Arboricultural Report Property Development based on BS5837

Property Location

Higher Hall Farm, Bowling Bank, LL13 9RT

On behalf of:

Higher Hall Poultry Ltd

Report Date:

Survey and Report by:

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1 Purpose of Report

To provide an arboricultural survey in accordance with BS5837, to the property, for the purposes of a planning application to carry out proposed development works. The report is to include an inventory, RPA study and implications study, protection plan, method statement and if applicable a remedial planting plan. The purpose of the report does not include for a detailed tree health assessment or risk assessment. The report is for the sole use of the client and his agents / consultants and the client upon full payment of fees due has an irrevocable licence to use the intellectual property notwithstanding that such intellectual property shall remain vested in Iros Arb.

Architect: Scott Architecture Ltd

Landscape Designer: N/a

Topographical Surveyor: N/a

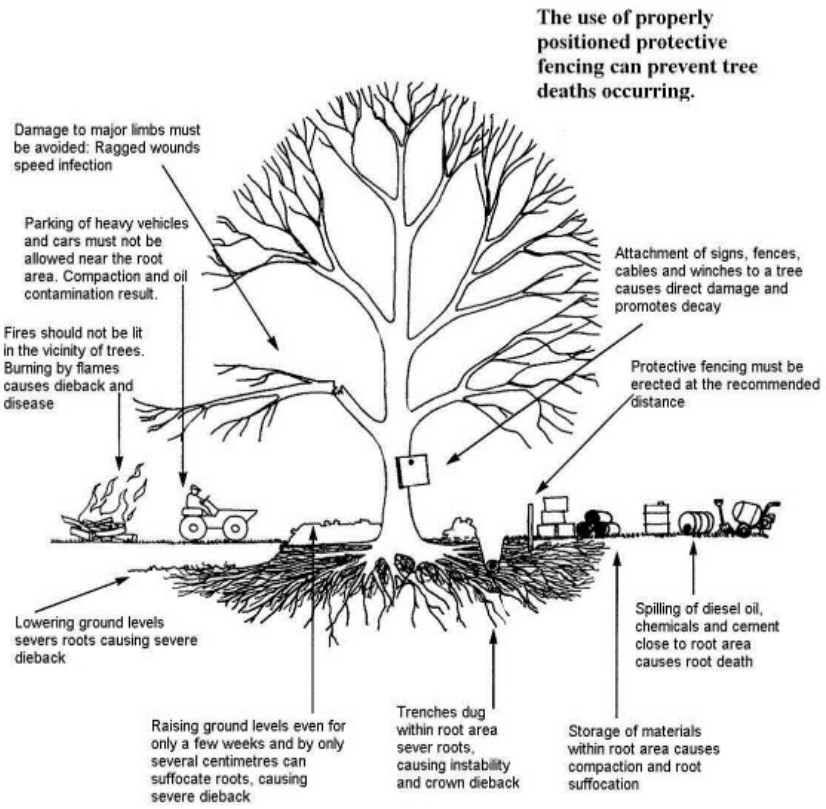
Structural Engineer: N/a

2 Explanatory Information

Basis of Report. For the purposes of planning application this report will be based on BS5837 which sets out the guidelines for tree surveys for planning applications.

Visual Tree Assessment. This is the method of surveying trees from ground level for dimensions in accordance with BS5837 using professional equipment. Additional observations will have been added with regards to tree category schedule. Detailed assessment of tree health and vigour including root assessment however is not necessarily included within the scope of this report. Tree categories are limited to categories A, B, C and U. Additional numeral categories (i.e. A1, A2 and A3) will only be used in relation to veteran trees or trees of significant arboricultural or amenity value.

Drawings are taken from OS Masterplan or DWG Autocad and include drawings as listed.



3 Survey methodology

a) Identification and visual assessment of trees from ground level within proximity to property

b) Identification of soils profile from National Soils Research Institute or BGS Data

c) Where a clay is notified, a sample may be taken from 1m depth for preliminary plasticity assessment

d) Tree Inventory and Schedule

e) Root protection Area Study

f) Impact Assessment with CEZ and RAZ study

g) Method Statement Notes

h) Remedial Planting Strategy

4 Feasibility: Tree survey and Constraints

The current existing Tree infrastructure survey is set out in table Appendix 1 and drawing Appendix 2. The BS5837 details as follows including colours as marked on drawings:

*	Category A (Green)	Trees of high quality and amenity value with estimated life expectancy of over 40 years.
*	Category B (Blue)	Trees of moderate or impaired condition with estimated life expentancy of over 20 years
*	Category C (Grey)	Trees of low quality and poor form with low life expectancy or young tree with DBH of 150mm or less
*	Category U (Red)	Trees of poor form with significant defects that would not be reasonable to retain and with very poor life expectancy. No RPA is required.

