

SF3422 Earlsfield Park

ARBORICULTURAL SURVEY REPORT | BS 5837:2012

June Revision A 2023

SMEEEDEN FOREMAN

Landscape Architecture • Ecology • Arboriculture

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Document Check Sheet

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1.0 Introduction

Smeeden Foreman Ltd has been appointed to undertake an arboricultural survey of trees at Earlsfield Park (see Figure 1).

The survey was undertaken on 3rd May 2023 and was based upon topographical survey plan 8303A_3D produced by Ellam Land Surveys. The trees have been surveyed in accordance with BS5837:2012. The limitations of survey techniques and analysis are included in Appendix A.

1.1 Site Description

The site is located at Earlsfield, Knowsley (see Figure 1). The site comprises a vacant plot with service road and tree line border to the northern edge.

1.2 Legal status of trees

The trees on site are not protected by a Tree Preservation Order, and the site is not situated within a Conservation Area (Digital mapping provided by Knowsley Council, accessed 23.05.2023).

Trees may be subject to legal protection under a range of legislation, which is aimed at wildlife and habitat protection, particularly nesting birds and bats.



Figure 1 – Location Plan

2.0 Aims and Methodology

2.1 Aims

The aims of the survey are to undertake a non-invasive survey of the identified trees and any trees which have the potential to be affected by future works within the vicinity. The Tree Constraints Plan shows the location and category of the surveyed trees.

2.2 Survey Methodology

The survey was carried out to British Standard 5837:2012 using the categories explained below:

- 2.2.1 The trees were assessed visually from ground level. Where potential problems were identified, further inspection by tree climbing is recommended. No digging or drilling methods were employed during this survey
- 2.2.2 The tree numbers or group numbers within the schedules refer to the order in which the trees were recorded and shown on the tree survey plan
- 2.2.3 The approximate height of each tree is measured from ground level to top of canopy using a clinometer;
- 2.2.4 The diameter of each tree is measured at 1.5m above ground level. Where a tree stem divides below 1.5m each stem is measured at 1.5m above ground level in accordance with Annex C of the British standard. The diameter of trees where the trunk was inaccessible have been estimated and marked as such within the schedules.
- 2.2.5 The age of each tree is based upon our experience and is divided into young, semi-mature, early-mature, mature, over-mature.
- 2.2.6 The water demand of each tree (As listed in table 12, appendix 4.2 – A, NHBC standard chapter 4.2) noted on or adjacent to the site is recorded. Shrinkable soils are subject to changes in volume as their moisture content is altered. Soil moisture content varies seasonally and is influenced by a number of factors including the action of tree roots. The resulting shrinkage or swelling of the soil can cause subsidence or heave damage to foundations, the structures they support or services.
Engineers should consider the soil condition and the potential impact of the species of the trees/hedges on and adjacent to the site when preparing building/structure design.
- 2.2.7 The condition of the tree is based upon our experience and is an assessment of the health and vigour of the tree.
- 2.2.8 Estimated remaining contribution and category/rating of each tree is based on our experience;
- 2.2.9 The retention category of each tree or group of trees is based upon the information detailed above using the following categories:
 - A Trees of high quality and estimated remaining life expectancy of at least 40 years (Light green on plan)
 - B Trees of moderate quality and estimated remaining life expectancy of at least 20 years (Mid blue on plan)
 - C Trees of low quality and estimated remaining life expectancy of at least 10 years or young trees with a stem diameter below 150mm Grey on plan)
 - U Trees cannot realistically be retained as living trees in context of current land use for longer than 10 years (Dark red on plan)
- 2.2.10 The following subcategories have been used in rating tree value:
 - 1 Mainly arboricultural value
 - 2 Mainly landscape value
 - 3 Mainly cultural values, including conservation

