard standing and grassed playing areas, situated to the west of the present school buildings, centred on NGR TL 22800 11610.

1.5 The development proposes the construction of a new music block, replacement tarmac play areas, and a new teaching block, with associated services and landscaping. In addition, there will be new parking area on the eastern side of the site adjacent to the sports centre.

2. Research Design

Archaeological Background

2.1 In order to establish the archaeological and historical context for the site, the overview set out below has been drawn from the Hertfordshire *Historic Environment Record* (HER), the Heritage Network's own records and other sources. The study area extends to a radius of 500m around the centre of the site.

2.2 The earliest evidence for activity within the study area is in the form of Neolithic finds. These include a scraper, which was found 160m to the north west of the site (HER 11762), and part of a polished flint axe which was found 340m to the west (HER 2806).

2.3 The development site is located within *Area of Archaeological Significance 11* (AAS11), identified in the Local Plan as the probable extent and immediate surroundings of a significant Late Iron Age or Early Romano-British palisaded enclosure settlement.

2.4 During the late Iron Age the enclosed settlement appears to have been largely abandoned, but there is some evidence for continued use of the site in the early Roman period. Later cremations were found outside of the enclosure ditches.

2.5 The enclosure ditches were identified during excavations in the 1930s and 1950s, and during evaluation work in the 1990s (Events EHT4166 & EHT4359). Subsequent monitoring of groundworks for new school facilities in the late 1990s (Events EHT4752 & EHT4757), found that much of the land had been terraced when the school was built (HER 161).

2.6 Cremations dating to the Iron Age were found 380m to the north west of the site (HER 2804).

2.7 A small fragment of Roman samian pottery was found underneath a layer of peat that was excavated during the construction of the Stanborough boating lake, 300m to the south of the site (HER 2799).

2.8 The route of a Roman road (Viatores' route 214) is suspected to run through Welwyn Garden City, but there is currently no evidence to confirm the actual route (HER 4661).

2.9 The western boundary of Woodhall Park (HER 18114), a medieval deer park, may follow Stanborough Road, close to the site, but its extent is masked by a post-medieval and possibly enlarged park, which was established by 1695.

2.10 Historic mapping shows the site as open agricultural land until the school was established in the 1930s.

Aims and Objectives

2.11 The aims of the present investigation shall be:

- to establish the location, depth, extent, date, character and condition of any remains that are liable to be threatened by the development;
- to consider the local and regional archaeological and historical context of such remains, and their significance and quality, in relation to current published regional research;
- to ensure that an appropriate strategy for the mitigation of damage or destruction of any such remains is adopted before the development proceeds.

2.12 It is considered that this investigation has the potential to contribute to a number of regional research aims, including:

- a greater understanding of settlement in the area from prehistory onwards;
- a greater understanding of Neolithic activity within the Lea Valley;
- a greater understanding of the nature and extent of the Iron Age settlement and funerary practices;
- the transition between the late Iron Age and early Roman activity;
- the development and extent of medieval manors and associated parks;
- a greater understanding of the nature and extent of agriculture practices from the medieval period onwards.

3. Scheme of Investigation

3.1 The programme of archaeological work leading to the discharge of Condition 3 of the planning consent for the present development is intended to be an incremental process, the nature and extent of each new stage being dependent on the results of the foregoing stage(s).

Stage 1

3.2 In accordance with the advice provided by the HET, the first stage of work will involve the excavation of a trial trenches in the areas affected by the new development, in order to evaluate the archaeological potential of the site. This approach is intended to characterise the complete stratigraphic sequence while minimising unnecessary destruction of the archaeological resource.

3.3 Following the evaluation fieldwork, the findings will be reviewed in consultation with the HET. If no remains of archaeological significance have been identified, and it is agreed that no further work on site is warranted, the trenches will be reinstated and a report on the results of the evaluation will be prepared in an appropriate form.

Stage 2

3.4 If remains of archaeological significance are identified, an Evaluation Report on the findings will be prepared, together with a strategy and method statement for a further stage of works intended to mitigate the effects of the development on the identified remains. Such mitigation could include:

- the appropriate recording and protection of the identified remains and their preservation in situ beneath the development;
- the open area investigation of all or part of the footprint of the development to allow for the appropriate recording of all identified archaeological features and deposits that meet the research criteria of the project;
- the monitoring of groundworks to ensure that an appropriate record is made of any archaeological features and deposits that are directly impacted by the development groundworks and that meet the research criteria of the project.

3.5 On completion of the mitigation fieldwork, the findings will be reviewed in consultation with the HET. If no new data have been recorded as a result of the mitigation strategy that was adopted, the previously prepared Evaluation Report will be updated, finalised and submitted for the approval of the LPA as the definitive report on the results of the project, and, subsequently, published in an appropriate form. The documentary and material archives for the project will also be finalised and deposited with the agreed repository, in this case, Mill Green Museum, Hatfield.

Stage 3

3.6 If further data have been recorded, these will be assessed by class to consider their significance and their potential for detailed analysis. If no detailed analysis is warranted, the evaluation data will be collated in a report with the further recorded data, together with a discussion of their archaeological and historical context, and submitted for the approval of the LPA as the definitive report on the results of the project and, subsequently, published in an appropriate form. The documentary and material archives for the project will also be finalised and deposited with the agreed repository, in this case, Mill Green Museum, Hatfield.

