



Gatwick Airport Northern Runway Project

Environmental Statement

Appendix 5.3.2: Code of Construction Practice Annex 6 – Outline
Arboricultural and Vegetation Method Statement – Part 6 – Clean Version

Book 5

VERSION: 4.0

DATE: JULY 2024

Application Document Ref: 5.3

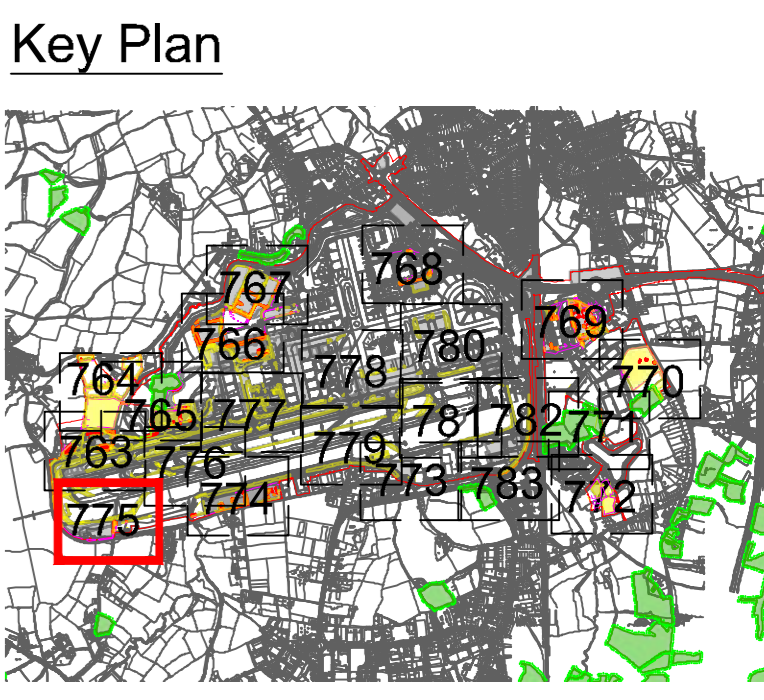
PINS Reference Number: TR020005



- Key**
- Site Boundary
 - Survey boundary
 - Projected Tree Loss (Worst Case Scenario)
 - Projected Vegetation Loss (Worst Case Scenario)
 - Indicative Scheme Layout
 - Indicative temporary protective fence/line in accordance with Section 6.2.2, BS5837:2012. See below for example barriers.
 - Indicative secondary protective Hi-Viz Mesh fence/line in accordance with Section 6.2.2, BS5837:2012. See below for example barriers.
 - Indicative vegetation protective fence/line: Design and location to be agreed by local council during detail design.
 - Designated Ancient Woodland (as per Natural England ancient woodland inventory, via open data publication)
 - Ancient Woodland tree buffer (15m offset) (as per planning advice produced by Forestry England and Natural England)

NOTES

- Refer to ES Appendix B 10.1: Tree Survey Report and Ancillary Impact Assessment for further details.
- Some trees or a small proportion from the ground and is not intended as a full arboricultural method.
- Plans produced in accordance with recommendations set out in BS 5837:2012 - Tables 6.1 to 6.4, 6.6 and 6.7.
- Survey based upon Aerial Photography and trees located by eye.



DOCUMENT

Environmental Statement

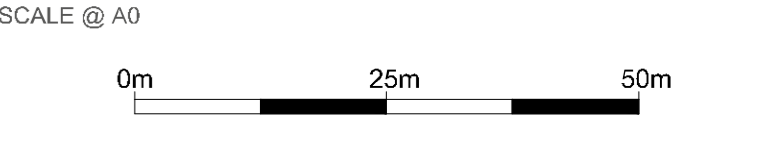
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Airport Preliminary Vegetation Removal & Protection Plans
Appendix 5.3.2 Annex 6
Sheet 13 of 21

