

Data Centre at Imperial Park, Duffryn, Newport

Arboricultural Impact Assessment

Next Generation Data

October 2020

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1. Introduction

1.1. Terms of reference

Atkins Limited (Atkins) has been commissioned by NGD to undertake a tree survey in accordance with the British Standard BS 5837:2012 '*Trees in Relation to Design, Demolition and Construction – Recommendations*' in support of a planning application to construct a new datacentre on brownfield land adjacent to the existing Data Centre on Celtic Way at Duffryn, Newport.

This report is an Arboricultural Impact Assessment (AIA), focusing on the trees within and adjacent to the extents of the site. It reports on the impacts on the recorded trees from the proposals and is supplemented by the production of a Tree Protection Plan (TPP), which is included within Appendix E of this report.

1.2. Site location

The application site is located on former industrial land directly to the east of the existing large data centre buildings on Celtic Way. The site is bounded to the north-east by South Lake Drive, and to the south-west and north-west by a recently constructed road linking roundabouts on Dyffryn Lane and Imperial Way. On the south-east side the site is edged by dense self-set vegetation which extends south-east within the loop of South Lake Drive.

The Ordnance Survey national grid reference for a point at the centre of the site is ST 28504 84467.

1.3. Proposed works

The General Arrangement drawing (number VAN-ATK-D3-00-DR-LA-0001) prepared by Atkins in September 2020 shows proposals to build a large data centre building at the site, with 4m high secure fencing to enclose the site on all sides. The area within the site between the building and the fencing is mostly hard surfacing for vehicle access, parking and pedestrians. Drainage swales are proposed in parts of the site near to the boundary.

The layout of the proposals has been overlaid on to the TPP to determine the impacts of the works on the existing tree stock.

1.4. Scope of works

This report presents arboricultural information captured on 16 September 2020 by Atkins' Landscape and Arboricultural Consultant Adam Atkins, BA (Hons), CMLI, TechCert (ArborA).

The scope of works includes: the survey of trees that could be impacted by the Scheme; the preparation of an AIA; and the preparation of TPP drawings which display in graphic form the trees surveyed and the impact of the works.

2. Methodology

2.1. General

This tree survey has been undertaken in accordance with BS 5837:2012 *Trees in Relation to Design, Demolition and Construction – Recommendations*. The Standard gives recommendations and guidance on the relationship between trees and the design, demolition and construction process, setting out the principles and procedures to be applied to achieve a harmonious and sustainable relationship between trees and structures.

BS 5837:2012 does not set explicit parameters for measuring the sensitivity of an arboricultural resource; nor does it assess the magnitude of impact of a proposed development on trees (other than by providing a record of the number of trees that would need to be removed to facilitate the development). Rather, the British Standard provides parameters which enable the arboriculturist to assess the quality of all the trees and other arboricultural features that may be affected by the development that is proposed.

Whilst the BS categories are open to varied interpretation, the guidelines in the cascade chart of BS 5837:2012 (see insert A. 1 in Appendix A of this report) provide details on how to determine tree qualities and can be used to inform the design process to retain those trees of higher quality where possible.

2.2. Spatial scope

The survey works focused on all trees within the site red line boundary and in the area to the south of the site.

2.3. Data gathering

Data were collected in accordance with BS 5837:2012, as outlined in Appendix A of this report. The purpose of the tree categorisation method applied by the arboriculturist was to identify the quality and value (in a non-fiscal sense) of the existing tree stock, allowing informed decisions to be made concerning which trees should be removed or retained if development is to occur.

For a tree to qualify under any given category, it should fall within the scope of that category's definition as defined in Figure A2 in Appendix A (categories U, A, B, C) and, for trees in categories A to C, it should qualify under one or more of the three sub-categories (1, 2, 3). Sub-categories 1, 2 and 3 are intended to reflect arboricultural, landscape and cultural values, respectively.

Trees were recorded as individual specimens and groups. Where trees were recorded as groups, measurements were in some instances taken from the largest tree within the group.

This level of survey meets the requirements of BS 5837:2012, which states that 'trees growing as groups or woodland should be identified and assessed as such'. The British Standard defines the term group as 'trees that form cohesive arboricultural features either aerodynamically (e. g. trees that provide companion shelter), visually (e. g. avenues or screens) or culturally including for biodiversity (e. g. parkland or wood pasture)'.

The method of measuring diameters is described in Appendix A of this report. Crown spreads of the surveyed trees were given as an average measurement or to the relevant cardinal points with regards to the proposals. The average measurement was taken from the cardinal point relevant to the direction of the proposed Scheme. This level of survey is deemed sufficient by the arboriculturist in order to establish the extent of the crown spread in the direction of the proposals. All crown spread measurements should be taken from the tree survey schedules (Appendix B of this report).

The trees were assessed in line with the Visual Tree Assessment (VTA) method as developed by Mattheck and Breloer (1994). This method is based on the axiom of uniform stress, whereby a tree will grow in response to environmental stimuli to produce a structure that bears forces evenly across its surface. As such an internal defect, such as decay, would initiate a noticeable change in the stem's shape to accommodate the physical change.

2.4. Survey

The approach to the survey involved a ground-level walked assessment.

