

BAM Construction Ltd
Ambulance & Fire Services Resource Centre, Wrexham

2593/AMS/12

ACS Consulting
272 Bath Street
Glasgow
0141 354 1633



Arboricultural Method Statement

Land adjacent to Croesnewydd Road, Wrexham

June 2014

Ambulance & Fire Services Resource Centre, Wrexham Arboricultural Method Statement

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Section 1

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General

This Arboricultural Method Statement (AMS) is prepared on behalf of BAM Construction Ltd for development of land adjacent to Croesnewydd Road, Wrexham.

This document is intended to demonstrate the degree of protection to be undertaken and demonstrate the fact that, in arboricultural terms, the development is sustainable.

This AMS sets out proposed measures to minimise and mitigate construction impact on the trees and targets for the management of the site during the construction phase.

The document provides certainty of outcomes, for example details of special engineering within tree Root Protection Areas.

It is intended that the AMS remains under review during the construction of the project. Sequencing of tree protection measures has been programmed with the contractors construction programme. The following text contains a series of considerations that BAM Construction Ltd and their appointed developer will follow whilst working on the project to completion.

**Ambulance & Fire Services Resource Centre, Wrexham
Arboricultural Method Statement**

Section 2

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Description and Location of Project

Author:	ACS Consulting, 272 Bath Street, Glasgow G2 4JR.
Project Title:	Ambulance & Fire Services Resource Centre, Wrexham
Value of Project: □	£ T.B.A.
Location:	Land adjacent to Croesnewydd Road, Wrexham.
Nature of Project:	Development of previously unoccupied site for a new Ambulance and Fire Station.
Contract Period:	August 2014 to November 2015

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Section 3

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Development

Permission has been granted for the construction of an Ambulance and Fire Station of approximately 3600m² gross internal floor area, arranged over two storeys. The location is on land recently purchased from the council on the western side of Wrexham town centre, on a site bounded to the north by Wrexham Maelor Hospital (specifically the hospital car park on the former and disused railway), to the west by the proposed improved Croesnewydd Road, and to the south by the River Gwenfro.

The Ambulance and Fire Station will house:

- 8 No. Fire Appliance Vehicles
- 6 No. Ambulance Vehicles in an internal garage
- Up to 4No. Ambulance Vehicles in an internal cleaning and restocking bay
- Up to 5 No. Ambulance Vehicles in a vehicle maintenance garage

The accommodation for personnel will include:

- Rest room, dining and kitchen facilities
- Lockers, changing rooms and toilet facilities
- Training room facilities
- Support offices for operational functions
- Store rooms for equipment and supplies
- Administrative offices

Other significant features of the development of the site will include:

- A hardstanding 'apron' in front of the vehicle garages
- Car parking for 87cars
- A vehicle washing and refuelling area
- A yard and compound for the ambulance vehicle maintenance operations

*Various outbuildings, including oil stores, transformer and generator housings, bin stores, cycle shelter etc
A Fire Training House, to simulate wet (water), cold smoke, and blackout rescue conditions (but not live fire or hot smoke conditions)*

A compound to simulate rescue from Road Traffic Collision situations

The development is intended to achieve BREEAM 'Excellent', and incorporate low/zero carbon technologies.

Ambulance & Fire Services Resource Centre, Wrexham Arboricultural Method Statement

Section 4

Planning Conditions

As part of the permission, the Local Planning Authority has placed three Arboricultural Planning Conditions. Conditions 8, 9 and 10 apply. A copy of the planning conditions can be found at Appendix B.

Section 5

Risks to and Impacts on Retained Trees

The consented development is a low level, low impact scheme that occupies an area largely in the centre of the site. As part of the development, a 15-metre wide strip of land is to be given over for ecological aspect between the River Gwenfro and the development. Within the site is a large spoil mound that requires to be removed as part of the site's ecological improvements. Landform drawings by Arup show the final levels of the site. The trees and their Root Protection Areas (RPA) are at a lower level than the finished levels, the cross sectional drawings show works taking place outside the RPA. The works are considered to be insignificant in their effects on the retention of the trees. Nonetheless, the site works are to be monitored.

Section 6

Construction Methods and Sequence

The removal of the spoil is the principal activity on site affecting trees. The site will be occupied from mid-August 2014. A Construction Timetable is being drafted. Tree protection and site offices will be the first activities to be undertaken. Once established, the spoil can be removed. The tree protection will act as the ecological and otter fencing and be located at 15 metres from the river bank except for the area of spoil removal (Trees 5531 - 5536). In this location, localised tree protection will be installed, once the spoil has been reduced to grade, the fence will be established at the ecological area boundary and retained until the project is completed.

Where the re-grading is close to the edge of the Root Protection Areas of Trees 5531 – 5536, it will be monitored for signs of any roots.

Site visits will be undertaken. Initially, these will be intense due to activities occurring close to retained trees, tailing off to monthly visits to ensure the efficacy of the ecological/tree protection fencing. A site log is to be maintained of the visits and the results to be forwarded by email only to the Local Planning Authority.