DATE

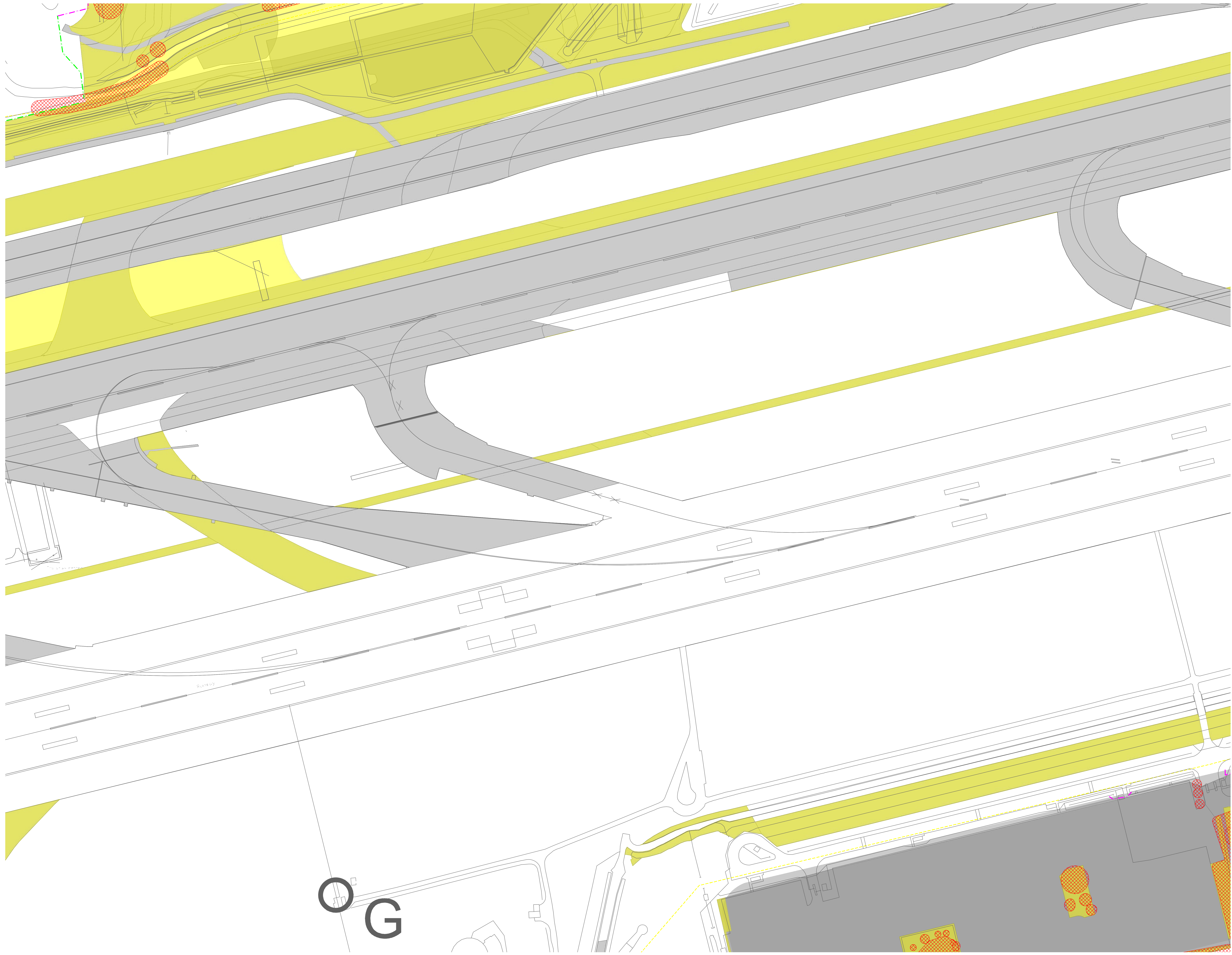
June 2024

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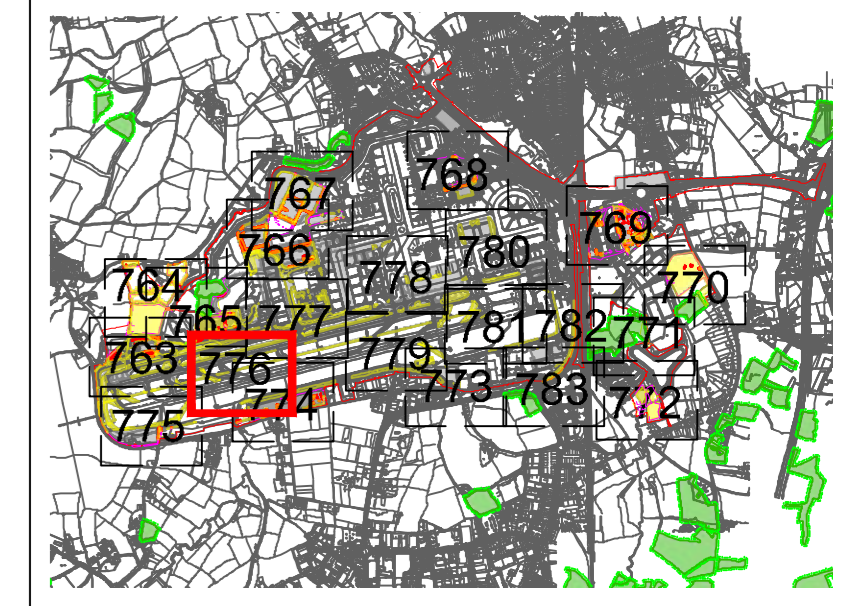


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- Some labels for visual inspection from the ground and is not intended as a 1:1 scale reference.
- Plans produced in accordance with recommendations set out in BS 5837:2012 - Trees in Relation to Developments and Construction.
- Survey based upon Aerial Photography and trees located by eye.

Key Plan



DOCUMENT

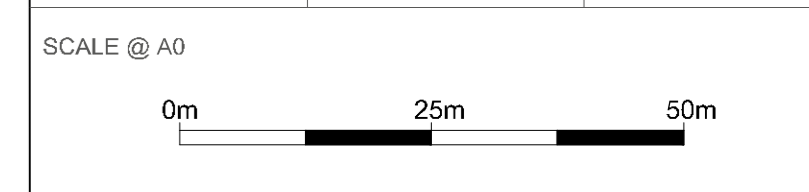
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Airport Preliminary Vegetation Removal & Protection Plans
Appendix 5.3.2 Annex 6
Sheet 14 of 21