Stage 4

3.7 If further analysis is considered to be necessary, an Assessment Report detailing the work to be undertaken will be prepared, including:

- a statement of the research aims of the fieldwork and an illustrated summary of results to date indicating to what extent the aims were fulfilled or extended;
- a summary of the quantities and potential for analysis of the information recovered for each category of finds, dating and environmental data;
- a list of the project aims as revised in the light of the results of fieldwork and post-excavation assessment;
- a list of the methods that will be used to achieve the research aims;
- a list of all the main tasks involved in using the stated methods to achieve the aims and produce a report and research archive in the stated format, wherever possible linking each task explicitly to the relevant method statement and indicating the personnel and time in days involved in each task (allowance will be made for general project-related tasks such as monitoring, management and project meetings, editorial and revision time);
- a provisional report synopsis, broken down into chapters, section headings and sub-headings, with approximate word lengths and numbers and titles of illustrations per chapter; the structure of the report synopsis should explicitly reflect the research aims of the project;
- a list of the personnel involved indicating their qualifications for the tasks undertaken;
- a cascade or Gantt chart indicating tasks in the sequence and relationships required to complete the project to publication;
- provisional publication options indicating potential publisher(s) and report format.

Stage 5

3.8 Once the Assessment Report has been approved by the HET, the defined analysis can be undertaken leading to the preparation of a definitive report on the results of the project, publication in an appropriate form, and the deposition of the documentary and material archives for the project with the agreed repository, in this case, Mill Green Museum, Hatfield.

4. Structure and General Practice

Introduction

4.1 The Heritage Network is an independent practice specialising in archaeology and the historic environment. Founded in 1992, the company has undertaken a wide variety of commercial archaeological projects for clients involved in housing and industrial development, pipeline and road construction, agriculture and landscaping. As a Registered Organisation, the company is monitored annually by the Chartered Institute for Archaeologists to ensure that its work meets the highest professional standards.

Project Management

4.2 The Project will be administered and co-ordinated by David Hillelson BA MCIFA, the Heritage Network's Archaeological Director. He holds an honours degree in archaeology from the University of Durham and has over thirty-five years' experience of the management of archaeological projects, and of fieldwork in both urban and rural contexts.

4.3 Fieldwork will be managed by Chris Turner BSc MCIFA, the Heritage Network's *Operations Manager*. Chris holds an honours degree in Archaeological Science from the University of Bradford, and has over twenty years of practical archaeological experience in the commercial sector.

4.4 Off-site research and analysis will be managed by Helen Ashworth BA ACIFA, the Heritage Network's Research Manager. She holds a degree in English and History from Middlesex Polytechnic, the Certificate in Field Archaeology from the University of Oxford, and has over thirty-five years of fieldwork and post-fieldwork experience.

Staffing

4.5 The Heritage Network employs technical and specialist staff with a broad range of complementary experience covering all aspects of research, recording and analysis of archaeological and historical structures, features, and deposits, together with the artefacts and ecofacts associated with them.

4.6 Field staff on the project will normally be expected to have the following qualifications:

- a) All Project Officers will have had at least four years' experience in the field, with at least one of those at supervisory grade. They will also be corporate members of the Chartered Institute for Archaeologists.
- (b) All Assistant Project Officers will have had at least three years' experience in the field. They will also be corporate members of the Chartered Institute for Archaeologists.
- (c) All other members of the team will have had a minimum of two years' experience in the field. Corporate or affiliate membership of the Chartered Institute for Archaeologists will be considered desirable.

Specialist Support

4.7 While members of the project team have the necessary local, academic and professional knowledge to examine a broad range of artefacts and ecofacts, and to undertake the majority of tasks required in archaeological practice, provision will be made for academic advice and technical services to be sought from appropriate recognised specialists if required. The current list of relevant specialists is given below:

Ceramics: Prehistoric	Emily Edwards, Kinver
Ceramics: LPRIA/Romano-British	Helen Ashworth, Heritage Network
Ceramics: Medieval/post-medieval	Paul Blinkhorn, Northampton
Ceramics: Saxon	<i>Ditto</i>
Conservation	Julia Park Newman, Conservation Services
Decorative metalwork: IA/Roman	Angela Wardle, Stevenage
Dendrochronology	Dr K. Lucus, Reading University
Environmental analysis	James Rackham, Environmental Archaeology Consultancy
Faunal remains	<i>Ditto</i>
Flints	Keith Fitzpatrick-Matthews, N Herts Museums
Geophysical surveying	SUMO Services
Human remains	Malin Holst, York Osteoarchaeology
Industrial residue analysis	Jane Cowgill, Lincolnshire
Numismatics	M.Curteis, BA AMA, Essex
Palynology	Rob Scaife, Palaeopol
Petrology	D. Williams, Southampton University
Radio carbon dating	SUERC, Glasgow

Standards

4.8 The Heritage Network's general operational procedures for archaeology are documented in a series of manuals which are available for consultation on site and in our offices.

4.9 The Heritage Network is registered with the *Chartered Institute for Archaeologists* (CIfA) and undertakes to follow the Code of Conduct of the CIfA, the *Standards for Field Archaeology in the East of England* published by the Association of Local Government Officers (ALGAO), and the relevant sections of the professional standards and guidelines set by the CIfA, the *Historic Buildings and Monuments Commission for England* (Historic England), the *United Kingdom Institute of Conservation* (UKIC), and such others as may be appropriate to the effective execution of the project.

4.10 The Heritage Network is registered with Constructionline, and is accredited by the *Contractors Health and Safety Scheme* (CHAS). All staff hold *Construction Skills Certification Scheme* (CSCS) cards covering Health and Safety. The company undertakes to follow all relevant Health and Safety regulations, and receives support and advice on health and safety matters from QDOS Consulting through the *Federation of Archaeological Employers and Managers* (FAME). A risk assessment for the project has been prepared.