2.3 *Key to Survey Schedules*

Tree no.	Tree number as recorded on the plan: T1, T2 etc and for tree groups: G1, G2 etc. Hedges: H1, H2 etc. Woodland: W1, W2 etc.	
Species	Common name / Scientific name	
Height	Overall estimated height of the tree in metres (rounded up to the nearest metre for trees over 10m high).	
Stem Dia	Stem diameter measured in millimetres at 1.5m above ground (on sloping ground measured on the upslope of the stem) in accordance with Annex C of BS5837:2012.	
Branch spread	Measured in metres (rounded up to the nearest half metre) along the four cardinal points: north, east, south and west to derive an accurate representation of the crown.	
Ht crown clearance	The existing height, measured in metres, above ground level of: the first significant branch and direction of growth and the canopy.	
Age class:		
Young (Y)	Recently planted or establishing tree. Typified by vigorous growth and distinct apical dominance (definite, discernible leader).	
Semi-mature (SM)	A tree in its first third of life span. Tree that has not reached its ultimate potential height. Phase includes considerable girth thickening and the start of crown spreading.	
Early mature (EM)	A tree in its second third of life span. A tree that is reaching its ultimate potential height. The growth rate is slowing down but the tree, will still increase in stem diameter and crown spread.	
Mature (M)	A tree in its final third of life span. The tree has attained its largest proportions and has reached its ultimate height. The tree is typified by thicker bark plates and a large spreading crown.	
Over-mature (OM)	The tree has attained its maximum height and growth rate slows considerably. Characterised by the loss of large limbs, large amounts of deadwood and decay. Limited safe life expectancy.	
Water Demand	High, Moderate, Low (As listed in table 12, appendix 4.2 – A, NHBC standard chapter 4.2)	
Physiological condition	Good (G), fair (F), poor (P), dead (D).	
Comments	Overall form of tree, presence of any decay, any physical defects and observations	
Preliminary Management Recommendations	Including any further investigations required, wildlife habitat potential, management or pruning works.	
ERC	The estimated remaining contribution measured in years: <10, 10+, 20+, 20-30+, 40+)	
Cat	Category U or A to C grading as defined in Table 1 BS 5837: 2012	
RPA	Root protection area measured in square metres, calculated according to BS 5837:2012	
Other abbreviations used:	N	North
	S	South
	E	East
	W	West
	GL	Ground level
	OSB	Outside site boundary
	MS	Multi-stemmed
	#	Estimate
	NWR	No work required
	NVD	No visible defects

3.0 Tree Survey Schedules

Tree No.	Species	Top Height (crown height) m	Branch Spread (m)				Stem Dia. (mm)	Age Class	Water Demand	Condition	Comments	ERC (years)	Recommendations	Category
			N	E	S	W								
T1	Fraxinus excelsior (Ash)	14(3)	4	4	5	5	560	M	M	Poor	Large cavity on stem at 1m-dangerous. Stem divides at ground level. Ash dieback.	<10	Remove	U
W1	Pinus nigra (Austrian Pine), Quercus robur (Common Oak), Acer campestre (Field Maple), Fraxinus excelsior (Ash) Crataegus monogyna (Hawthorn), Prunus padus (Bird Cherry), Larix decidua (European Larch), Ilex aquafolium (Holly)	8(0)	3.5	3.5	3.5	3.5	420	EM	M	Good	OSB. Limited inspection. Motorway verge. Self seeded sycamore and ash with ash-dieback. Oaks galls and epicormic growth sprouts.	20+	No works required.	B2
W2	Acer pseudoplatanus (Sycamore), Fraxinus excelsior (Ash), Quercus robur (Common Oak), Crataegus monogyna (Hawthorn)	12(0)	3.5	3.5	3.5	3.5	530	M	M	Fair	Moderate deadwood in live trees. 3 standing dead trees. Evidence of active Armillaria on some live trees on the south edge of the woodland.	10+	Remove trees infected with Armillaria as part of good woodland management.	C2
W3	Acer pseudoplatanus (Sycamore), Fraxinus excelsior (Ash)	4(0)	1.5	1.5	1.5	1.5	175	M	M	Fair	OSB. Limited inspection. Motorway verge.	10+	No works required.	C2

3.2 Hedges

<i>Hedge No.</i>	<i>Species</i>	<i>Height (m)</i>	<i>Water Demand</i>	<i>Physiological condition</i>	<i>Comments</i>
H1	Crataegus monogyna (Hawthorn)	2.5	H	Good	Unmaintained.