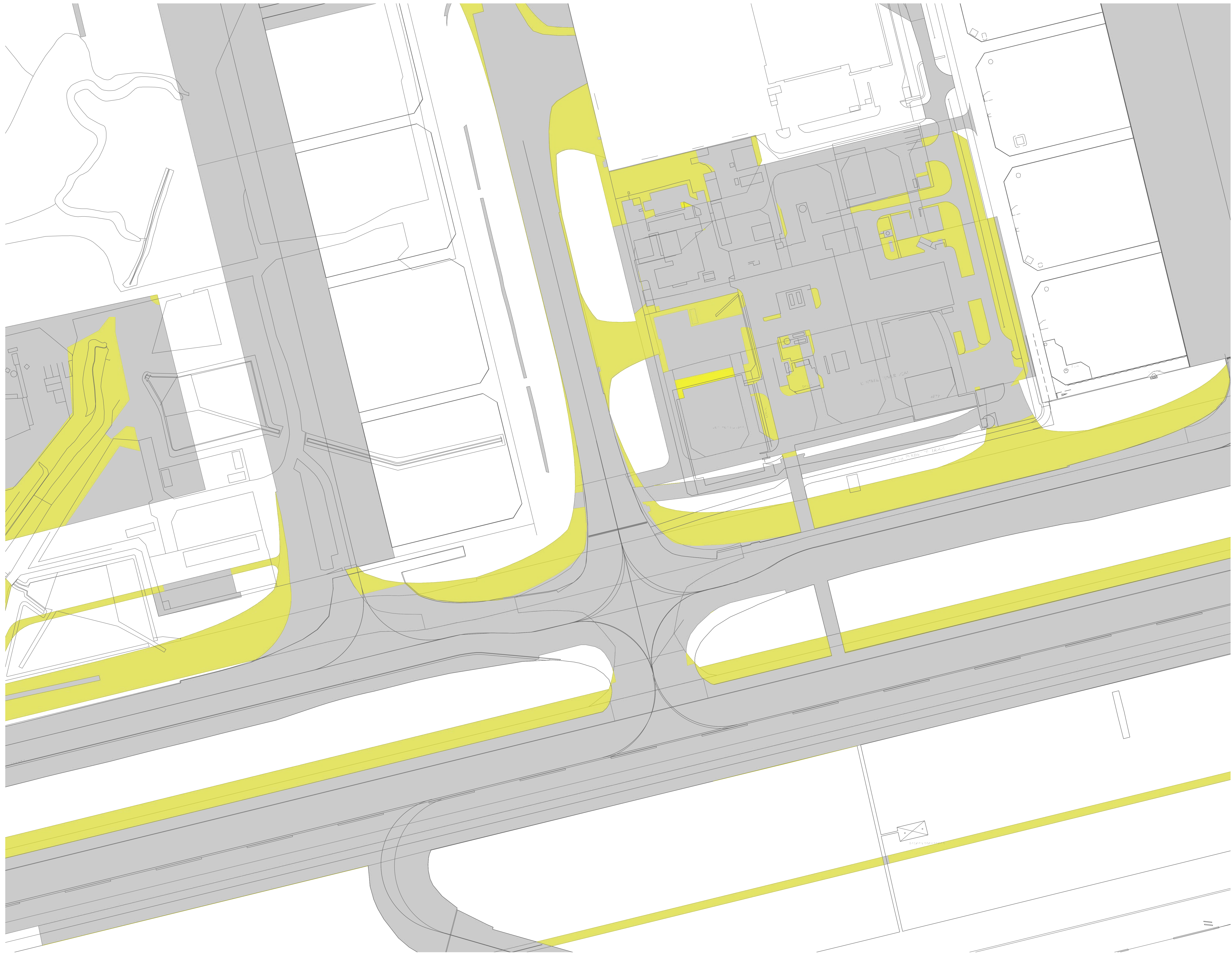
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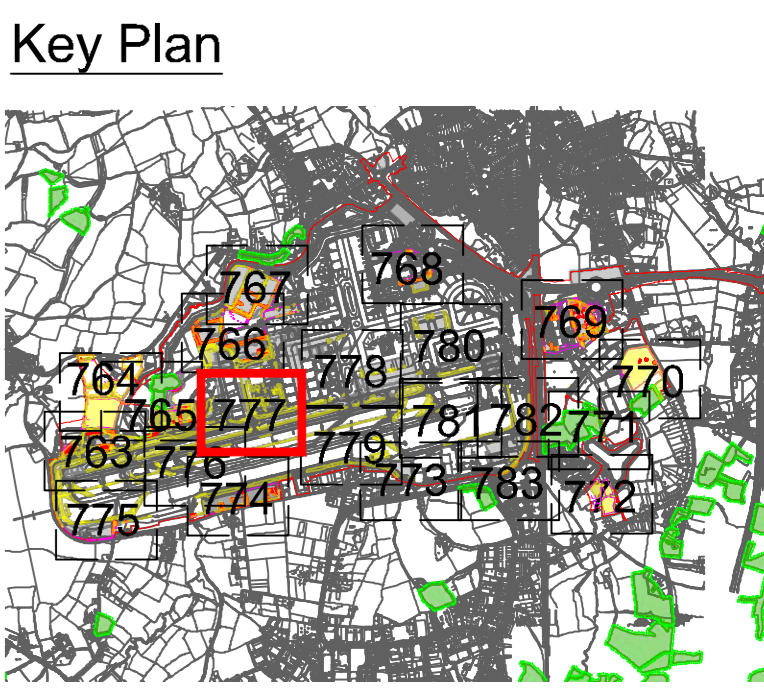
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NOTES

- Refer to ES Appendix 8.10.1: Tree Survey Report and Arboriculture Impact Assessment for further details.
- Some trees or shrubs are shown from the ground and are not intended to be removed.
- Plans produced in accordance with recommendations set out in BS 5837:2012 - Trees in Relation to Development and Construction.
- Survey based upon Aerial Photography and trees located by eye.



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Environmental Statement

DRAWING TITLE

Airport Preliminary Vegetation Removal & Protection Plans
Appendix 5.3.2 Annex 6
Sheet 15 of 21