4.11 The Heritage Network is fully insured for Public Liability under the group policy held by the Council for British Archaeology (Aviva Archaeology Policy no.00172) and for Professional Indemnity with Hiscox Underwriting Ltd (Policy no. HU PI 9129989/1052).

Copyright

4.12 The Heritage Network shall retain full copyright of any commissioned reports, tender documents or other project documents, under the *Copyright, Designs and Patents Act 1988*, with all rights reserved; excepting that it hereby provides a non-exclusive licence to the client for the use of such documents by the client in all matters directly relating to the project as described in the *Project Brief* and the *Project Design*.

4.13 The Heritage Network will assign copyright on completion of the project to the museum or repository undertaking the ultimate curation of the archive, but will retain the right to be identified as the author of all project documentation and reports as defined in the *Copyright, Designs and Patents Act 1988* (Chapter IV, s.79).

Monitoring

4.14 Hertfordshire County Council's *Historic Environment Team*, as the lead curatorial authority for the area, will be kept informed of the progress of fieldwork to enable the timetabling of monitoring visits at appropriate intervals.

5. Bibliography

Published and grey literature

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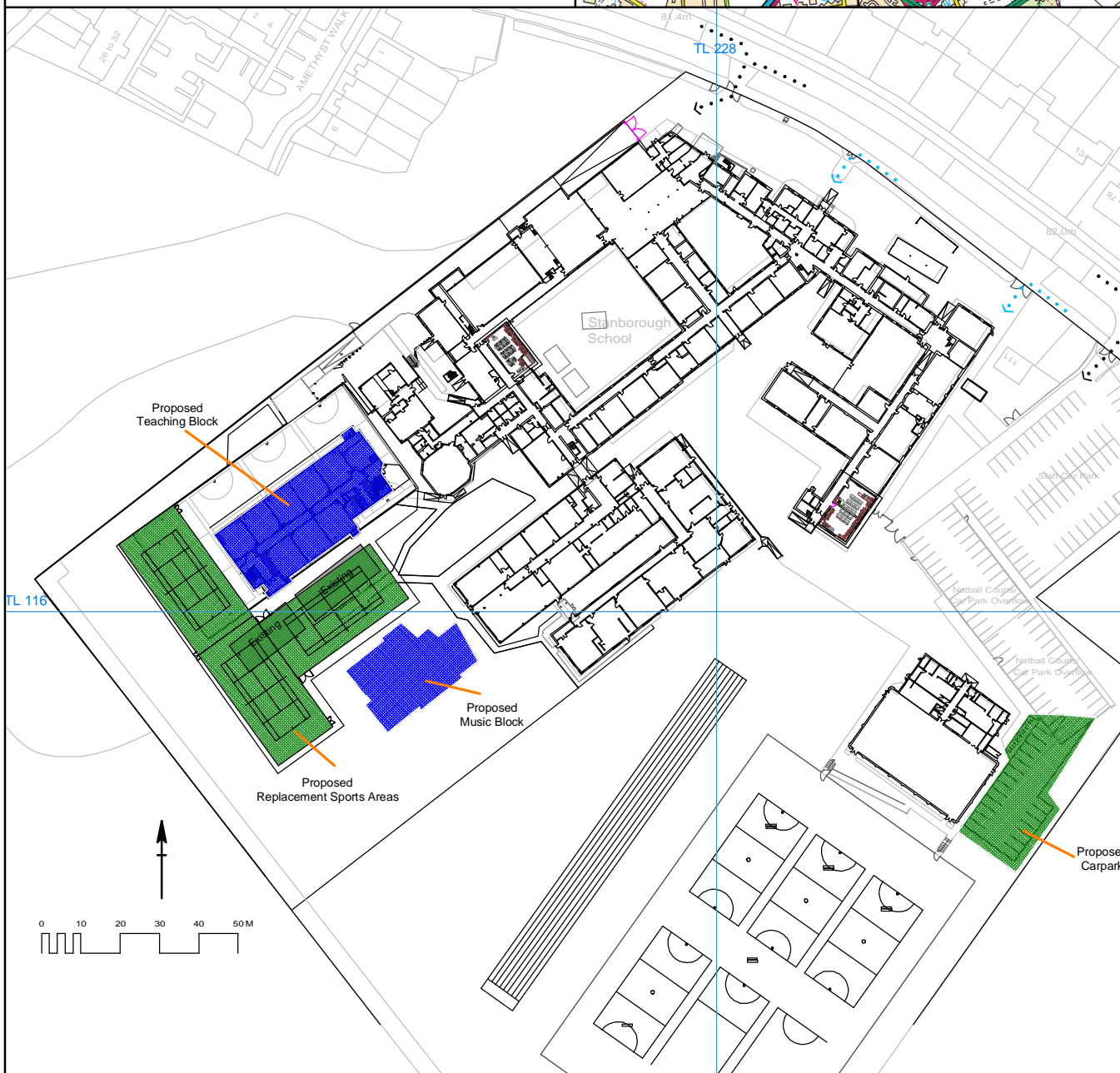
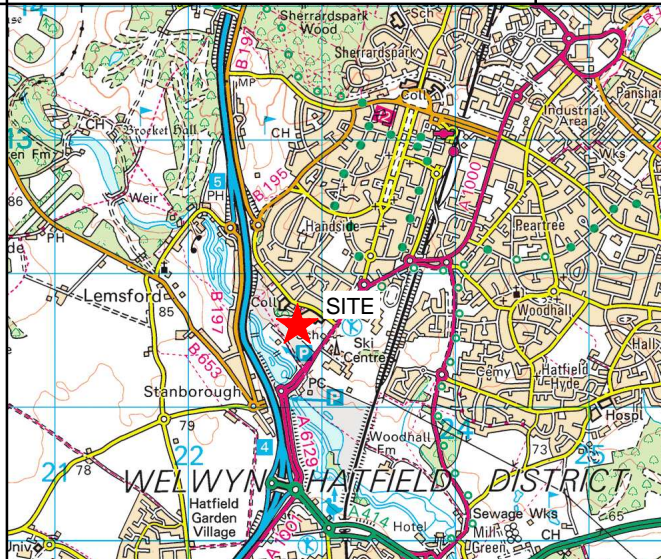
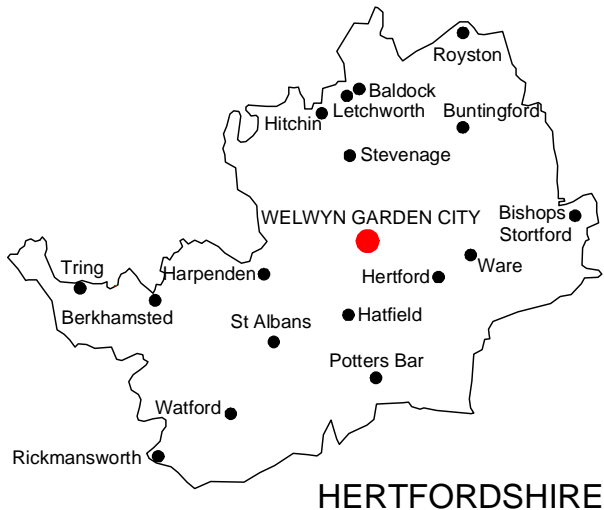
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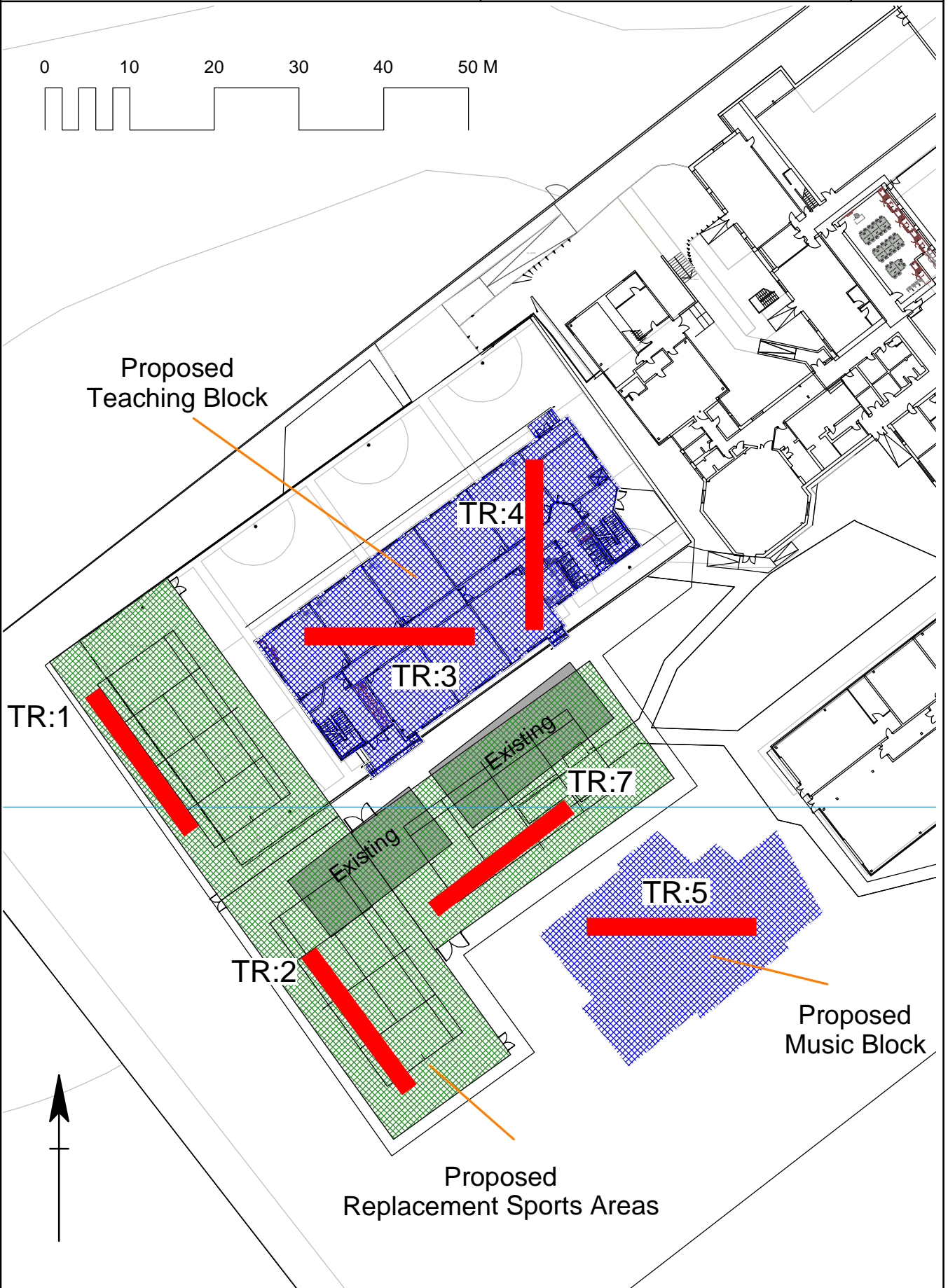
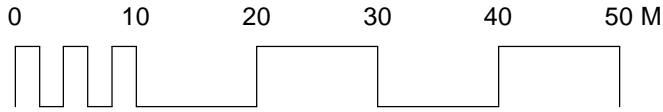
MAGIC Interactive Map. <http://www.natureonthemap.naturalengland.org.uk/>. Accessed 05/11/2018