Partial topographic survey data about existing trees were supplied. Where not shown, the location of individual trees and the outline of groups were plotted using a proprietary GIS data capture software on a Trimble hand-held mobile mapper and verified using available aerial imagery.

The trees and groups were numbered sequentially from 001. Individual trees recorded were prefixed with a 'T' (e.g. T001), groups of trees with a 'G' (e.g. G002). No numbered aluminium tree tags were used for the survey.

2.5. Limitations to survey

Where access permitted, trees were identified and inspected from ground level only and were not climbed. No invasive examination techniques (such as increment boring, or internal decay detection) were carried out and as such no assessment of the internal condition of the wood of these trees can be given.

The tree survey undertaken is not intended to be a tree risk management survey targeting safety-related issues. However, where specific hazards have been identified these have been recorded and management recommendations provided and are detailed within the tree survey schedules (see Appendix B of this report).

The BS 5837:2012 does not include arguments for or against development, or for the removal or retention of trees. Where development is to occur, the standard provides guidance on how to decide which trees are appropriate for retention.

Validity, accuracy and findings of the tree locations will relate directly to the accuracy of the supplied topographical data, available aerial imagery and the GIS data capture software being used. As such, the accuracy of the tree locations is potentially open to discrepancies and their locations may need verifying.

The report does not comment on possible effects of trees on neighbouring properties, including in relation to subsidence or heave, or with regard to possible hazards presented by trees surveyed.

Trees are living organisms subject to changes outside man's control. Trees and their environment alter with the seasons and it is as well to inspect trees whilst in full leaf and when out of leaf.

Following harsh or unexpected weather conditions, or heavy storms it is also prudent to inspect trees. Changes to ground water conditions will affect the root growth of a tree. Such changes are not always the result of man's influence and other factors may be involved.

3. Existing site conditions

3.1. Existing land use

The application site is currently disused, with robust fencing and locked gates ensuring no public access. The site has been cleared of most vestiges of its former uses, although demolition spoil and redundant construction materials, such as large diameter concrete tubing and plastic ducts, are spread around much of the site.

3.2. Historic land use

Old Ordnance Survey (OS) mapping shows a landscape of fields cut across by reens (drainage channels) which remained until the late twentieth century. The 1996 map shows the beginnings of a new business park, with parcels of land served by the meandering loop of North and South Lake Drives and the straight line of Celtic Way to the west; the whole laid out in anticipation of receiving businesses into a semi-formal but naturalistic landscape of water features and sweeping driveways, perhaps to be complemented by a stock of attractive, large trees.

The subsequent development has been more grid-like in form, and less landscape-focused, to the extent that North Lake Drive has disappeared, and the curve of South Lake Drive now seems somewhat at odds with its surroundings.