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Section 7

Conclusions

The development can be achieved with little impact to retained trees using standard tree protection methods. The landform plans by Arup indicate minimal, if any, impact on those retained trees. Where re-grading is to take place these works will be monitored by appropriate staff including the Arboricultural Consultant.

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1. Timing of Works

The timing of the primary works involved for the earthworks which will have an impact on trees are listed below. These timings are approximate and are influenced by a number of factors. All the tree works and fencing requirements will be undertaken prior to top soil strip and other ground works. The critical Arboricultural Operations in relation to the Construction Programme are outlined below.

Date	Job Description
Week 1 13/08/2014	Undertake tree felling Erect Type A Construction Exclusion Zone Fencing as part of ecological exclusion zone. Erect Type B temporary fence around trees []
Week 2 18/08/2014	Monitor removal of spoil around trees 5531 - 5536
Week 3 25/08/2014	Erect Type A Construction Exclusion Zone Fencing as part of ecological exclusion zone to remainder of site.
Monthly	Maintenance of ecological/tree protective fence

Targets

- Type A Fencing to be installed as detailed prior to all other works.
- Appointment of an Arboricultural Clerk of Works to liaise with the Arboricultural Consultant (AC).

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2. Construction Exclusion Zone Fencing

Adequate protection of trees requires the installation of the correct fencing type at the locations shown on the Tree Protection Plan Drawing No. – 2593_103.

Targets

- Type A Heras fencing erected on a metal framework as indicated on the Plan 2593_103.
- Fencing installed at locations shown on the plan and marked on site.
- Location and adequacy signed off by Arboricultural Clerk of Works and LPA and advised AC.
- Tool Box Talk – make construction staff aware of the importance of areas.
- Signs to be erected advising of the area's importance.

3. Site Offices/Welfare Facilities/Compound

Site offices, welfare facilities and a compound including fueling location will be required at the site due to the length of the contract period. Site offices can be used in place of Construction Exclusion Zone fencing to protect trees. The following issues should be considered.

Targets

- Site offices/welfare facilities, if used as tree protection, to be placed on pads.
- No discharge of effluent into Construction Exclusion Zone.
- Compound to be outside of Construction Exclusion Zone.

4. Spoil Re-grading

As part of the development, it is proposed to remove a spoil mound to allow the creation of an ecological area and the development to be accommodated. Tree Protective Fencing will be erected at the distances noted on Plan 2593_103. The works will be monitored by a banks man and the Arboricultural Consultant. Where re-grading may be within 0.5 metres of the edge of the RPA the spoil will be removed by hand working.

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Targets

- Type B Construction Exclusion Zone (CEZ) fencing to be installed, under supervision, at the locations shown on Plan 2593_103.
- The re-grading, where it comes within 0.5 metres of the edge of the CEZ fence, to be monitored by a banks man/Arboricultural Clerk of Works.
- If regarding is to be undertaken within the Root Protection Area, the following will take place. The spoil to be removed with a selective excavator to grade, Roots <25mm Ø may be cut with secateurs. Roots >25mm Ø will be retained and the material teased out with a soil pick selective excavator. Exposed roots to be kept moist.
- The excavated area to be backfilled with top soil to BS3882:2007 Multipurpose Topsoil at the end of each working day.
- Completion to be reported to the LPA. Completion to be reported to the LPA and signed off by Arboricultural Consultant.

5. Services

As part of the development, services are required. However, no services are to be located in the Construction Exclusion Zone, with the exception of: a water main diversion, and a surface water drainage outfall pipe into the river. In both instances, the route of the below ground pipe will avoid tree root protection areas.

6. General Precautions

The retention of trees requires a number of general precautions to be taken.

Compliance is to be maintained on site by the appointed Clerk of Works and visits by the Arboricultural Consultant. The site visits are detailed at criterion 1 – Timing of Works.