Site location and layout

Scale 1:1600

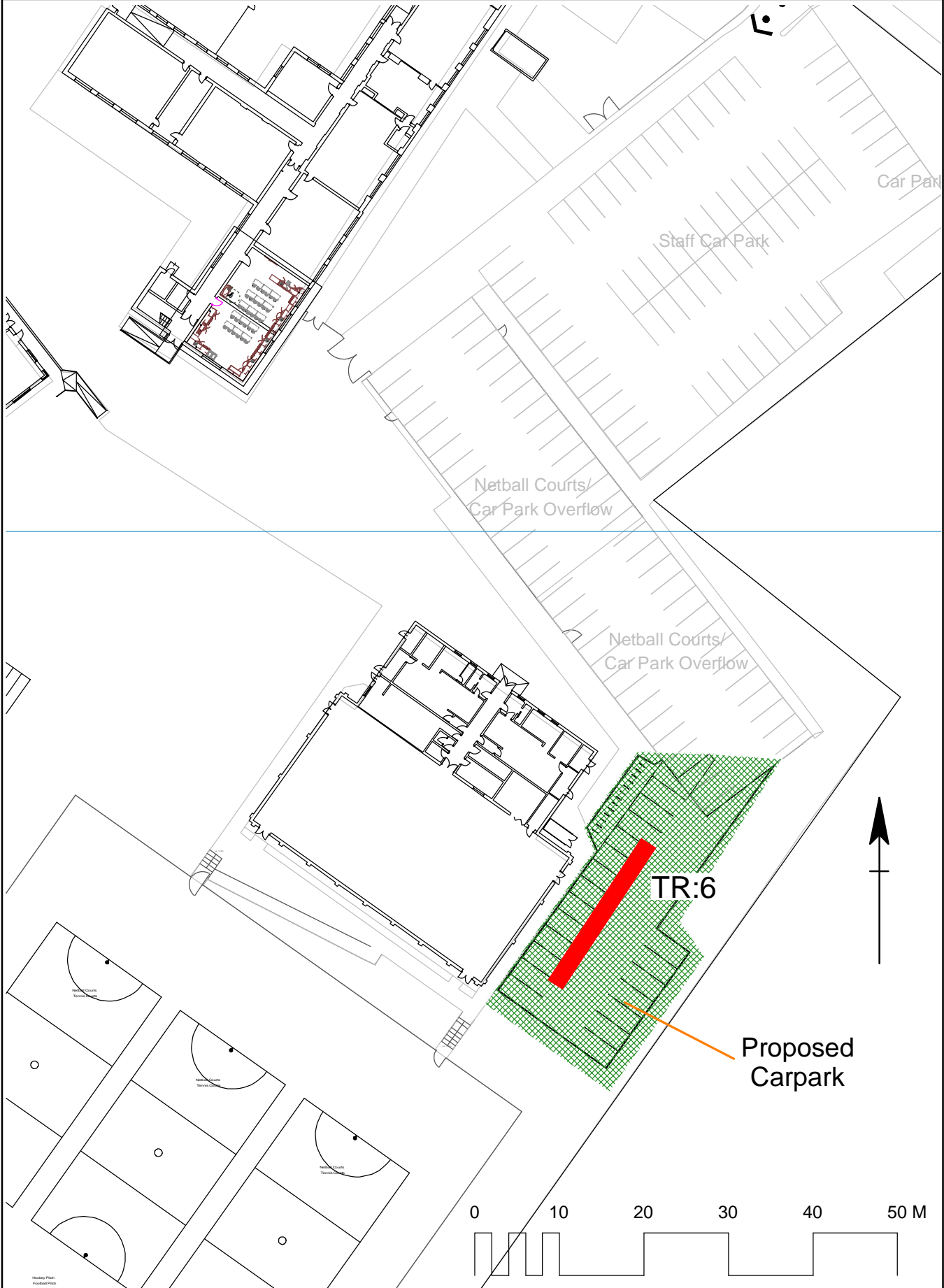
Figure 1



Proposed layout, Trenches 1-5 & 7

Scale 1:625

Figure 2



Proposed layout, Trench 6

Scale 1:625

Figure 3

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Appendix 1

Method Statement: Archaeological Evaluation

Evaluation strategy

EV 1. It is considered that the best strategy to characterise the archaeological potential of the site, and assess the survival of any archaeological deposits, will involve the excavation of trial trenches in the area affected by the proposed development. The strategy is intended to establish the nature of the stratigraphic sequence while minimising unnecessary destruction of the archaeological resource.

EV 2. A sample of 280m² is proposed, representing approximately 5.7% of the 4875m² area directly affected by the development proposals.