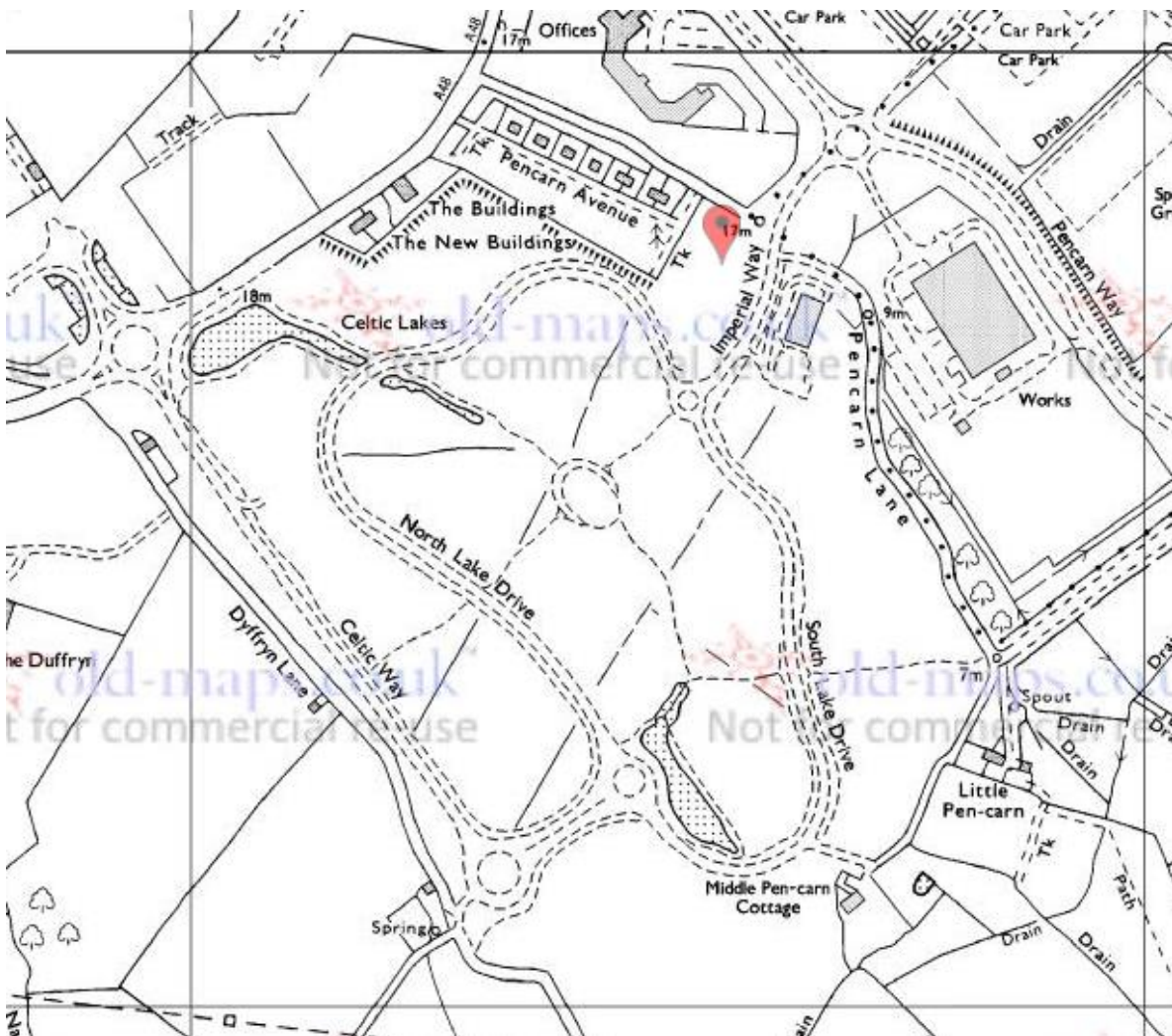


Figure 1: the 1996 edition of the Ordnance Survey map, showing the initial planned layout of the business park at Duffryn

3.3. Existing trees

All the vegetation within the fenced-off section of the survey area is self-set – no planted tree was observed.

The dominant species is goat willow, typically displaying its characteristic form – multiple stems leaning outwards from a central point in a starfish pattern. The oldest of these trees are passing from semi-maturity into the ‘early mature’ stage of life.

Other trees seen at the site include birch, grey and Italian alder, field maple, as well as saplings of oak and ash. Most of the more established trees are pioneer species, which are colonising the poor-quality terrain of the post-industrial site.

Spoil with a high aggregate content, presumably resulting from the clearance of the site, covers much of the ground in the south-east section of the site, and has been piled within the RPAs of trees at the front of the large area of vegetation recorded as group G005.

Elsewhere vegetation is growing around and through redundant construction materials strewn around the site, as shown at Figure 2. Although many of the young trees are showing structural defects associated with a lack of formative management, such as co-dominant basal forks, most of the self-set vegetation in groups G001-5 is in good physiological condition.

Self-set ornamental shrubs are also widespread around the site, including buddleia, dogwood, tutsan, pyracantha and cotoneaster. These are presumably descendants of ornamental plantings elsewhere in the surrounding area.



Figure 2: a goat willow grows inside concrete tubing

The formal trees at the site are all located on a mown grass verge at the side of South Lake Drive, in the north-east part of the site. These are semi-mature trees in standard form: 13no lime trees (G006) and 2no Norway maples (G008) are faring well; but 2no apple trees (G009) and 7no ash trees (G007) are showing poor vitality and, while this may be due in part to drought stress associated with a dry summer, the potential for the ashes to have been afflicted by the fungal disease ash dieback (*Hymenoscyphus fraxineus*), although conclusive evidence was not observed

there were a number of known symptoms visible, including frequent deadwood on ground at base, frequent browning and curling of leaflets, cankerous deformities and dieback of some twigs in lower crown where reachable. These are symptoms of the disease, but these also have parallels with drought stress.

3.4. Site topography

The land at the site is uniformly flat.

3.5. Soil assessment

No soil assessment was carried out on site by the Arboriculturist, although baseline data from the British Geological Survey webpage (<http://www.bgs.ac.uk>) indicate that the site has a bedrock geology of "St Maughans Formation - Argillaceous Rocks and [subequal/subordinate] Sandstone, Interbedded", with superficial deposits of "River Terrace Deposits (undifferentiated) - Sand and Gravel".

Where clay-based soils are present, the ground may be susceptible to volumetric changes resulting from the uptake and release of moisture by tree roots, which may influence any potential foundation development.

3.6. Statutory protection

Trees may be protected through a Tree Preservation Order (TPO). The law on TPOs is in Part VIII of the Town and Country Planning Act 1990 as amended and in the Town and Country Planning (Tree Preservation) (England) Regulations 2012.

A TPO is made by a local planning authority in respect of a tree(s) as the tree is considered to bring amenity value to the surrounding area. A TPO makes it an offence to cut down, uproot, lop, top, wilfully damage or wilfully destroy a protected tree without authorisation.

Newport City Council has confirmed that no trees at the site are subject of a TPO (see Appendix D).

Trees in a conservation area that are not protected by a TPO are protected under the provisions in section 211 of the Town and Country Planning Act 1990. There is a requirement to notify the local planning authority six weeks before carrying out certain work on such trees, unless an exception applies. Newport City Council has confirmed that no part of the Scheme is located within a conservation area.