4.0 Above Ground Constraints

- 4.1 The potential for retaining trees on a development site includes the extent of the influence of the tree at the time of survey. Consideration is also given to the effects of future growth within the context of the proposed development. In addition, the potential nuisance caused by shading to new buildings both after construction and also once trees reach their ultimate size is also considered.
- 4.2 The extent to which a tree may represent a constraint to development will depend both upon the location of the trunk and size and nature of the canopy and also the extent of the roots below ground. The tree constraints drawing (SF3422 TS01) plots the location and extent of the tree above ground.

5.0 Below Ground Constraints

- 5.1 The Root Protection Area (RPA) represents a potential constraint to development which may be modified in pattern, although not overall area, by existing site conditions such as structures and surfaces, soil types and drainage, and an appreciation of the nature of particular tree species and root morphology.
- 5.2 Within the tree root protection area there should be a presumption against excavation, excess vehicular or pedestrian movement, storage of materials, construction, or changes in ground level unless consideration is given to the potential effects on the tree to be retained and the efficacy of any construction techniques designed to reduce adverse effects on the tree.
- 5.3 The tree constraints drawing (SF3422 TS01) plots the location and extent of the tree below ground through application of the calculation provided in section 4.6 of the BS5837:2012 Trees in relation to design demolition and construction – Recommendations.

6.0 Arboricultural Impact Assessment

- 6.1 The proposed development produced by Building Management Services Ltd. has been assessed in relation to the existing trees on drawing SF3422 AIA01 (Appendix C).
- 6.1.2 T1 was found to be in danger of failure due to the presence of ash die-back and a large cavity on the stem which is in excess of an expectable threshold for such a defect (see figure 2). It is therefore recommended for removal.



Figure 2 – T1 showing large cavity

- 6.1.3 Armillaria is present in Woodland 2 (See figures 3 and 4). Armillaria should be managed by removal of infected trees from site to help reduce the spread.



Figure 3 – Example of Armillaria 'bootlaces' on ash in W2, with decay damage



Figure 4 – Example of standing dead tree in W2 as probable result of Armillaria.

6.2 **Summary of proposed tree removal due to poor condition**

Tree No.	Species	Proposed Works	Category
T1	Fraxinus excelsior (Ash)	Removal	U
W2	Acer pseudoplatanus (Sycamore), Fraxinus excelsior (Ash), Quercus robur (Common Oak), Crataegus monogyna (Hawthorn)	Remove trees infected with Armillaria as part of good woodland management.	C2

6.3 **Tree Works**

- 6.3.1 All tree works recommend within this report shall be carried out to existing trees on site and shall be in accordance with BS 3998:2010 Recommendations for Tree Work, industry best practice and in line with any works already agreed with the Local Authority.
- 6.3.2 The Tree Surgeon shall be chosen from The Arboricultural Association's Approved Contractor list and all work shall be undertaken at the appropriate time and with the consent and approval of the Site Agent who shall approve a programme of work.

6.4 **CONSTRUCTION SPACE**

- 6.4.1 The proposed fencing location would fully protect the canopy of retained trees – see SF3422 AIA01 method statement.

APPENDIX A

Tree survey to BS 5837:2012 -Trees in relation to design demolition and construction limitation notes

This survey to BS 5837:2012 is a visual assessment undertaken from ground level without any physical investigation and should be regarded as a preliminary overview of the trees on site. 'This term [visual] describes a general approach to tree surveying using visual observation and recording, combined with experience and knowledge of tree biology and structure to draw conclusions about tree condition'p8[1]

Observations on structural condition, preliminary management recommendations, (e.g. pruning) and the estimated remaining contribution are based on visual indicators present at the time of inspection (i.e. a single point in time).

It should be noted that numerous potential defects may not be detectable dependent upon timing of inspection, in particular wood decay fungi which may only occasionally produce external fruitifications or may not provide external symptoms until an advanced state of invasion is achieved.

Trees are long lived organisms with a significant proportion of growth below ground, (in addition to what is evident above ground) that naturally lose branches and may potentially fail in many ways.