Site specific methodology

EV 3. Seven trenches, measuring 20m in length and 2m in width, are proposed to be excavated across the footprints of both of new teaching and music blocks, and the new replacement play areas (Figure 2) and the new parking area (Figure 3).

EV 4. The location of the trenches will be surveyed in relation to the Ordnance Survey national grid, either by triangulation from known points or by using a total station theodolite. The final location of the trenches will be subject to circumstances encountered on site.

EV 5. Within each trench, overburden will be removed down to the first significant archaeological horizon under close archaeological supervision, using a mechanical excavator fitted with a toothless ditching bucket.

EV 6. Spoil will be scanned visually and using a metal detector in order to assess the presence and survival of artefactual material in the overburden.

EV 7. All exposed archaeological features and deposits will be cleaned by hand and sampled as appropriate according to their accessibility, so as to ascertain their nature, depth, date and quality of preservation, while ensuring that unnecessary destruction of discrete features is minimised.

EV 8. Pre-excavation plans of each open trench (where potential features and deposits have been identified) will be drawn at a scale of 1:50 on polyester drafting film together with a longitudinal section or profile of the trench. Post-excavation plans of all exposed archaeological features will be drawn, at a scale of 1:20 on drafting film. Sections of excavated features will be drawn at a scale of 1:10. Intermediate contexts will be drawn in the space provided on pro-forma record forms, or on drafting film as appropriate.

EV 9. Subject to any requirement for a further work, and with the agreement of the HET and of the client, the trench will be backfilled on completion of the evaluation but no further reinstatement will take place.

NOTE: A geotechnical survey was carried out in 2018 by Ian Farmer Associates. The report indicated that there were areas of made ground on site which have the potential to contain contaminants. Borehole data indicated there were marginally elevated levels of Dibenzo(ah)anthracene, a pollutant of smoke and oils, around the tennis court area. The archaeological fieldwork will go ahead, but all on-site staff will wear appropriate PPE, including gloves, with other PPE, such as masks, being available if required. Should any other readily identifiable contaminant, such as asbestos, be encountered during the archaeological investigations, the excavation team will withdraw from the affected area until it has been appropriately cleared. Responsibility for this shall remain with the client.

Fieldwork: general methodology

EV 10. A detailed context record will be maintained on individual pro-forma record cards, designed to meet current professional standards. Each layer, fill, cut etc, will be individually numbered and described in terms of soil detail, stratigraphic position, dimensions, artefact content, samples and interpretation.

EV 11. The location of each feature will be marked on plans drawn on polyester film in relation to the limits of excavation of the trial trench. Additional drawings showing the excavated features in plan and section will be prepared at a scale of 1:20 or 1:10, as appropriate.

EV 12. A photographic record of each trial trench, and each archaeological feature or deposit, will be maintained on 35mm monochrome film and in digital format using high quality DSLR equipment. Lenses and film types will be chosen to suit the prevailing conditions. A complete register of all photographs will be included in the archive.

EV 13. All finds relating to the archaeological record of the site will be collected with reference to context and location. Finds processing will take place alongside the site work and will entail cleaning, marking, appropriate storage, quantification and initial classification. Primary conservation of artefacts will take place on site, and be supplemented by appropriate storage prior to selection for specialist attention. All registered finds will be recorded three-dimensionally in situ, either by offset measurement or by extrapolation from polar coordinates. A metal detector will be available where appropriate.

EV 14. Provision will be made for sampling and analysis of environmental data by appropriate specialists. All sampling will be carried out in accordance with the guidelines set out *Environmental Archaeology* (English Heritage 2011) and with reference to *Environmental Archaeology and Archaeological Evaluations* (Dobney et al. 1995).

EV 15. Should human remains be encountered, their location will be marked and they will be left in situ. Any decision on further investigation or removal of human remains will be the subject of a separate agreement between the Heritage Network, their clients, and the appropriate authorities.

EV 16. The physical security of all archaeological deposits, features and artefacts, both on and off the site, will be a central concern and all reasonable measures will be taken to ensure their protection before, during and after excavation.

PRESENTATION OF RESULTS

EV 17. Upon completion of the fieldwork and data gathering, a report will be prepared, which draws together the results obtained so as to meet the aims and objectives of the project, as described in Section 2, above.

EV 18. The report will be produced in the standard Heritage Network house style. One bound and one digital copy of the report will be provided to the HET and additional copies will be lodged with the planning authority and with Mill Green Museum, Hatfield.

EV 19. It is anticipated that the results of the present project would be combined with subsequent stages of work, if appropriate, and published in the local archaeological journal, or in an appropriate specialist academic journal, depending on the nature and complexity of the information recovered. The results of the present stage of work will be uploaded to the Archaeology Data Service's OASIS database together with any unpublished archive reports.

Archive Deposition

EV 20. On completion of all stages of the present project, it is intended that the full archive, including the documentary records owned by the Heritage Network, and the material records owned by the client and held in the care of the Heritage Network, will be deposited at Mill Green Museum, Hatfield.

RESOURCES AND PROGRAMMING

Fieldwork

Duration:	2 to 5 days
Staff:	1 x project officer 1 x assistant project officer

Archive and Report Preparation

EV 21. A summary report on the results of the evaluation can be made available within one week of the completion of the fieldwork, if requested, and will include an assessment of the archaeological importance of the remains. The archive and complete report will normally be available within four weeks of the completion of the entire fieldwork programme.

Timetable

EV 22. The evaluation fieldwork is subject to the determination of planning consent for the teaching block and has yet to be timetabled.