There are further provision of additional sub-categories but may not be used in this report:

*	Category 1	Of significant arboricultural interest.
*	Category 2	Of important landscape amenity value
*	Category 3	Of important cultural value

Further notes include the following references:

* Ident - T: Tree; G: Group of Trees; H: Hedge
* Age Assessment - Y:Young; EM: Early Mature; SM: Semi Mature; M: Mature; LM: Late Mature; V: Veteran
* DBH - Standard for stem diameter at 1.4m measured in mm
* Height and Crown Spread - measured in metres.
* RPA - Root Protection Area; Radius of 12x DBH measured in metres.
* 1st Branch - Height in metres and Direction i.e - 2.5NW
* Vigour - G: Good, M: Moderate, P: Poor, D: Dead
* Amenity Value - 1: Very Good, 2: Good, 3: Moderate, 4: Poor, 5: N/A
* Further notes based on VTA - Structural, Basal FFB, Stem/Branch FFB, Hollow/Decay, Pathogens, Ivy.

Appendix 3 includes an initial Root Protection Area (RPA) assessment. This is the area as defined by BS5837 4.6.1 as being of radius 12x the stem diameter. Where there are trees with multiple stems, the are is calculated in accordance with BS5837 guidelines.

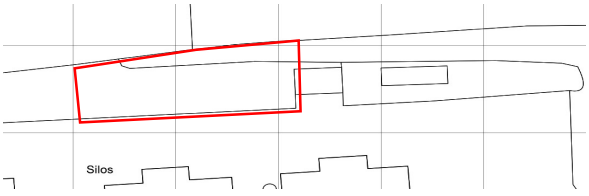
5 Site Overview

Site coordinates: 53.04216, -2.87707

Survey area: As below.

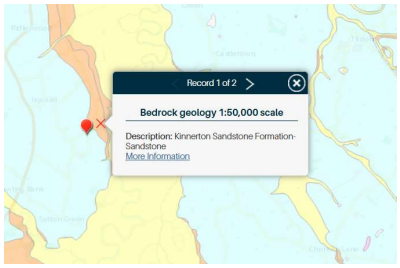
Approximate topography: A detailed topographical survey has been carried out by others.

Survey extent



6 Soil profile report

The Soil profile report based on BGS data indicates: River Terrace Deposits over Kinnerton Sandstone



7 Physical Soil assessment carried out to 1 metre depth only.

Not applicable to this survey

Soil Type	ID	Horizon	Moisture	Liquid Limit

8 Preliminary Subsidence Risk Appraisal (subject to geotechnical report if required)

Based on the acquired knowledge of the soil profile in relation to the property and tree proximity. This is provided as a preliminary estimate only. Where there is risk of shrinkable clay, an independant geotechnical report would be required.

Preliminary estimated subsidence risk from tree influence: Nil, Very Low, Low, Moderate, High, Very High

Based on the Soil Profile information, subsidence risk would be expected to be: Nil

9 NHBC 4.2 Recommendations

Attention is drawn to NHBC 4.2 - D5 and D6 as setting out the requirements relating to foundations and clay subsoils. Where clay subsoils are present, a geotechnical survey would be required to provide accurate assessment od plasticity which should then be combined with the advice of a structural engineer to ensure compliance with NHBC requirements. Any comments provided in this report are for prelimary estimate only and should not be interpreted as a giudance for structural purposes, such being outside the scope of this report.

10 Underground amenities

No information on existing underground amenities and any associated risk has been provided. Any potential risk to amenities from root development would require a specialist survey beyond the scope of this report.

11 Tree Preservations and Conservation areas

No information has been obtained

It should be noted that any works carried out within TPO or Conservation areas, must have planning permission from the local authority as there would be liability for substantial fines for unauthorised work.It would therefore be the responsibility of the client to confirm with the Local Authority the status and if required to obtain relevant planning. IROS*ARB* can assist with this.

The removal of dead trees and branches and management of tree with immediate risk of harm are exempt from planning restrictions, however in TPO and Conservation Areas, it would be normal to provide at least 5 days notice of the intended work backed by photographs demonstrating the particular issues.