Risk Assessments

Whilst hazards may be identified in this document e.g. a defect 'that may cause harm'. The risk, (i.e. 'the chance high or low) that somebody could be harmed by these and other hazards, together with an indication of how serious the harm could be' is not assessed. [2]

Requirements for ongoing inspections (to monitor observed defects) and risk assessments will be suggested as necessary in the body of the report. The level and frequency of assessment required (in line with HSE advice) will depend on a range of factors for example 'the frequency of public access to the tree' p4 [3]. A balanced and proportionate approach to tree safety management is advocated in the National Tree Safety Group publication 'Common sense risk management of trees'. [4]

The health, (condition) and resulting safety of trees for a risk assessment should be checked on a cyclical basis, alternating between early and late seasons to ensure a full picture of the trees current health is established. Therefore the assessment of risk that trees present on a particular site would be additional to the scope of this BS 5837:2012 tree survey.

Arboricultural Impact Assessments, Tree Protection Plans, Method Statements, Tree Management Plans

These items are additional services identified relating to design demolition and construction in BS5837:2012 which may form part of a strategy to manage risks.

NHBC Guidelines

The technical requirements of the National House Building Council Chapter 4.2 Building near trees are not fully met under the requirements of BS BS5837:2012 in relation to shrinkable soils and 'vegetation surveys' (which include hedgerows and shrubs.). p4 [5]

References/ Further reading

[1] The Arboricultural Association Guidance Note 7 Tree Surveys: A Guide to good Practice.

[2] Health and Safety Executive Guidance <http://www.hse.gov.uk/risk/risk-assessment.htm>

[3] HSE guidance on Tree Management SIM01/2007/05 Management of the risk from falling trees or branches.

[4] National Tree Safety Group Guidance – Common Sense Risk Management of Trees.

[5] National House Building Council Chapter 4.2 Building near trees (Part 4 Foundations).