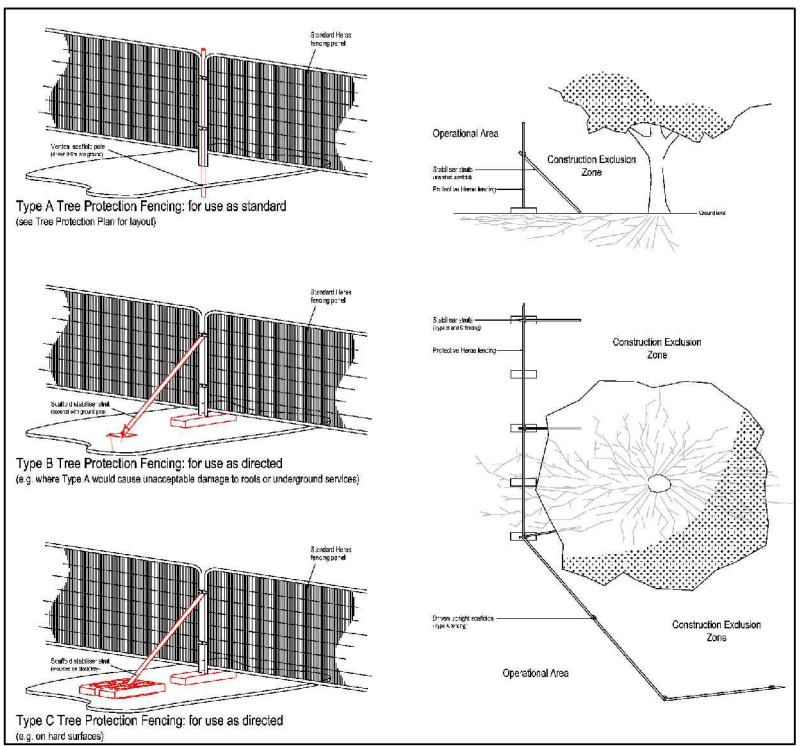
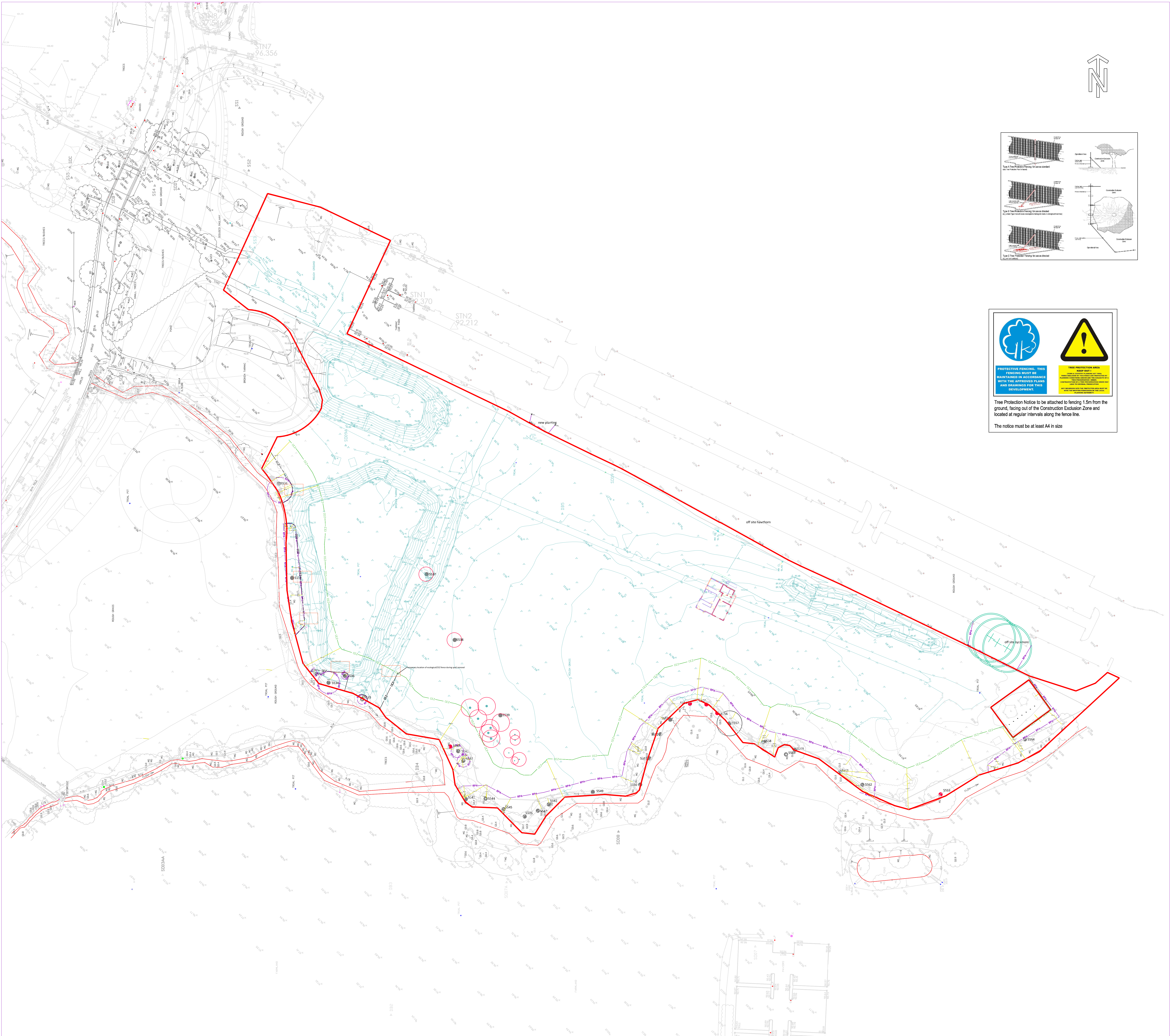
Targets

- Spoil from the foundation pits or other excavations shall not be placed within the Construction Exclusion Zone. No materials, equipment, spoil or washout water may be deposited, stored or parked within the Root Protection Area/ Construction Exclusion Zone.
- On-site inspections to be undertaken by the Arboricultural Clerk of Works with the Arboricultural Consultant visiting during critical operations. The aim of the visits is to maintain on-going liaison with all personnel involved in the site development, Wrexham County Borough Council and its Tree Officer.