DATE

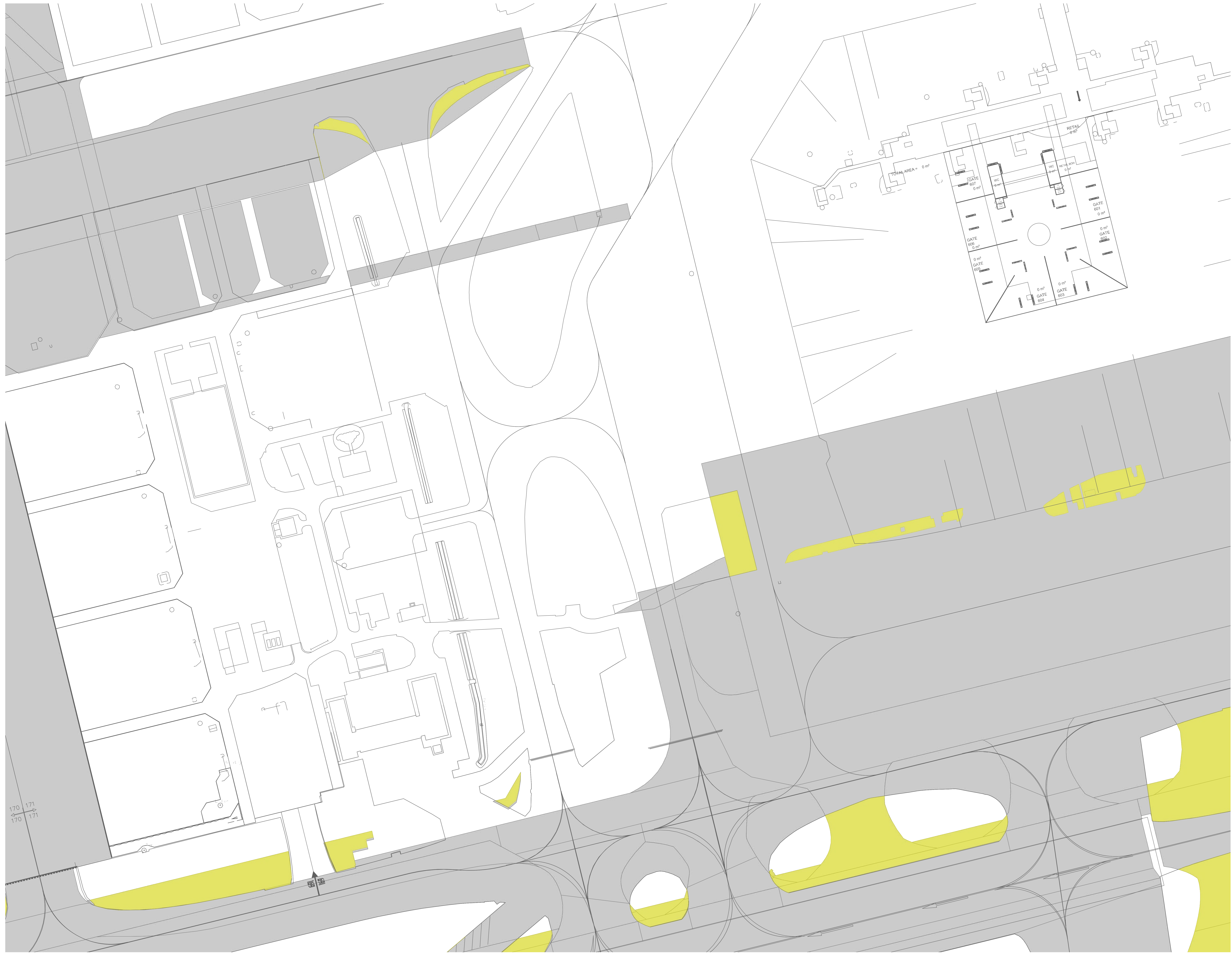
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SCALE @ A0

0m 25m 50m

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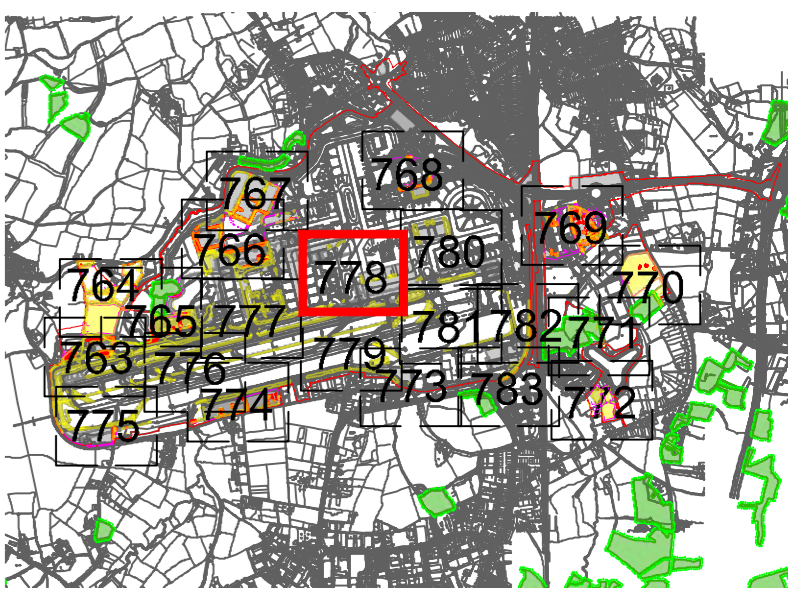


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NOTES

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- Some labels for visual inspection from the ground and is not intended to be a full aerial photograph.
- Plans produced in accordance with recommendations set out in BS 5837:2012 - Trees in Relation to Development and Construction.
- Survey based upon Aerial Photography and trees browsed by eye.