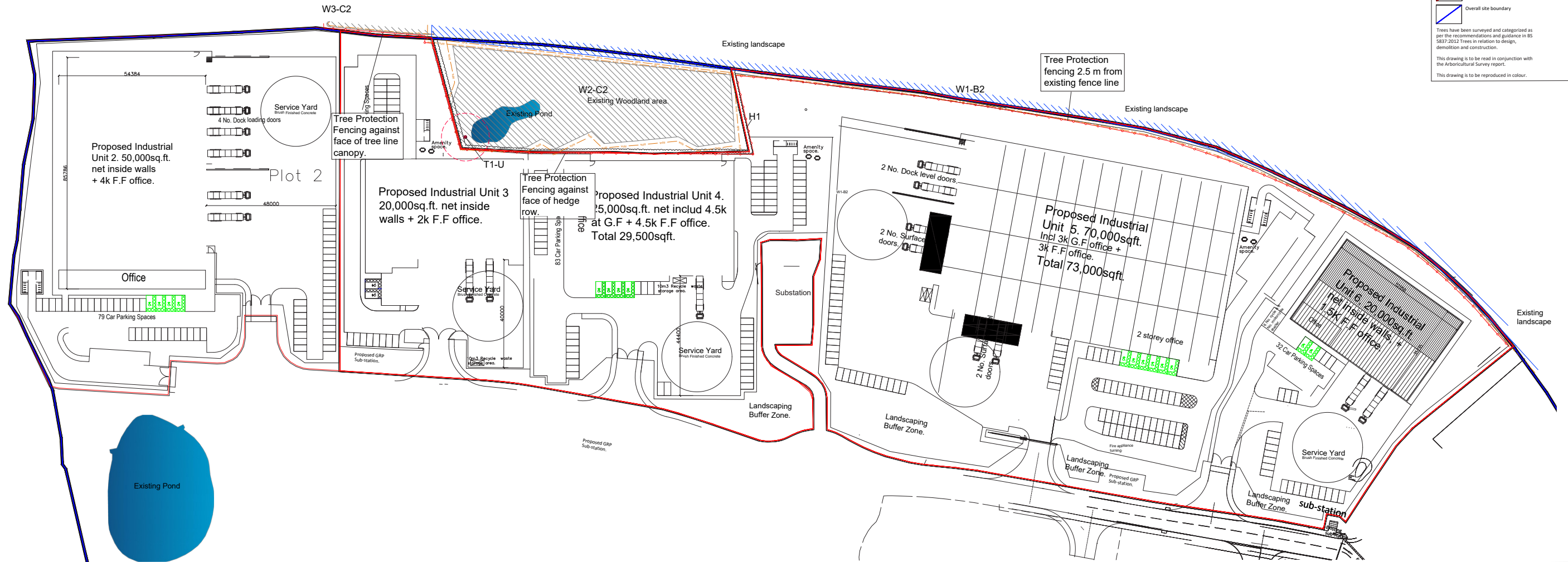
APPENDIX B

SF3422 TS01 Rev A Tree Survey Plan



APPENDIX C

SF3422 AIA01 Rev A
Arboricultural Impact Assessment Plan



Key

- Existing hedge
- Tree retention category A**
High quality with an estimated life expectancy of at least 40 years
- Tree retention category B**
Moderate quality with an estimated life expectancy of at least 20 years
- Tree retention category C**
Low quality with an estimated life expectancy of at least 10 years, OR young tree with a stem diameter below 150mm
- Tree category U**
Poor condition with an estimated life expectancy of less than 10 years
- RPA**
Minimum Root Protection Area
- Proposed tree removal**
Due to poor condition
- Tree protection fencing**
see Detail 1 and method statement
- Application Development Area**
- Overall site boundary**

Trees have been surveyed and categorized as per the recommendations and guidance in BS 5837:2012 Trees in relation to design, demolition and construction.

This drawing is to be read in conjunction with the Arboricultural Survey report.

This drawing is to be reproduced in colour.

ARBORICULTURAL METHOD STATEMENT

TREE PROTECTION FENCING

Tree protection fencing must be installed in the position as shown on the Tree Protection Plan before any other works on site can be undertaken.

Tree Protection Fencing should be set out as per Section 6.2 of BS5837: 2012, and should consist of 2 m tall welded mesh panels on rubber or concrete feet. The mesh panels should be joined together using a minimum of two anti-tamper couplers, installed so that they can only be removed from inside the fence. The distance between the fence couplers should be at least 1 m and should be uniform throughout the fence. The panels should be supported on the inner side by stabilizer struts, which should normally be attached to a base plate secured with ground pins (Figure 2b). Where the fencing is to be erected on retained hard surfacing or it is otherwise unfeasible to use ground pins, e.g. due to the presence of underground services, the stabilizer struts should be mounted on a block tray. Bracing poles will be fixed to the inside of the barrier to ensure maximum rigidity, and should be located to avoid contact with structural roots.

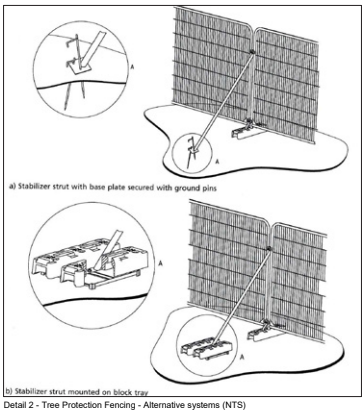
It might be feasible on some sites to use temporary site office buildings or perimeter fencing as components of the tree protection barriers, provided these can be installed and removed without damaging the retained trees or their rooting environment.

All-weather notices, A4 size, shall be attached to the tree protection fencing every 10m at 1.5m high with the words: "Tree Protection Fence—strictly no access".

MIXING AND STORAGE OF MATERIALS

All mixing and storage of cement and concrete will take place in a designated area, which will be located well outside the vicinity of the RPA.

All mixing operations must take place with ground protection in place, which will comprise a tarpaulin and ground boards. A spill kit (which is adequately equipped to deal with the materials being held on site) must be kept on site at all times. A supply of water must also be available during mixing operations (to dilute any spillage).



Detail 2 - Tree Protection Fencing - Alternative systems (NTS)

FOR INFORMATION

Rev	Date	Comments	Drawn	Checkd
A	27.06.2022	Revision to TPF specification re site perimeter fencing	KS	MS

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Project: **Earlsfield Park**

Title: **Arboricultural Impact Assessment**

Project No. SF 3422	Drawing No. AIA01	Rev. A
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Scale 1:500 @ A0	Date 23.05.2023
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Drawn by KS	Checked by MS
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