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- Any defects requiring rectification shall be notified to the Contractor/Site Manager/Arboricultural Consultant and the client.
- A site logbook for tree protection measures is kept to record all stages of the development from the erection of the protective fencing, right through to the completion of the project. This will be made available to the Arboricultural Consultant and WCBC, if required, to show evidence of continuous site monitoring.

Appendix A
Tree Protection Plan



PROTECTIVE FENCING. THIS FENCING MUST BE MAINTAINED IN ACCORDANCE WITH THE APPROVED PLANS AND DRAWINGS FOR THIS DEVELOPMENT.

TREE PROTECTION AREA
This area is defined by the red line on the plan. It is the area within which the tree must be protected. It is the area within which the tree must be protected. It is the area within which the tree must be protected.

Tree Protection Notice to be attached to fencing 1.5m from the ground, facing out of the Construction Exclusion Zone and located at regular intervals along the fence line.

The notice must be at least A4 in size

Legend (Tree Survey)

NOTES

Tree Works

- All tree works to be carried out by a competent Arborist and must comply with:
- BS 3998:2010
- Tree Work Specification

Temporary Tree Protection Fence/Construction Exclusion Zone

- Fencing to BS 3998:2010 Type A fences type to be installed at locations shown to prevent encroachment of traffic materials or change in levels.
- The Fence must be fixed in the ground for the duration of the construction works.
- During the construction works there is to be no storage of plant, materials or soils within the Construction Exclusion Zone at any time.
- The Fencing may only be relocated under supervision of the Arboricultural Clerk of Works.

Notes

All works are to be implemented outside the bird nesting and breeding season.

Ecology

All trees and vegetation in the vicinity must be surveyed by a qualified ecologist for protected species.

Unauthorized Tree Works

No works other than those indicated on the tree Work Specification and this drawing may be carried out.

Additional Tree Works are to be agreed with the Arboricultural Clerk of Works and Employer.

Supervision

There are areas that require supervision by the Arboricultural Clerk of Works as works may be in the Construction Exclusion Zone.

LEGEND

- Trees of High quality and value (A)
- Trees of moderate quality and value (B)
- Trees of low quality and value (C)
- Loss to condition (D)
- Tree Reference with BS rating

1000 A/B/C/D

- C22 Type A (the Work Ecologist) Area/Construction Exclusion Zone Fence to BS 3998:2010
- C22 Type B Construction Exclusion Zone Fence with dimensions in millimetres.
- RPA Root Protection Area.
- RPA Supervision required by Arboricultural Clerk of Works.
- Individual or small groups of tree(s) removed.
- Large groups or woodlands removed.
- Hedgerow removed.
- Individual trees retained.
- Large groups or woodlands retained.
- Hedgerows retained.

TO BE REPRODUCED IN COLOUR ONLY

Do Not Scale

No	INFORMATION	By	Date	Checked
REVISIONS				

A.C.S.
Consulting

Suite 1
9 Princess Street
Knutsford
WA16 6BY
01565 755422

mail@acsconsulting.co.uk

CLIENT:

BAM CONSTRUCTION LTD

PROJECT:

LAND ADJACENT CROESNEWYDD ROAD, WREXHAM

DRAWING TITLE:

TREE PROTECTION & RETENTION PLAN

CONDITION DISCHARGE

SCALE:	SHEET SIZE:	FILE No:	DRAWING No:	REV
1:500	A0	2019/06/12	100	
DRAWN BY:	DATE:			
	JUNE 2014			

Appendix B
General Information

Applicant	WELSH AMBULANCE SERVICE TRUST	Code Number	WRO P/2013/0805
Agent	IBI NIGHTINGALE MR ROBIN AINLEY UNIT 2 BLUEBERRY BUSINESS PARK KINGSWAY ROCHDALE LANCASHIRE OL16 5DB	Date Received	18/11/2013
		Decision Date	06/05/2014