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Appendix 2

Fieldwork Risk Assessment			
Site Name:	Stanborough School, Welwyn Garden City	HN:	1456
Project Type:	Evaluation	Date:	26/11/2018
Signed:	CT	Approved:	DJH
Overall Risk BEFORE Mitigation (Low, Moderate, High)			
Moderate			
Overall Risk AFTER Mitigation			
(Negligible, Low, Low-Moderate, Moderate High-Moderate, High)			
Low-Moderate			

Remember mitigation measures MUST be put in place for hazards with a PR score of 4 or above

All hazards need to be monitored during the course of a project and reassessed if methodologies change significantly.

- Key:** Likelihood of hazard occurrence (LO) 1=Rare; 2=occasional; 3= very likely
 Potential Severity of injury (PS) 1=negligible; 2=minor injury; 3=serious injury/ fatal
- Perceived Risk (PR) Calculated using (LO x PS) 3=Normal; 4=Proceed with Caution; 5=Unacceptable
- Mitigated Risk (MR) 1=V.Low; 2=Low; 3=Normal; 4=Proceed with Caution; 5=Unacceptable

IF MITIGATED RISKS (MR) IS 5 OR HIGHER THAN THE RISK IS UNACCEPTABLE WITHOUT FURTHER ACTION TAKEN

Identified Site Specific Risks

Process	Hazard		At Risk	Potential injury	Appropriate Action (Mitigation)	Calculated Risk		
	Type					LO	PS	MR
Buried services. Services around the perimeter of tennis courts and possibly crossing the proposed music block	Striking Service cables; breaking foul water drainage	All in vicinity	Serious injury or death; stomach illness	Wear PPE; Check developers plans; use a cat scan; consult with on site foremen/ surveyor; assume all services are live; avoid contact with foul water.	2	3	6	4
Geotechnical survey recorded elevated levels of Dibenzo(ah)anthracene, apollutant of smoke and oils, in the area of the tennis courts	Contamination; hazardous waste	All in vicinity	Irritant of varying degrees of severity; Serious disease or death	Wear suitable protective suits; gloves and appropriate breathing apparatus; Observe good site hygiene; Avoid contact, direct or close proximity with harmful substances. Withdraw and inform authorities if necessary.	2	3	6	4

Other risks

Process	Hazard		At Risk	Potential injury	Appropriate Action (Mitigation)	Calculated Risk		
	Type					LO	PS	MR
Arriving and Departing								
Loading/ unloading vehicle	Carrying too much equipment; dropping equipment	All users	Back injury; foot injury; minor cuts	Follow the manual handling procedures; Training in safe lifting; caution while loading tools	2	2	4	3
Transport to and from site	Traffic accident; vehicle fire	All users	Serious injury or death	Vehicles kept in good order; all drivers have company vehicle test; properly maintained fire extinguisher in vehicle	1	3	3	2
Parking vehicles	Run down or traffic accident	All drivers	Serious injury or death	Park in designated areas on site or find a safe place to park; do not park on pavements or obstruct highways.	1	3	3	2
Site Conditions								
On site	Adverse hot weather conditions, hot/cold/ rain/ snow	All on site	Dehydration; heat-stroke; sunburn of varying degrees of severity. Increased likelihood of falling ill; exposure	Use high factor sun creams/ sunblocks; drink at least 1.5-2 litres of water; take regular breaks in shade. Wear suitable warm/ waterproof clothing; take shelter from extreme weather	2	2	4	3

Process	Hazard		At Risk	Potential injury	Appropriate Action (Mitigation)	Calculated Risk			
	Type					LO	PS	PR	MR
On site	Extreme noise		All in vicinity	Serious damage to hearing	Wear approved ear defenders; limit the time of exposure to sound.	1	3	3	2
On site	Contamination; hazardous waste		All in vicinity	Irritant of varying degrees of severity; Serious disease or death	Wear suitable protective suits; gloves and appropriate breathing apparatus; Avoid contact, direct or close proximity with harmful substances. Withdraw and inform authorities if necessary.	2	3	6	4
On site	Lone working		Worker	Injury without help or support.	Inform colleagues of whereabouts. Maintain communications with office.	1	2	2	2
Ground conditions	Tripping, or falls on uneven ground		All on site	Serious injury; muscle strains	Wear PPE; clearance if possible; Caution when walking across site, particularly when carrying equipment.	2	3	6	4
Vegetation, Plants, bushes and trees	Trips and falls, unsafe or low tree branches		All in vicinity	Serious injury; minor cuts; muscle sprains; tetanus; stomach illness; allergic reaction varying degrees of severity; poisoned	Wear PPE; If possible clear area of vegetation. Avoid direct contact with vegetation likely to cause allergic reaction; do not eat any unknown berries or fruit.	1	3	3	2
Animals	Bitten, chased or stood on by large animals (e.g. cows/horses) Contact with animal excrement or urine.		All in vicinity	Serious injury; cuts; disease	Wear PPE; If possible request the removal of animals (e.g. bulls etc) from site prior to start of work; adequate washing facilities on site. Know the symptoms of animal borne diseases.	1	3	3	2
Biting/stinging insects	Bites, stings, infection.		All in vicinity	Irritation; minor injury; disease	Wear PPE; apply suitable repellent where necessary; avoid known nests; if necessary have nests removed.	1	2	2	1
Fieldwork									
Vicinity of heavy machinery	Run down or struck by mechanical arm.		All in vicinity	Serious injury or death	Wear PPE; keep out of operating radius of machines; work with a banksman; keep within driver's field of vision.	2	3	6	4
Overhead Services	Striking overhead cables; machine arcing to power cables		All in vicinity	Serious injury or death	Never machine close to overhead services; when moving beneath overhead services the machine arm must be as low as possible and supervised; Wear PPE; Banksman to be used during all machine operations.	2	3	6	4
Buried services	Striking electric cables; breaking foul water drainage		All in vicinity	Serious injury or death; stomach illness	Wear PPE; Check developers plans; use a cat scan; consult with on site foremen/ surveyor; assume all services are live; avoid contact with foul water.	2	3	6	4