Trees should be checked for protected species before works are undertaken. While it is outside of the scope of this tree survey to comment on the confirmed or likely presence of protected animal species, it is against the law to disturb bats or their roosts under the Conservation of Habitat and Species Regulations (2010). Likewise, nesting birds are protected by the Wildlife and Countryside Act (1981) (as amended). If protected species are discovered, then works should cease immediately and Natural England should be contacted for advice.

4. Arboricultural impacts

4.1. General

This report takes into account the trees adjacent to the proposed works and assesses their condition and suitability for retention. The report is supplemented by the TPP (Appendix E of this report), which presents in graphic form the trees recorded as part of the survey, their specific reference numbers and the impacts of the works.

The TPP is drawing number 5197938-ATK-ARB001.

The tree survey schedules within Appendix B of this report cover all the trees recorded as part of this assessment in line with the *BS 5837:2012* guidance.

4.2. Root protection areas

The Root Protection Area (RPA), as defined in the *BS 5837:2012*, is the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated as a priority. This area should be protected from disturbance "in order to avoid unacceptable damage to the tree as a result of severance or asphyxiation of the root system".

The recommended minimum area (m²) to avoid potentially harmful disturbance has been calculated and entered into the tree schedules (see Appendix B of this report) for all trees. The RPA for each individual tree has been illustrated on the TPPs as a circle centred on the tree's stem, whilst for the groups it's an offset from canopy extents for groups.

This representation of the RPA does not take into account pre-existing site conditions or other factors that can influence or modify the shape and disposition of tree roots. Accordingly, the Arboriculturist may make modifications or judgements on the likely extents of RPAs, where through professional judgement it is deemed likely that the root zones have been restricted in a certain direction because of limiting factors such as topography, drainage or the presence of existing built infrastructure.

4.3. Scheme details

The proposed works are illustrated on the TPP and are as described at section 1.3. The tree removals are marked on the TPP.

4.4. Arboricultural impacts and mitigation

The table below outlines the impacts of the proposals on the tree stock on site and likely mitigation measures required to facilitate the works. Table 4.1 below summarises the impacts on the trees.

Table 4.1 – Arboricultural impact table

Group / Tree No.	Species	Cat.	Removal due to		Mitigation required for		Details of how proposed build layout affects trees and mitigation
			Cons.	Cond.	Canopy	RPA	
G001	Goat Willow	C2	X	n/a	n/a	n/a	Intermittent small trees in footprint of proposed building or boundary fencing; <u>Approximately 7no individual trees to be removed.</u>

Group / Tree No.	Species	Cat.	Removal due to		Mitigation required for		Details of how proposed build layout affects trees and mitigation
			Cons.	Cond.	Canopy	RPA	
G002	A Group	C2	X	n/a	X	X	North-west edge of group in footprint of proposed access road and boundary fencing; HERAS-type protective fencing to be installed prior to start of all works to protect crowns and RPAs of trees to be retained; <u>255m² of trees to be removed.</u>
G003	A Group	C2	X	n/a	n/a	n/a	Group of trees in footprint of proposed building or hard surfacing for vehicles / pedestrians; <u>451m² of trees to be removed.</u>
G004	Birch	C2	X	n/a	X	X	Northern tree in footprint of proposed boundary fencing; HERAS-type protective fencing to be installed prior to start of all works to protect crown and RPA of second tree; <u>1no tree to be removed.</u>
G005	A Group	C2	n/a	n/a	n/a	n/a	Vegetation group not affected by proposed works.
G006	Lime	B2	n/a	n/a	X	X	Trees closely adjacent to proposed drainage swale at site boundary; HERAS-type protective fencing to be installed prior to start of all works to protect crowns and RPAs of trees.
G007	Ash	C2	n/a	n/a	X	X	As G006
G008	Norway Maple	B2	n/a	n/a	X	X	As G006
G009	Apple	C2	n/a	n/a	X	X	As G006

Key:

Group/ Tree number – Tree reference in the tree survey.

Species – Common name for species.

Cat – BS 5837:2012 Category rating.

Removal due to - Cons – Construction, Cond – Condition. An X or n/a (not applicable) dependent on appropriate action or impact.

Mitigation required for - Canopy or for RPA (Root Protection Area). An X or n/a indicates appropriate actions as a result of the impacts on the tree(s).

The impacts of the proposals have been quantified as accurately as possible given the information available at this time. At present the proposed works would require the removal of the following trees:

- 'Category A': no trees to be felled;
- 'Category B': no trees to be felled;

- 'Category C': **8no** individual trees in groups G001 and G004, and **706m²** of grouped trees (in groups G002/3) to be felled;
- 'Category U': no trees to be felled.

The removal of the trees is required because the trees are located directly in the footprint of the works, or so closely adjacent to the Scheme that the works would require significant RPA severance, i. e. over the maximum recommended threshold of 20% stated in the *BS 5837:2012* guidance.

4.5. Preliminary management recommendations

The tree survey schedules (see Appendix B) show management recommendations for those trees which at the time of the survey were identified as requiring management intervention.

4.6. Mitigation measures

An indicative location for protective fencing to protect trees is shown on the TPP. The exact location of the fencing should be confirmed prior to construction. The fencing should be erected before the commencement of works, and kept in place throughout the duration of the works.