7. No land drainage run-off or surface water shall be permitted to discharge or connect to the public sewerage system, either directly or indirectly, and foul and surface water shall be drained separately from the site.
8. No equipment, machinery, plant or materials of any kind in connection with the development shall be brought onto the site until tree protection fencing and ground protection measures have been implemented in strict accordance with details which have been submitted to and approved in writing by the Local Planning Authority. The details should include specification and location for the fencing. Nothing shall be stored or placed in any area fenced in accordance with this condition and the ground levels within those areas shall not be altered, nor shall any excavations be made.
9. The tree protection fencing and ground protection measures approved in connection with condition no. 8 shall be kept in place until all external site works have been completed and the removal of the fencing has been approved in writing by the Local Planning Authority.
10. No part of the development shall commence until a detailed Arboricultural Method Statement has been submitted to and approved in writing by the Local Planning Authority. No development or other operations shall take place except in strict accordance with the Method Statement as is approved. The Method Statement shall include the following:
 - 1) A specification for tree protection fencing and ground protection measures that comply with British Standard 5837:2012;
 - 2) A Tree Protection Plan showing the location of the trees to be removed and retained with their crown spreads, Root Protection Areas, Construction Exclusion Zones, and location of protective fencing and ground protection measures accurately plotted;
 - 3) A full specification for any access, driveway, path, underground services or wall foundations within retained tree Root Protection Areas or Construction Exclusion Zone, including any related sections and method for avoiding damage to retained trees;
 - 4) Details of general arboricultural matters including proposed practices with regards to cement mixing, material storage and fires;
 - 5) Details of the frequency of supervisory visits and procedures for notifying the findings of such visits to the Local Planning Authority;
 - 6) Method for protecting retained trees during demolition works;
 - 7) Details of all proposed tree works, including felling and pruning.

BAM Construction

Site Contact List

Title	Name	Address	Telephone	Email
Arboricultural Consultant (BAM)	I Murat	ACS	01565 755422	
Tree Officer (Council)		Head of Community Well-being and Development Wrexham County Borough Council Lord Street Wrexham LL11 1LG	01978 292017	
Landscape Consultant (Developer)	TBA			
Planning Officer (Council)		Head of Community Well-being and Development Wrexham County Borough Council Lord Street Wrexham LL11 1LG	01978 292017	
Planning Consultant (Developer)	Robin Ainley	Architect Studio Associate Director IBI Nightingale Unit 2 - Blueberry Business Park, Kingsway Rochdale OL16 5DB	07979 576128	
Architect (Developer)	Robin Ainley		07979 576128	
Developer	Ian Greener Mike Nevitt	BAM Construction, Contracts Manager BAM Construction, Design Manager	07824 816802 07824 300656	
Arboricultural Clerk of Works	TBA			

Site Inspection Form –/DR.12

Site Address	[]
Site Visit Date	[]
Persons Present	[] - Contractor Ian Murat - ACS

Tree No.	Issue	Comments	Recommendations	Action
[]	[]	[].	[]	[]

Our Ref: 2593/DR.12

**Land adjacent to Croesnewydd Road, Wrexham
- Tree Works**

No.	Identity	Particular Schedule of Works Required
2538	Alder	Fell, grub out stump.
2539	Ash	Fell, grub out stumps.

Arboricultural Association Standard Conditions of Contract and Specifications apply.

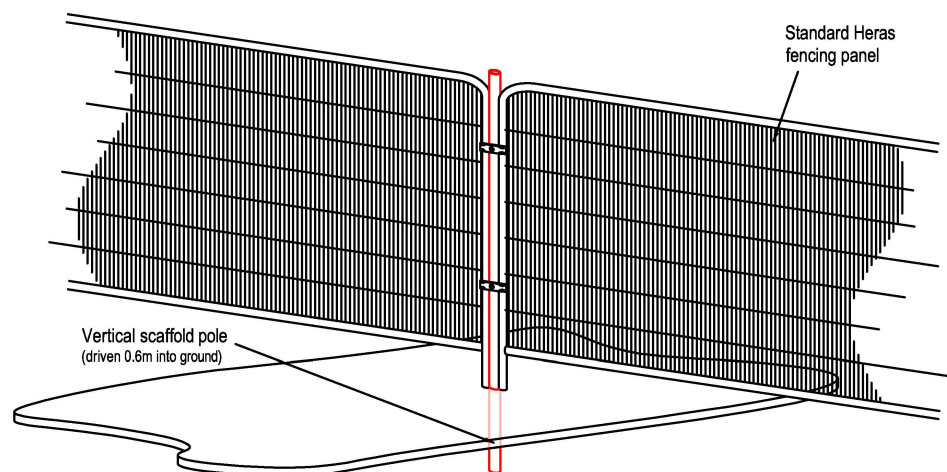
Works in accordance with BS3998 – 2010

Not for planning control.