12 Tree Notes and Recommendations

See Appendix 1 and Conclusions

13 Constraints and Protection Study

Constraints and impact planning is to take into account the RPA (underground constraints) and the above gound constraints such as tree spread and potential growth and how the development will impact on present tree infrastructure including identifying which trees would be incompatible with the development and assessing the working and access areas and the effect the proposed development may have on the tree amenity value, protection of overhanging branches including for vehicle height restrictions and evaluation of infrastructure requirements.

It should be noted that quality mature, late mature and/or veteran trees (Category A) should be retained within adequate space and root protection due to their extensive and substantial amenity value and development plans need to be aware of this requirement.

With reference to proximity of structures to trees, the default position is that structures are to be located outside the RPA of trees to be retained. There is possible provision for this to be overidden where it can be demonstrated that trees can remain viable and damage mitigated or avoided including for structural design that avoids any foundation trenching, considering however that close proximity of structure to trees, particularly species with large growth potential is not desirable.

14 Root Protection Area

Root Protection area (RPA) is the area of boundary radius measured as 12 x stem diameter where ground disturbance should be absolutely minimised to avoid soil compaction and root disturbance. See Appendix 2

Construction Exclusion Zone (CEZ) would normally be the same where possible as the RPA and are zones where construction activity is not permitted other than minor landscape works excluding change of soil levels. These areas are to be fenced off throughout the whole of the construction site works and the following restrictions shall apply:

* No construction activity whatsoever.
* No vehicles or plant machinery shall be driven or parked.
* No tree works, other than those specified to be undertaken.
* No alterations of ground levels or conditions.
* No chemicals or cement working permitted.
* No excavation whatsoever.
* No temporary structures.
* No spoil to be stored.
* No fires.
* No hazardous materials (including cement products) .

Restricted Activity Zone (RAZ). Where it is not practical to form a CEZ because of access issues or works proposed then an RAZ is imposed with monitored limitations to be placed. Temporary fencing would be required which could be moved as necessary. Ground protection measured would also need to be specified and incorporated.

* A suitable load bearing protection system is mandatory and will remain in place except for local approved works.
* No temporary structures to be installed
* Ground levels shall be maintained except for 100mm of topsoil only
* To avoid damage to tree roots, existing ground levels should be retained within the RPA. Intrusion into soil (other than for piling) within the RPA is generally not acceptable, and topsoil within it should be retained in situ. However, limited manual excavation within the RPA might be acceptable, subject to justification. Such excavation should be undertaken carefully, using hand-held tools and preferably by compressed air soil displacement
* Soil density should be maintained at no greater than 1.6g/cm^3
* Storage of materials shall be limited to those needed for the completion of the works. These shall be arranged in a tidy and orderly manner. Heavy materials will need to be stored outside the RAZ.

* No spoil or waste.
* No fires permitted
* No hazardous or cement based material
* Any required plant access shall only be permitted on load bearing protection and shall be limited to the minimum possible and without any threat of damage to trees including for first branch height.
* **Where underground apparatus is to pass within the RPA, detailed plans showing the proposed routing should be drawn up in conjunction with the IROS*ARB.* In such cases, trenchless insertion methods should be used, with entry and retrieval pits being sited outside the RPA. Provided that roots can be retained and protected in accordance, excavationusing hand-held tools might be acceptable for shallow service runs.**

Suggestions for trenchless solutions for utilities

Method	Accuracy	Bore dia. [A]	Max. sub. [B] length	Applications	Not suitable for
	mm	mm	m		
Microtunnelling	<20	100 to 300	40	Gravity-fall pipes, deep apparatus, watercourse/ roadway undercrossings	Low-cost projects due to relative expense
Surface-launched directional drilling	≈100	25 to 1 200	150	Pressure pipes, cables including fibre optic	Gravity-fall pipes, e.g. drains and sewers [C]
Pipe ramming	≈150	150 to 2 000	70	Any large-bore pipes and ducts	Rocky and other heavily obstructed soils
Impact moling [D]	≈50 [E]	30 to 180 [F]	40	Gas, water and cable connections, e.g. from street to property	Any application that requires accuracy over distances in excess of 5 m

[A] Dependent on strata encountered.

[B] Maximum subterranean length.

[C] Pit-launched directional drilling can be used for gravity fall pipes up to 20 m subterranean length.

[D] Impact moling (also known as thrust-bore) generally requires soft, cohesive soils.

[E] Substantial inverse relationship between accuracy and distance.

[F] Figures given relate to single pass: up to 300 mm bore achievable with multiple passes.