The specification for the protective fencing should be a 'HERAS'-type fencing, which should be installed to protect both the crowns and RPAs of trees and to establish a Construction Exclusion Zone (CEZ) around the trees. Site operations not permitted in the CEZ without consultation with an arboriculturist include the storage of plant, equipment or materials; vehicular or plant access; the washing down of vehicles or machinery; the handling, discharge or spillage of any substances, including cement washings. No mechanical digging, scraping or excavation shall be permitted in the CEZ and no earthworks or changes in the finished ground levels other than those agreed by an arboriculturist.

Appendices



Appendix A. Key & British Standard 5837:2012 Survey Table

A.1. Survey key

Tree No: Sequential reference number given to the tree or group of trees as shown on the tree survey drawings.

Species: This is the common name given to the tree. The botanical name is sometimes given.

Height (Ht.): tree height from the base of the tree to its full stem height, measured in metres (m). Measurements are taken to the nearest half metre.

Stem diameter (mm): measured in accordance with Figure A1 below. Measurements are rounded to the nearest 10mm.

Branch spread (m): measurement of crown spread to the four cardinal points; if the crown is balanced a single measurement is given. Crown spread plotted on the tree survey drawings. Measurements are taken to the nearest half metre.

1st significant branch and direction of growth (m): measurement of the height of the first significant branch above ground level, given in metres and direction of growth e. g. 2. 4-N

Canopy height (m): height of the canopy above ground level. Measurements are taken to the nearest half metre.

Life stage: The following abbreviations are used:

Y = Young trees <1/5 life expectancy.

SM = Semi-Mature trees 1/5 – 2/5 life expectancy.

EM = Early Mature trees 2/5 – 3/5 life expectancy.

M = Mature trees 3/5 – 4/5 life expectancy

OM= Over-Mature trees >4/5 life expectancy

Vitality: Good, fair, poor or dead

Good – a tree with little or no obvious physiological defects; leaf density and colour are typical for the species, bud, flower and fruit production are good and there are no signs of dieback at any point throughout the crown.

Fair – a tree with moderate physiological defects; leaf density is less than typical for the species, leaf cover is chlorotic, bud, flower or fruit production are deficient, there are signs of minor dieback within the crown, there is a moderate degree of deadwood within the crown.

Poor – a tree with major or multiple physiological defects; evidence of extensive crown thinning, bud, flower or fruit production is poor or missing, there are signs of advanced dieback throughout the crown, there is extensive or major deadwood throughout the crown.

Dead – a tree that has died due to either old age, drought, disease, pest infestation, physical damage to the main stem or rooting system, or a combination of these factors.

General observations, particularly of structural and/or physiological condition: e. g. observations of any decay and physical defect.

Preliminary management recommendations: any identified preliminary management to rectify defects recorded in general observations. These may include the need for further detailed inspection, or works to address immediate hazard to life or property.

Estimated remaining contribution, in years:

<10

10+

20+

40+

Category grading: As per BS 5837:2012 chart in accordance with Figure A2 below.

A – Illustrated as light green (RGB code 000-255-000)

B – Illustrated as mid blue (RGB code 000-000-255)

C – Illustrated as grey (RGB code 091-091-091)

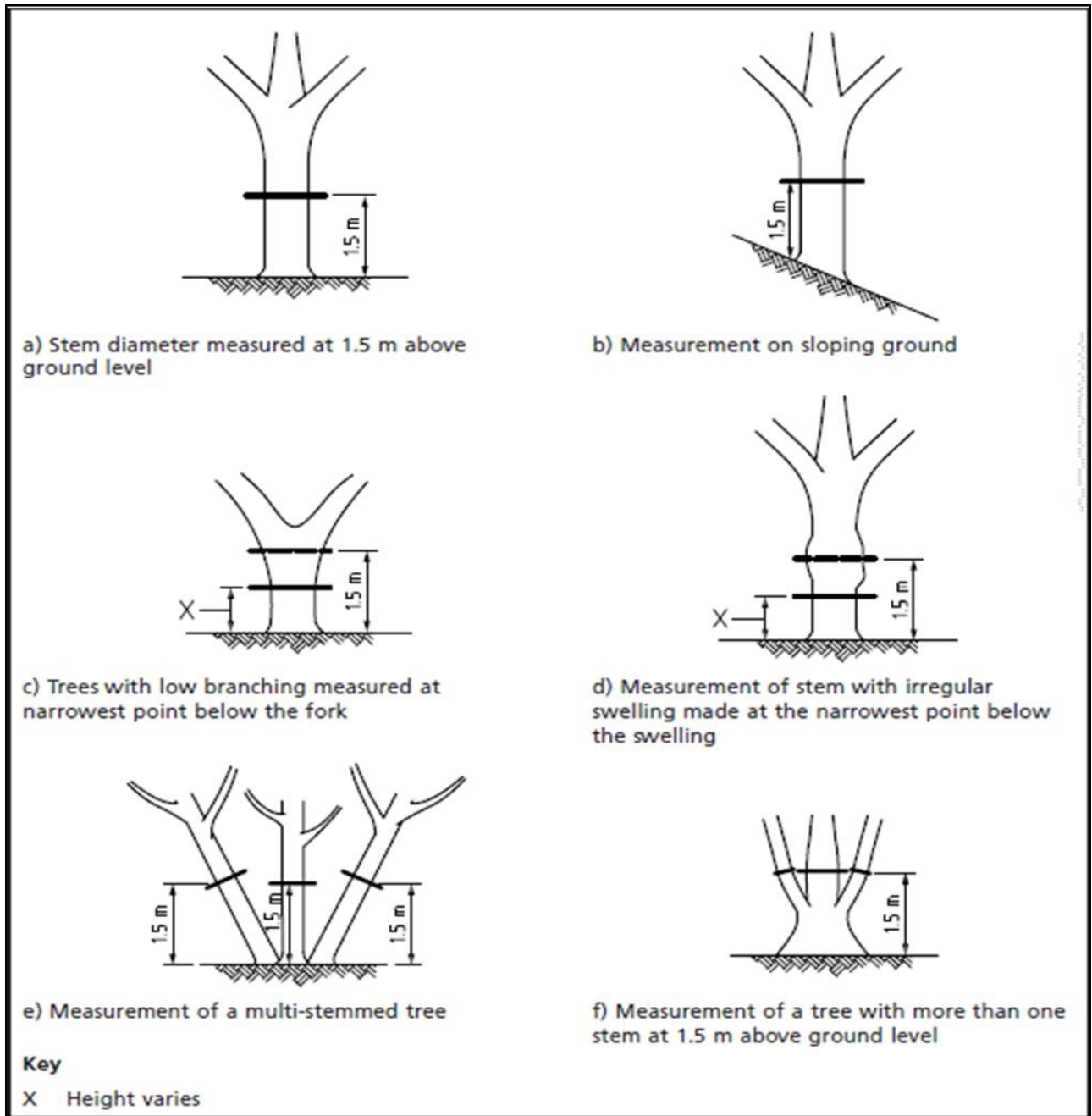
U – Illustrated as dark red (RGB code 127-000-000)