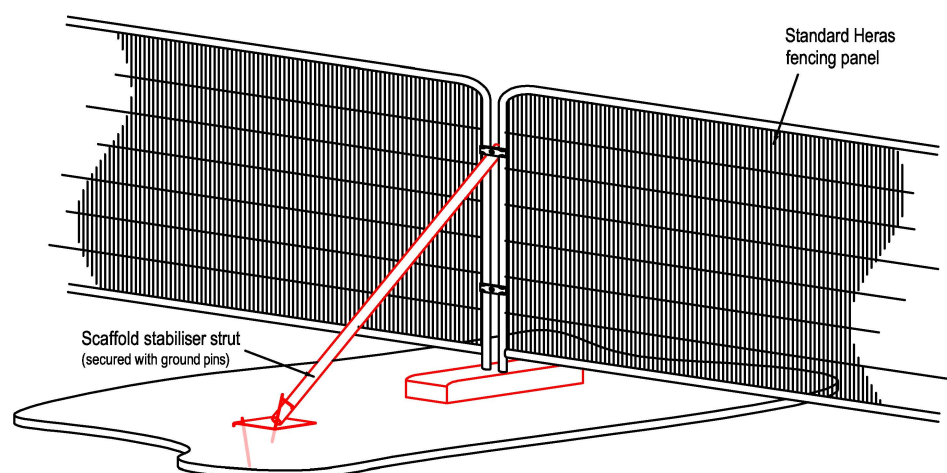
Any defects are to be reported to Ian Murat 01565 755422

No deviation from the specification without written consent.

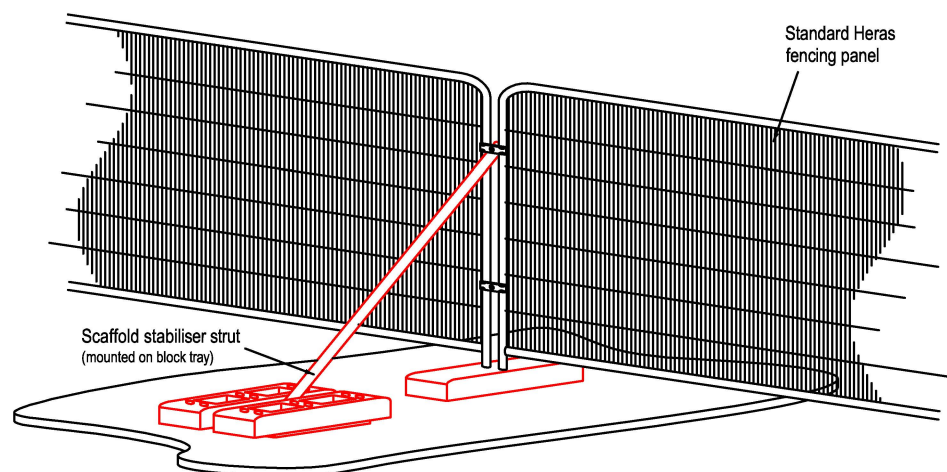
General Risk Assessment and Method Statement to be supplied. .



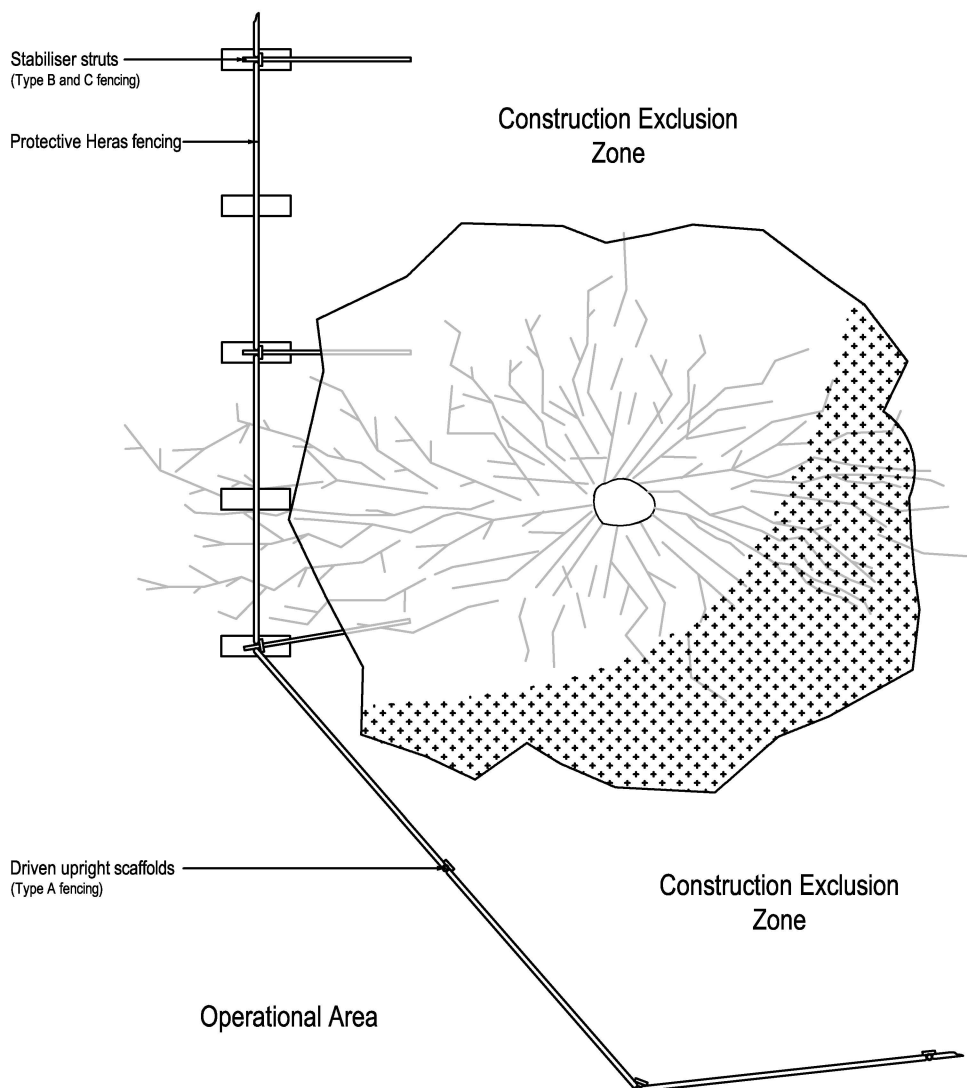
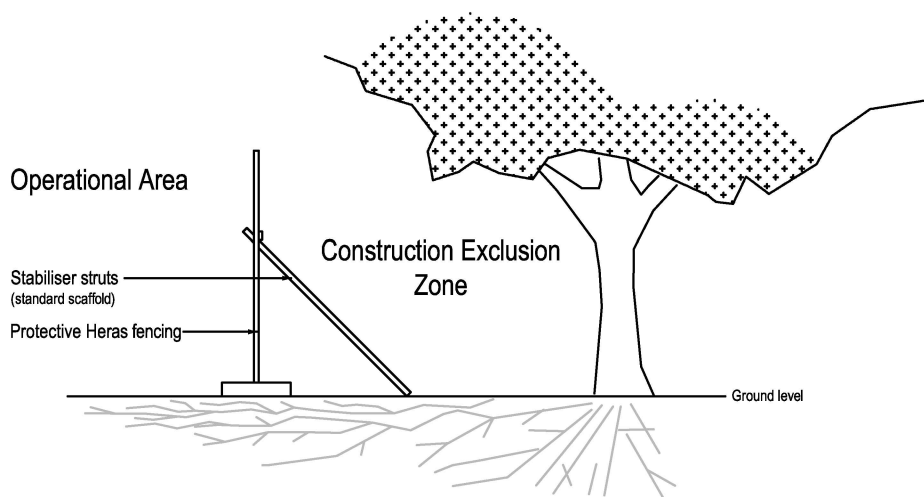
Type A Tree Protection Fencing: for use as standard
(see Tree Protection Plan for layout)