Key Plan



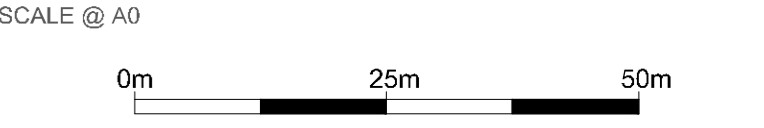
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Environmental Statement

DRAWING TITLE
Airport Preliminary Vegetation Removal & Protection Plans
 Appendix 5.3.2 Annex 6
 Sheet 16 of 21

DATE
June 2024

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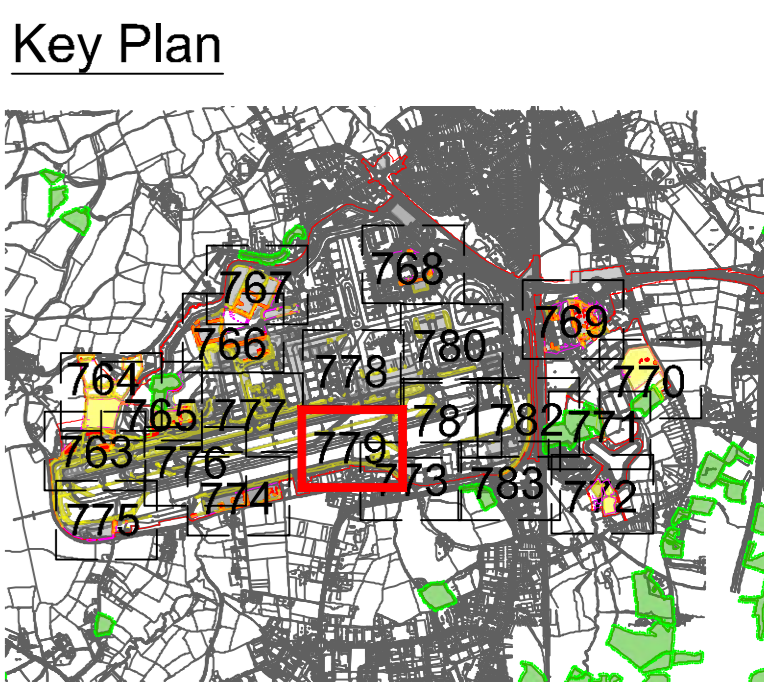
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 - Indicative vegetation protective fence/line: Design and location to be agreed by local council during detail design.
 - Designated Ancient Woodland (see our Natural England ancient woodland inventory - via open data publication)
 - Ancient Woodland tree buffer (15m offset) (see our planning advice produced by Forestry England and Natural England)

NOTES

- Refer to ES Appendix 6.10.1: Tree Survey Report and Ancillary Impact Assessment for further details.
- Survey based on visual inspection from the ground and is not intended as a full arboricultural assessment.
- Plans produced in accordance with recommendations set out in BS 5827:2012 - Trees in Relation to Road, Overhead and Overhead Structures.
- Survey based upon Aerial Photography and trees enclosed by a...



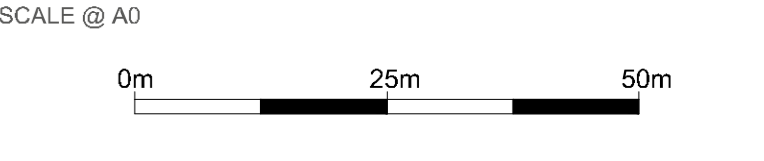
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Environmental Statement

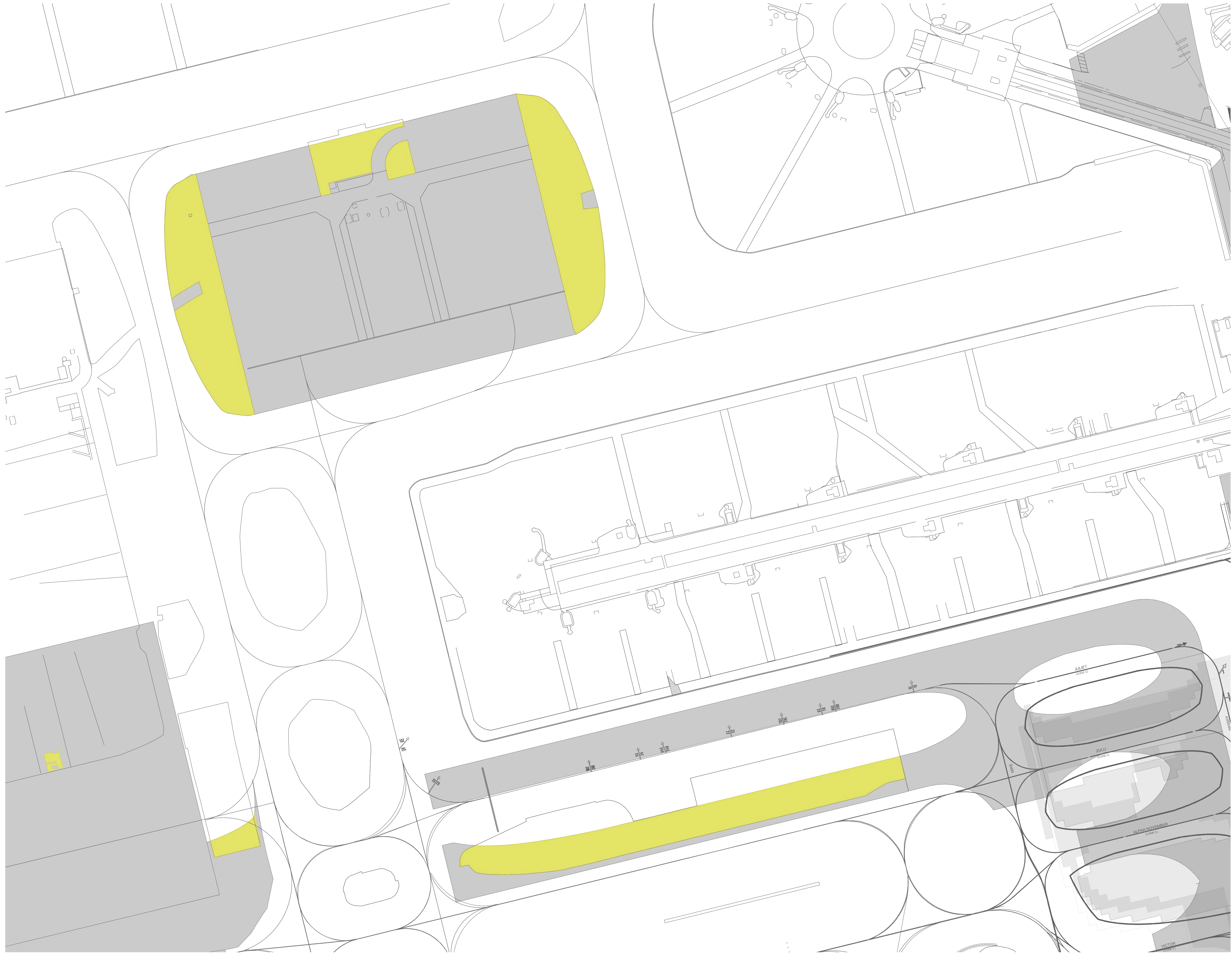
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 Appendix 5.3.2 Annex 6
 Sheet 17 of 21