Root Protection Area (m²): plotted around each of the category A, B and C trees on relevant drawings, illustrating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability. The protection of the roots and soil structure is treated as of paramount importance.

(Note: Red hash tag '#' will denote that a measurement is estimated)

A.2. Measuring table

Measurement of tree stems dependant on tree form.



A.3. BS 5837:2012 cascade chart

Cascade chart for tree quality assessment from BS 5837:2012

Table 1 Cascade chart for tree quality assessment			
Category and definition	Criteria (including subcategories where appropriate)		Identification on plan
Trees unsuitable for retention (see Note)			
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	<ul style="list-style-type: none">Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning)Trees that are dead or are showing signs of significant, immediate, and irreversible overall declineTrees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality <p>NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.</p>		See Table 2
Trees to be considered for retention			
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	1 Mainly arboricultural qualities Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	2 Mainly landscape qualities Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	3 Mainly cultural values, including conservation Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value
Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value

Appendix B. Tree survey schedule

Tree no.	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				1st major branch height (m) / Direction	Canopy height	Life stage	Vitality	General observations Structural and/or physiological condition	Preliminary management recommendations	Established remaining contribution	Category grading	Root Protection Area radius
				N	E	S	W									
G001	Goat Willow	5	120 at 1000m m	2.5	2.5	2.5	2.5	0	0	Y	Good	Larger specimens of self-set pioneer vegetation that is widespread around north-west section of site	No works required at time of survey	10+	C2	1.4
G002	A Group	to 9	to 150	4.5	4.5	4.5	4.5	0.5	0.5	Y-EM	Good	Self-set vegetation dominated by goat willow with characteristic multi-stemmed form; co-dominant basal forks; growing among redundant industrial/construction materials; ground with high content of site clearance spoil; intermittent birch, dogwood, pyracantha, dog rose; young oak saplings	No works required at time of survey	10+	C2	1.8
G003	A Group	4	70	2	2	2	2	0.5	0.5	Y	Good	Self-set vegetation growing on post-industrial ground - goat willow, dogwood, infrequent Italian alder	No works required at time of survey	10+	C2	0.8
G004	Birch	6	60 + 70	2.5	2.5	2.5	2.5	0.5	0.5	Y	Good	Birch trees growing among other self-set scrub vegetation amid site clearance spoil; southern tree twin-stemmed	No works required at time of survey	10+	C2	1.2

Tree no.	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				1st major branch height (m) / Direction	Canopy height	Life stage	Vitality	General observations Structural and/or physiological condition	Preliminary management recommendations	Established remaining contribution	Category grading	Root Protection Area radius
				N	E	S	W									
G005	A Group	10	200	4.5	4.5	4.5	4.5	0.5	0.5	Y-EM	Good	Self-set vegetation, goat willow prominent with characteristic multi-stemmed form; co-dominant basal forks; growing among site clearance spoil with high aggregate content, with redundant industrial/construction materials widespread; layer of spoil spread in RPA of trees on north-west edge of group; dense bramble restricts access; occasional larger specimens of willows and infrequent more established field maple; into interior, saplings of ash, oak, cherry, grey alder	No works required at time of survey	10+	C2	2.4
G006	Lime	10 av. e.	380 ave.	4.5	4.5	4.5	4.5	3	2	SM-EM	Good	Pockets of decay where crowns lifted; some mutual crown suppression; frequent compression forks in tight crowns; rubbing and crossing branches; autumn leaf fall unseasonably advanced at time of survey	No works required at time of survey	20+	B2	4.6