Type B Tree Protection Fencing: for use as directed
(e.g. where Type A would cause unacceptable damage to roots or underground services)



Type C Tree Protection Fencing: for use as directed
(e.g. on hard surfaces)





**PROTECTIVE FENCING. THIS
FENCING MUST BE
MAINTAINED IN ACCORDANCE
WITH THE APPROVED PLANS
AND DRAWINGS FOR THIS
DEVELOPMENT.**

**TREE PROTECTION AREA
KEEP OUT !**
(TOWN & COUNTRY PLANNING ACT 1990)
TREES ENCLOSED BY THIS FENCE ARE PROTECTED BY
PLANNING CONDITIONS AND/OR ARE THE SUBJECTS OF A
TREE PRESERVATION ORDER.
CONTRAVENTION OF A TREE PRESERVATION ORDER MAY
LEAD TO CRIMINAL PROSECUTION

ANY INCURSION INTO THE PROTECTED AREA MUST BE
WITH THE WRITTEN PERMISSION OF THE LOCAL
PLANNING AUTHORITY

Tree Protection Notice to be attached to fencing 1.5m from the ground, facing out of the Construction Exclusion Zone and located at regular intervals along the fence line.

The notice must be at least A4 in size

SOIL PICK



Quality Survives

MBW, INC

Since 1967, MBW has been manufacturing one of the industry's most interesting lines of construction equipment. What makes the MBW line interesting? MBW is not a copyist – we do not simply duplicate designs developed by others. MBW begins each new engineering project with the assumption that significant progress can be made in terms of productivity, maintenance, longer life, enhanced user safety, or lower long-term cost of ownership. Often, MBW's R&D efforts result in entirely fresh approaches to industry problems. A number of our "fresh approaches" solve problems in municipal and utility applications.

SOIL PICK

The **Soil Pick** is a selective excavator. Selective in the sense that it fractures, pulverizes and displaces porous and semi-porous soils, yet leaves non-porous objects unaffected. The Soil Pick excavates soil without risk of damaging buried utilities.

The Soil Pick employs converging/diverging nozzle technology to accelerate compressed air to supersonic speed (to 1475 mph). The high velocity air stream travels approximately 4 inches from the distal end of the Soil Pick – "the cutting edge" – before decompressing to atmospheric pressure with sufficient violence to pulverize and displace soil.



The Soil Pick's non-sparking, brass nozzle weighs 4.2 ounces. It is important that the nozzle does not detach from the barrel to become a high velocity projectile. For this reason, the nozzle is threaded into the Soil Pick's barrel and cemented in place. Some manufacturers promote easily exchanged nozzles. MBW's view is that safety comes first.