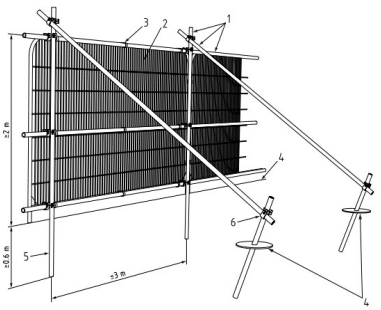
15 Protective Barriers

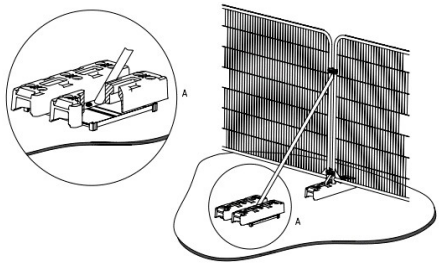
The purpose of protective barriers is for construction activity to be kept away from the Root Protection Areas including the Construction Exclusion Zones or Restricted Activity Zones and should be fit for the purpose required.

The barriers should be erected prior to the commencement of any site activity. Barriers should be able to withstand minor knocks from plant and other site activity and should be secure.

The barriers may be of a scaffold and wire mesh type fixed into the ground or a back stay design where a ground fix may not be practical and should be secured with anti-tamper fixings. IROS recommends CLD Fence Safe System.Barriers should be maintained and kept in good condition

Specification for barrier





16 Ground Protection

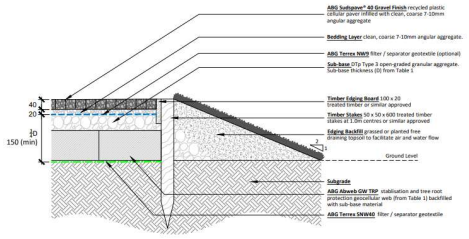
Where temporary access or works are required within the RPA, the barriers should be set back as appropriate for the time required and protection measures established so as to avoid soil compaction and damage to the roots.

Suitable ground protection should be capable of supporting required traffic. For pedestrian traffic, scaffold boards could be lain onto 10mm of woodchip or similar over a geotextile membrane

Where access is required for plant, whether hand operated of driven. IROS recommends using ground protection mats with approriate loadings for traffic required. Again these should be lain on a bed of woodchip of 150mm over a geotextile membrane. These are available from www.groundprotection.co.uk

17 Foundations within RPA's

Where paving or walkways are required within an RPA zone, a "no dig" policy would be expected. It would be required therefore to install a cellweb system. An example would be the ABG Abweb TRP Sysytem www.abgltd.com



For installation of timber structures such as decking, walkways and garden buildings, ground screws would be a suitable installation within RPA's. Guidance is that a maximum of 15% of an RPA is affected. These are available from www.terra-uk.com

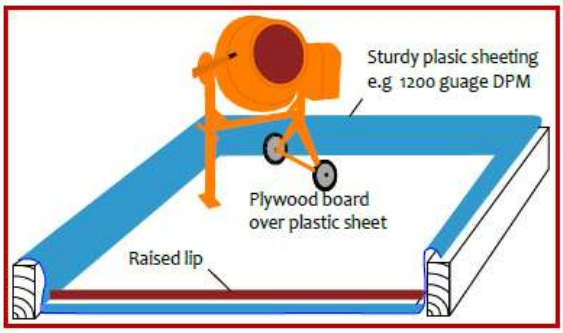




18 Hazardous Materials Management

The RPA, CEZ and RAZ must be kept absolutely clear from any contamination from both hazardous materials, hydrocarbons and waterlogging including cement or concrete spillages or water run offs from other areas within the site that could contain such materials

Any mixing of cement or cement based products and any hydrocarbon based products shall and will take place outside the restricted zones and shall be carried out within bunded areas to avoid unintended run off. All such processes shall be stored and carried out in accordance with COSHH Regulations and apart from protected zones.



19 Impact Assessment (See Appendix 3)

Overview	Trees affected (to be confirmed)
Tree removal: Cat A	N/A
Tree removal: Cat B	N/A
Tree Removal: Cat C	N/A
Tree Removal: Cat U	N/A
Tree work as recommendations	N/A
RPA: Foundations	N/A
RPA: New Hard Landscape	N/A
RPA: Existing Hard Landscape	N/A
RPA: New Underground Services	To avoid RPAs. No information provided
RPA: Soil Compaction	N/A
Other issues	N/A

For identification of trees, please refer to Appendix 1 for detail and Appendix 2 for plan layout

20 Implementation of Recommendations

All tree work must comply with BS3998 guidelines and current professional good practice by a qualified treework contractor with adequate insurance cover and taking into account statutory protection for birds, bats and any other protected species. All branch removal to be in accordance with target pruning practice and to branch bark ridge. "Topping", flush cuts and stub ends are not to professional standards and can cause extensive damage to the tree physiology. No liability can be accepted for damage and/or failure of tree structure due to unprofessional treework.