Process	Hazard		At Risk	Potential injury	Appropriate Action (Mitigation)	Calculated Risk			
	Type					LO	PS	PR	MR
Buried services	Gas pipelines		All in vicinity	Serious injury or death	Check service maps, do not mechanically excavate near pipes, call 0800 111 999 in an emergency and evacuate site.	2	3	6	4
Open excavations	Falls into excavations		All in vicinity	Serious injury or death	Adequate fencing; safety notices; hazard tape around trenches and other excavations	2	3	6	4
Deep excavations	Collapse of excavations		All in vicinity	Serious injury or death	Excavations should be fenced off; adequate gap between stockpiled spoil and excavation edge; professional shoring and/ or stepping or battering the sides; wear PPE; Secure ladders for access; do not enter an unsafe excavations	2	3	6	4
Buried features	Sudden voids, ground collapsing		All in vicinity	Serious injury or death	Care should taken when walking or standing on known buried features, particularly cellars and suspected wells. Access to any identified void should be restricted using fencing, appropriate safety equipment should be used	1	3	3	2
Human remains	Contact with decayed human matter		All in vicinity	Infection and disease of varying severity	Human remains to be handled in accordance to IFA guidelines and terms of home office licence; mask should be worn if necessary	1	3	3	2
Portable electrical devices	Lights and generators		Operative	Serious injury or death.	Ensure all electrical devices, cables and fittings are in good condition. Do not use generators in confined space. Where appropriate use 110voth equipment.	1	3	3	2
Excavation tools	Hitting self or others nearby		All in vicinity	Serious injury; minor cuts	Wear PPE; training in the safe use of tools; don't work too close together	2	3	6	3
Wheelbarrows	Tipping over; collapsing excavation sides		All in vicinity	Serious injury; back injury; muscle strains	Barrows should be properly maintained; don't overload barrows; don't use barrows in wet slippery conditions; ensure barrow runs are adequately far away from excavation sections and are not too steep	1	3	3	2
Survey equipment	Eye strain; looking into the sun		User	Serious injury to eyesight	Adequate training; never look at the sun through any optical device.	1	2	2	1
Site pegs/ markers	Tripping over; falling or walking into them		All in vicinity	Serious injury	Wear PPE; All pegs/ markers should be sprayed and have protective caps.	1	3	3	2

Process	Hazard		At Risk	Potential injury	Appropriate Action (Mitigation)	Calculated Risk				
	Type					LO	PS	PR	MR	
Working on ladders/ raised platforms	Fall; dropping equipment		All in vicinity	Serious injury or death	Wear PPE; Working at height should be avoided. Excavations should be stepped to allow access. all ladders should be properly maintained and properly secured at the top and base; access to the area beneath ladder/ platform should be restricted; only access scaffolding that has been erected by an approved certified contractor; mechanical platforms should be operated by trained professionals only	1	3	3	2	
Vicinity of overhead work	Struck on the head by falling objects		All in vicinity	Serious injury or death	Avoid working close to others working overhead; wear PPE; Make sure that everyone working overhead is aware of your presence below; work with a banksman	1	3	3	2	
Structures	Struck by falling debris; buried under collapsing walls/ buildings		All in vicinity	Serious injury or death	Wear PPE; do not undermine walls; do not enter unsafe structures	1	3	3	2	
Structures	Dust; air pollution; confined spaces		All inside structure	Breathing difficulties; loss of consciousness	Adequate fresh air supply; wear appropriate face masks; take regular breaks; only those with professional training should enter a confined space	1	2	2	1	
Structures	Debris, broken glass, animal droppings		All inside structure	Trips or falls; minor cuts; disease	Wear PPE; area should be cleared; wear gloves and avoid contact with animal droppings; adequate washing facilities	2	2	4	3	
Unexploded ordnance	Unearthing of unexploded ordnance		All in vicinity	Serious Injury or death.	Evacuate site (at least 100m) and contact police.	1	3	3	2	
Site facilities										
Toilets	Contact with human waste		All users	Sickness; disease	Provide adequate hygienic facilities for the size of work force. Toilets are to be sanitary and regularly maintained, and washing facilities provided	1	2	2	1	
Site office	Trips, falls; fire; electrical shock		All users	Serious Injury or death	Furniture, heaters, cookers, lights and fixtures are to be in good condition and properly maintained. Fire fighting appliances need to be in good working order; Passageways need to be kept open.	1	3	3	2	

Site Visitors								
Visitors	Trips, falls; run down or struck by heavy vehicles	All visitors	Serious Injury or death	Restrict access to site using adequate fencing; wear PPE; Visitors must be accompanied at all times; On larger sites visitors should be undergo an on site health & safety induction	2	3	6	3
Vicinity of hostile clients/ landowners	Assault, Harassment	Individuals	Serious physical or verbal assault	Do not put yourself in danger. Make written appointments; if overtly hostile take colleague or police officer. If there is a clear danger leave site	1	2	2	1