The Soil Pick requires no periodic maintenance. A pressure gauge on the handle assembly advises the operator if the tool is working at acceptable pressure. The Soil Pick weighs 6.2 lbs., has zero hand/arm vibration and can be used for extended periods without fatigue.

What separates the MBW Soil Pick from other excavation tools employing converging/diverging nozzle technology?

Safety. MBW holds US and international patents on the combination of dielectric and non-sparking characteristics embodied in the Soil Pick. Non-conductive, non-sparking tools are of obvious benefit to those working in environments that may be gas enriched and/or are in close proximity to live electric lines.

Also for reasons of safety, MBW standardizes the Soil Pick's cutting edge at approximately 4 inches*. A 4 inch cutting edge is long enough to facilitate rapid excavation, yet short enough to minimize the potential for personal injury caused by misdirection of the cutting edge. Very importantly, soil aeration beyond the target utility is minimized, thus simplifying and facilitating effective backfilling and compaction of the excavation. The 4 inch cutting edge also provides better control of the air stream while working in the immediate area of a gas leak.

* NOTE: Nozzle capacity (cfm, air stream velocity and cutting edge) is dependent on interior nozzle profile. Contact MBW for nozzle options.

SPECIFICATIONS	SP80	SP125	SP160
Weight	6.2 lbs (3 kg)	6.2 lbs (3 kg)	6.2 lbs (3 kg)
Length	52 in (132 cm)	52 in (132 cm)	52 in (132 cm)
Barrel Diameter	1.25 in (3 cm)	1.25 in (3 cm)	1.25 in (3 cm)
Airstream Velocity	1475 mph (2375 km/h)	1475 mph (2375 km/h)	1475 mph (2375 km/h)
Effective Cutting Depth**	4 in (10 cm)	4 in (10 cm)	4 in (20 cm)
Air Volume	80 cfm (2265 L/min)	125 cfm (3540 L/min)	160 cfm (4531 L/min)
Pressure at Tool Inlet	100 psi (6.9 bar)	100 psi (6.9 bar)	100 psi (6.9 bar)
Claw Type Quick Connector (optional 3/4" Dual Lock Connector is available)	3/4 in	3/4 in	3/4 in
Optional Accessories			
Extension Tubes	42 in (107 cm) 21 in (53 cm)	42 in (107 cm) 21 in (53 cm)	42 in (107 cm) 21 in (53 cm)
Cart Assembly for crack cleaning	7.5 in (19 cm)	7.5 in (19 cm)	7.5 in (19 cm)
Nozzle	45° or 90°	45° or 90°	45° or 90°

** Dependent on soil type

() Metric Measurements. Specifications subject to change without notice.

HANDLE VIBRATION TEST

Product type – MBW Soil Pick SP125

Manufacturer of testing apparatus – Castle

Accelerometer was affixed to the rear of the handle on the Soil Pick and all three axes were tested.

Accelerometer position:

X axis = $0.0M/S^2$

Y axis = $0.0M/S^2$

Z axis = $0.0M/S^2$

Hand/arm vibration = $0.0M/S^2$

TREE CARE

MBW's Soil Pick provides a multi-functional air tool for a variety of applications in the tree care industry including:

Radial Trenching

Radial trenching is a process which involves aerating the soils around a tree root in a pattern resembling a wagon wheel. The Soil Pick provides a safe and damage free means of utilizing a high air pressure to loosen tightly compacted soils.

Aeration & Excavation

Root Locating for Utility Line Installation or Pruning

Investigating Root Structure and Damage

Transplanting or Bare Rooting

Reducing Soil Compaction



SOIL PICK ACCESSORIES



45 DEGREE NOZZLE



90 DEGREE NOZZLE



42" EXTENSION



21" EXTENSION



SOIL PICK CASE



MBW Inc.
250 Hartford Road • P.O. Box 440
Slinger, Wisconsin • 53086-0440 • USA
Ph: 800-678-5237 or 262-644-5234 • Fax: 262-644-5169
E-mail: mbw@mbw.com • Website: www.mbw.com

MBW UK Ltd.
Units 2 & 3 Cochrane Street • Bolton BL3 6BN • England UK
Ph: 44 (0) 1204 387784 • Fax: 44 (0) 1204 387797
E-mail: mbwuk@btinternet.com • Website: www.mbw.com

MBW FRANCE S.A.R.L.
Z.A. d'Outreville • 5 rue Jean Baptiste Néron • 60540 BORNEL • France
Ph: 33 (0) 3 44 07 15 96 • Fax: 33 (0) 3 44 07 41 28
E-mail: mbwfrance@free.fr • Website: www.mbw.com

AUTHORIZED DISTRIBUTOR

ACS Consulting
Suite One
9-11 Princess Street
Knutsford
Cheshire
WA16 6BY