Tree no.	Species	Height (m)	Stem diameter (mm)	Branch spread (m)				1st major branch height (m) / Direction	Canopy height	Life stage	Vitality	General observations Structural and/or physiological condition	Preliminary management recommendations	Established remaining contribution	Category grading	Root Protection Area radius
				N	E	S	W									
G007	Ash	10 av e.	210 ave.	2.5	2.5	2.5	2.5	2	2.5	SM-EM	Poor	Slender-stemmed by comparison with same-age neighbours of other species; low-vitality lifted crowns displaying possible drought stress; co-dominant forks; no conclusive evidence of <i>Hymenoscyphus fraxineus</i> but: frequent deadwood on ground at base, frequent browning and curling of leaflets, cankerous deformities and dieback of some twigs in lower crown where reachable	Observe for future vitality and possible 'chalara ash dieback'	10+	C2	2.5
G008	Norway Maple	10 av e.	270 ave.	3	3	3	3	2	2	SM-EM	Good	Quintessential amenity trees on closely mown grass verge; minor decay pockets at crown lifting wounds; minor mutual crown suppression	No works required at time of survey	20+	B2	3.2
G009	Apple	3.5 av e.	120 ave.	1.5	1.5	1.5	1.5	2	2	SM	Poor to fair	Established decay at basal wounds - fair reaction wood growth on southern tree; pockets of decay at crown lifting wounds; occasional bleeds; bacterial cankerous deformities in branches of north tree crown	No works required at time of survey	10+	C2	1.4

Appendix C. Glossary of terms

Table C-1 Glossary Table

Term	Description
Access Facilitation Pruning	One-off tree pruning operation, the nature and effects of which are without significant adverse impact on tree physiology or amenity value, which is directly necessary to provide access for operations on site.
Adaptive Growth	The process whereby wood formation is influenced both in quantity and in quality by the action of gravitational force and mechanical stresses on the cambial zone
Amenity Value	The environmental and landscape benefits of trees as opposed to their commercial value for timber
Ancient Woodland	Sites which have been wooded since at least 1600, as defined by English Nature and recognised as being of high nature conservation value, whether managed or not. They may be semi-natural or replanted.
Arboricultural Method Statement	Methodology for the implementation of any aspect of development that is within the root protection area, or has the potential to result in loss of or damage to a tree to be retained.
Arboriculture	The study and care of trees and other woody vegetation
Arboriculturist	A person who has, through relevant education, training and experience, gained expertise in the field of trees in relation to construction.
Cavity	An open wound, characterised by the presence of decay and resulting in a hollow
Co-dominant stems	Where a tree's main stem splits into two leaders, can also be called twin-stemmed.
Competent person	A person who has training and experience relevant to the matter being addressed and an understanding of the requirements of the particular task being approached.
Construction	Site-based operations with the potential to affect existing trees.
Construction Exclusion Zone	The area based on the root protection area to which access is prohibited for the duration of a project.
Coppice	A traditional method of woodland management in which young tree stems are repeatedly cut down to near ground level. In subsequent growth years, many new shoots will emerge, and, after a number of years the coppiced tree, or stool, is ready to be harvested, and the cycle begins again
Crown clearance	This is the removal of all dead, dying and diseased branches; in addition branches that are cleared away from a specific hazard e. g. live railway line.
Crown lifting	The removal of lower branches to provide a desired amount of clearance above ground level. This can be achieved either by the complete removal of a branch or only parts of which extend below the desired height
Crown reduction	The overall reduction of both the height and spread of the crown.
Decay	Process of degradation of woody tissues by fungi and bacteria through decomposition of cellulose and lignin.
Deadwood	Deadwood is often present within the crown or on the stems of trees. In some instances it may be an indication of ill health; however, it may also indicate natural growth processes. If a target is present beneath the tree, and falling deadwood may cause injury or damage it should be removed; if no target is