21 Remedial Tree Planting

Applicable

ID	Standard	Species	Girth	Height	Potential
RT1 x 3	Heavy	Betula pendula	12 / 14	2.5m	10m
RT2 x 2	Heavy	Betula jacquemontii	12 / 14	2.5m	10m
RT3 x 1	Heavy	Sorbus aucuparia	12 / 14	2.5m	9m

Planting Study

There are many considerations when planting trees including selecting the right site and species taking into account tree growth and the effect in 50 years or more. Ideally we want trees planted to be able to establish well and grow to maturity. Considerations could include:

* Tree Planting and maintanence to be in accordance with BS8545
* Planting to include for GreenBlue RootRain Metro watering systems
* Tree ties to be hessian and to be adjusted annually
* Trees selected to be suitable for relative soils profiles as identified
* Statutory clearance of overhead services
* Local ecology including native species
* Tolerance of local climate such as urban or coastal
* Size and selection of stock
* Watering must be maintained during dry periods with no rainfall within 7 days.
* GBU RootRain watering system to be used.
* It should be noted that where trees are to be established in hard landscape, a suitable rootcell system such as GreenBlue Urban Rootspace 400 would need to be incorporated to allow for uncompacted soil with aeration and irrigation systems. A rootcell system allows for suitable conditions for root elongation and protects the hard landscape from secondary root growth and associated damage. For further information visit www.greenblue.com



RootSpace

The GreenBlue Urban RootSpace® system is manufactured with a lattice design, maximising vertical and lateral loadings, giving excellent soil volume for roots and to be utility friendly.

22 Illustrations

Group T1 - T6



23 Concluding Comments.

1) Existing trees not impacted by development.

2) Location of proposed store has been cleared including 3 small trees.

3) Only those trees adjacent to site have been recorded.

4) Protective barrier to be installed to protect existing during works.

4) No services to be installed within Construction Exclusion Zone.

5) T007 protected by existing wall.

6) It is prosed to plant 6 trees as listed. Locations within the property to be decided by client, to the east of the site.

24 Disclaimer and Limitations

Tree report is provided subject to IROS standard terms and conditions. www.iros-uk.com . Assessment is carried out through visual assessment. Trees are inspected from ground level only. Report based on BS5837. Decay detection, soil sampling, plasticity testing or sapflow measurement or other technical information, are only included if indicated. Soils profile is provided by the National Soils Resources Institute or BGS data and IROS do not accept any liability with regards to the accuracy of the information. All information is provided as preliminary and is subject to more detailed assessment and all measures are approximate only. No advice is given in relation to the structural integrity of the proposed property and underground amenities connected to the property and such advice is deemed to be outside the scope of this report. It will be deemed to be accepted that the information provided is for guidance relating to sound arboricultural management for property development projects but is not provided with regards to influencing financial decisions including morgage or insurance providers.

25 Time Limitation

Any warranty shall be subject to the time limitation as set out in the Iros terms and conditions and any client, funder or insurance provider shall be deemed to have accepted unconditionally such limitations as adequate and reasonable.

26 Trees as Living Organisms

Trees are subject to both biotic and abiotic disorders and the health, vigour and stability of a tree can change substantially and very quickly. In particular, all trees are subject to storm damage and windthrow due to severe weather conditions and IROS Arb cannot accept any liability with regards to structural failure due to severe weather including for windspeeds of over 16m/s. Visual tree assessment as carried out may not identify biotic pathogens and where no external evidence is identifiable, non visual biotic disorders are deemed to be outside the scope of this report which is only preliminary for development purposes.

27 Biodiversity and Habitat

Trees provide extensive biodiversity habitat and are covered by statutory instruments relating to various flora and fauna with particular reference to wild bird nesting, bats, red squirrels and others. This report does not take account of such issues which shall be deemed to be outside of the scope of this report. The client acceps that a seperate ecologicalsurvey would be necessary to report on related ecological issues.

IROSARB
ARBORICULTURE & URBAN FORESTRY

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