DATE
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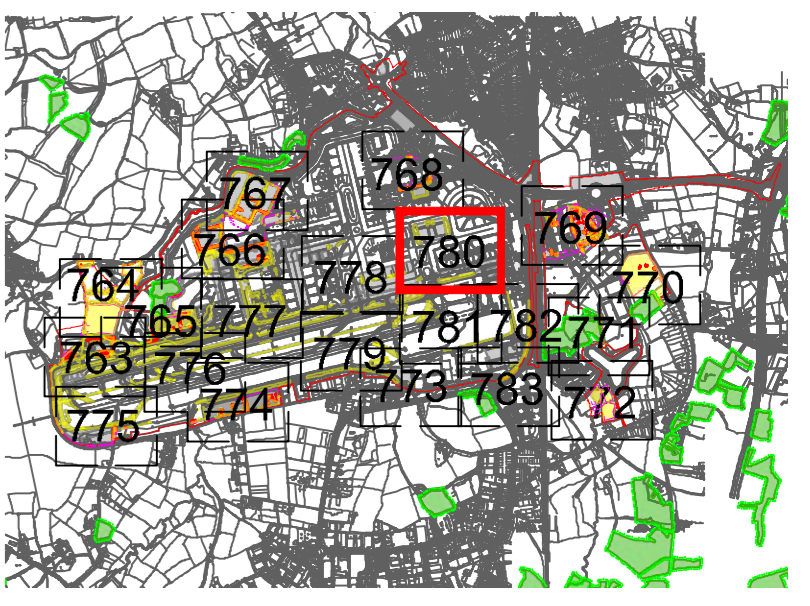


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NOTES

- Refer to ES Appendix B 10.1: Tree Survey Report and Ancillary Impact Assessment for further details.
- Some trees or a visual screen from the ground is not intended as a full vertical screen.
- Plans produced in accordance with recommendations set out in BS 5837:2012 - Trees in Relation to Development and Construction.
- Survey based upon Aerial Photography and trees located by eye.

Key Plan



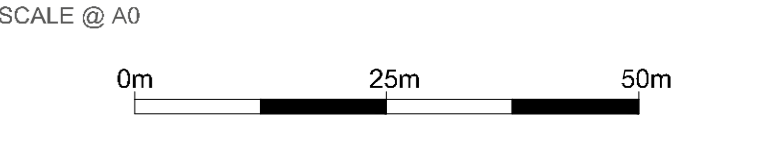
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Environmental Statement

DRAWING TITLE
Airport Preliminary Vegetation Removal & Protection Plans
Appendix 5.3.2 Annex 6
Sheet 18 of 21

DATE
June 2024

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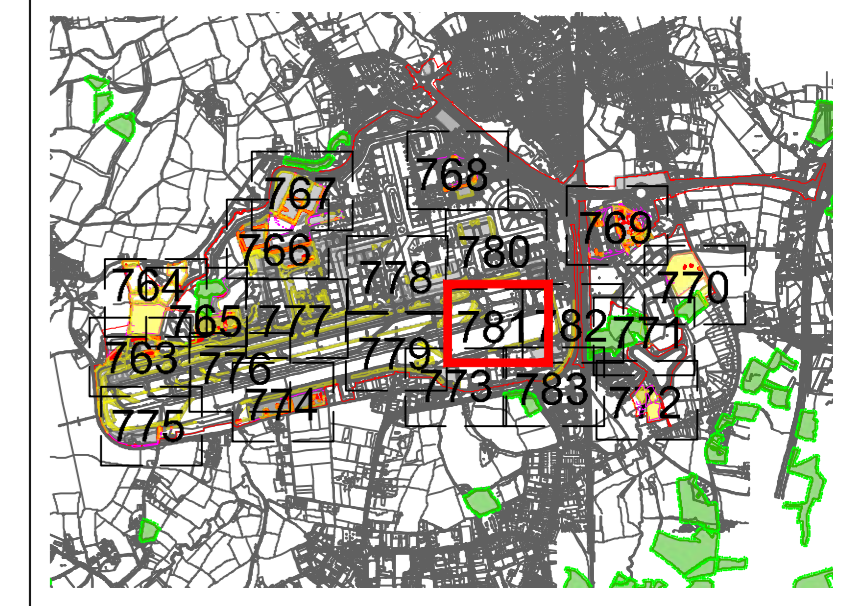


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NOTES:

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- Some trees of a visual importance from the ground and is not intended as a Hi-Vis protective fence/line.
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Key Plan