Term	Description
	present the deadwood may be retained intact for conservation purposes (insects, fungi, birds etc.).
Epicormic growth	A secondary growth from dormant adventitious buds on the stem or main branches.
Failure	In connection with tree hazards, a partial or total fracture within woody tissue or loss of cohesion between roots and soil.
Hazard beam	A branch that has over-extended in which strong internal stresses may occur without the compensatory formation of extra wood (longitudinal splitting may occur in some cases).
Hung-up limb	Dead or fallen branch from within the crown or from another tree's crown that has failed and been caught up by, and resting on, branches of a tree
Included Bark Junction	Pattern of development at branch junctions where bark is turned inward rather than pushed out. Potential weakness due to a lack of a woody union.
Ivy Growth	Ivy growth may ascend into the tree's crown, increasing wind resistance, concealing potential defects and reducing the tree's photosynthetic capacity. Ivy growth is often acceptable in woodland areas as a conservation benefit.
Monolith	A large bulk of standing dead wood. Usually the trunk of the tree or the trunk with the base of the branch frame work. These should be retained for wildlife habitat when the risk is appropriate for the location.
Pollarding	This involves the removal of whole branches to leave only the main trunk. In species such as willows and poplars such significant pruning is acceptable with new branches developing from the pollard heads. Secondary pruning of the new wood can help form a new canopy to the tree several years after the initial pollard
Reaction Wood	Specialised secondary xylem, which develops in response to a lean or similar mechanical stress, attempting to restore the stem to the vertical.
Root Protection Area (RPA)	The layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated as a priority.
Service	Any above or below ground structure or apparatus required for utility provision.
Stem	The principal above-ground structural component(s) of a tree that supports its branches.
Structure	A manufactured object, such as a building, carriageway, path, wall, service run, and built or excavated earthwork.
Structural Defect	Internal or external points of weakness, which reduce the stability of the tree
Sub-dominant stem	A branch within the crown that is not the dominant leader
Suppressed	Trees which are dominated by surrounding vegetation and whose crown development is restricted from above.
TPO	A Tree Preservation Order is an order made by a Local Planning Authority which in general makes it an offence to cut down, lop, top, uproot, wilfully damage or wilfully destroy a tree without first getting permission. Tree Preservation Orders are usually made to protect trees that make a significant contribution to the amenity of an area. They may particularly be made when it is felt that a tree may be under threat.
Tree Constraints Plan	Abbreviated to TCP. Plans showing specific tree constraints including Root Protection Areas and Crown spread.

Term	Description
Tree Protection Plan	Abbreviated to TPP. Scaled drawing, informed by descriptive text where necessary, based upon the finalised proposals, showing trees for retention and illustrating the tree and landscape protection measures.
Visual Tree Assessment	A non-invasive method of examining the health and structural condition of trees. Developed by Claus Mattheck and David Breloer 1994
Wound	Any injury, which induces a compartmentalisation response
Wound Wood	Wood with atypical anatomical features, formed in the vicinity of a wound and a term to describe the occluding tissues around a wound as opposed to the ambiguous term “callus.”

Appendix D. Statutory protection

Newport City Council has confirmed that no trees at the site are subject of a Tree Preservation Order, and the site is not located within a Conservation Area.

RE: Tree Preservation Order / Conservation Area enquiry



NCC - Tree Team <Tree.Team@newport.gov.uk>

To Atkins, Adam

Cc Carle, Shona (Trees and Woodlands Officer)

Reply

Reply All

Forward

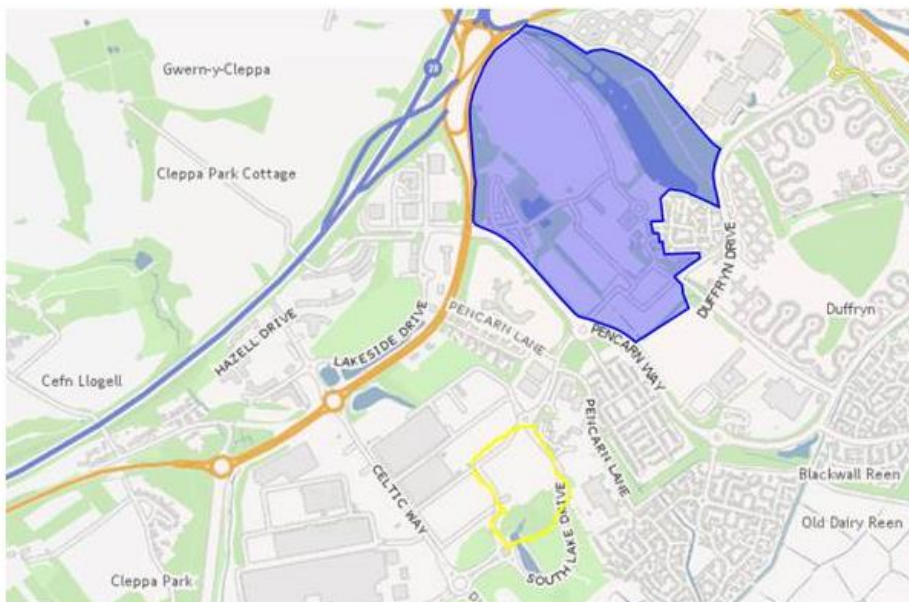
...

Fri 18/09/2020 14:19

Click here to download pictures. To help protect your privacy, Outlook prevented automatic download of some pictures in this message.

Hi Adam,

Checking this area I can't see any TPO's on the trees in this area, and you are not near any conservation area.



Cofion Cynnes / Kind Regards,

Paul Kane

Swyddog Cynorthwydd Coeddyddiaeth / Assistant Tree Officer

Cefn gwlad a Chadwraeth / Countryside & Conservation

Gwasanaethau'r Ddinas / City Services

Cyngor Dinas Casnewydd / Newport City Council

Rhif ffôn / Phone number: 01633 210076

paul.kane@newport.gov.uk

Figure 3: extract from e-mail from Newport City Council received on 18 September 2020

Appendix E. Tree protection plan drawings

Drawing(s) supplied separately

Atkins Limited
The Axis
10 Holliday Street
Birmingham
B1 1TF