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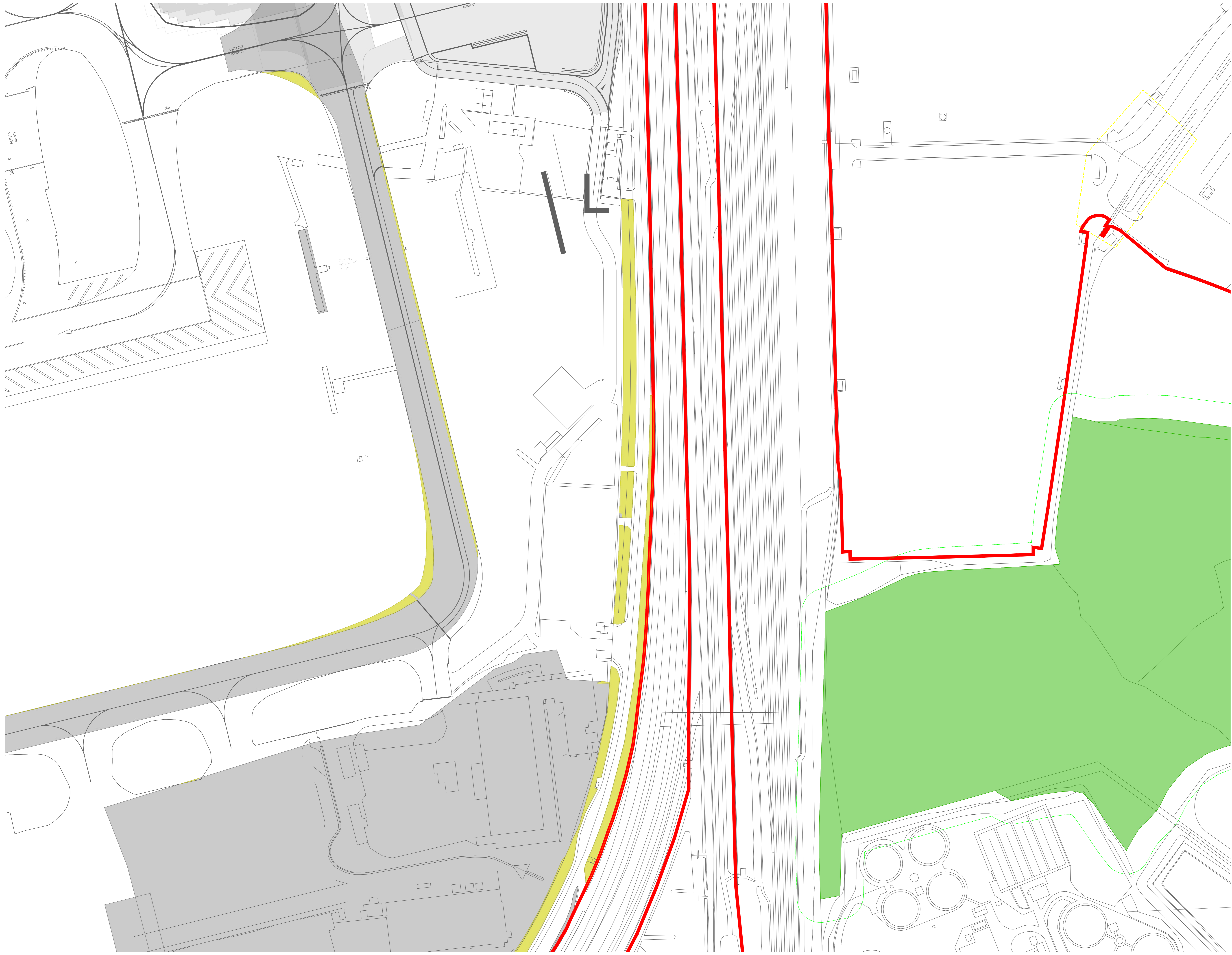
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Airport Preliminary Vegetation Removal & Protection Plans
Appendix 5.3.2 Annex 6
Sheet 19 of 21

DATE
June 2024

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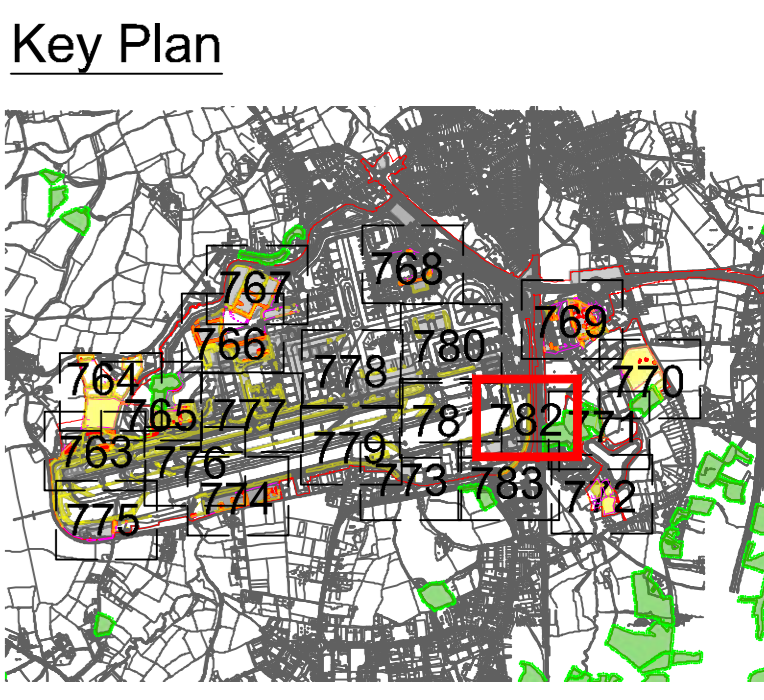
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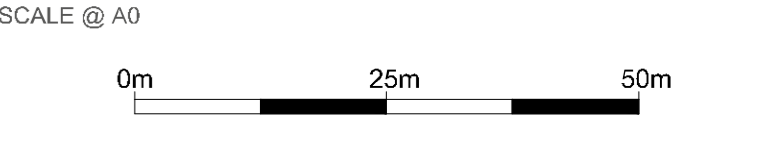
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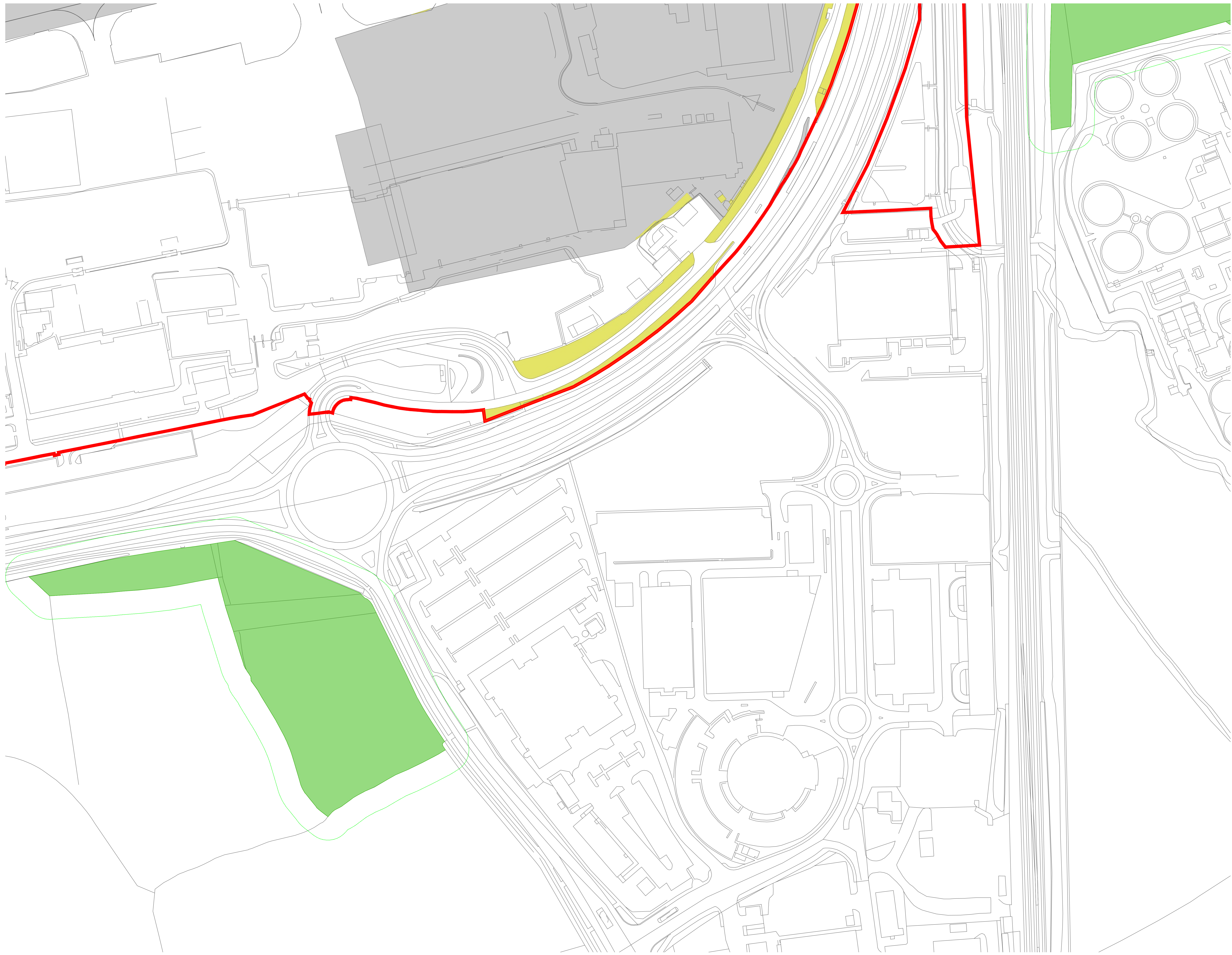
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Appendix 5.3.2 Annex 6
Sheet 20 of 21

DATE
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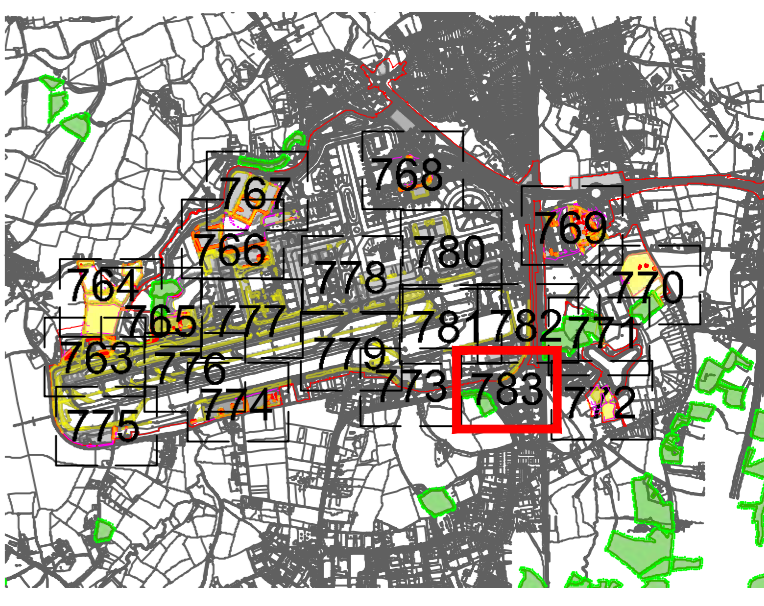


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Key Plan



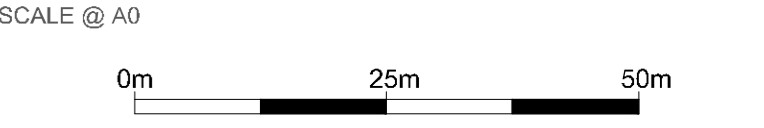
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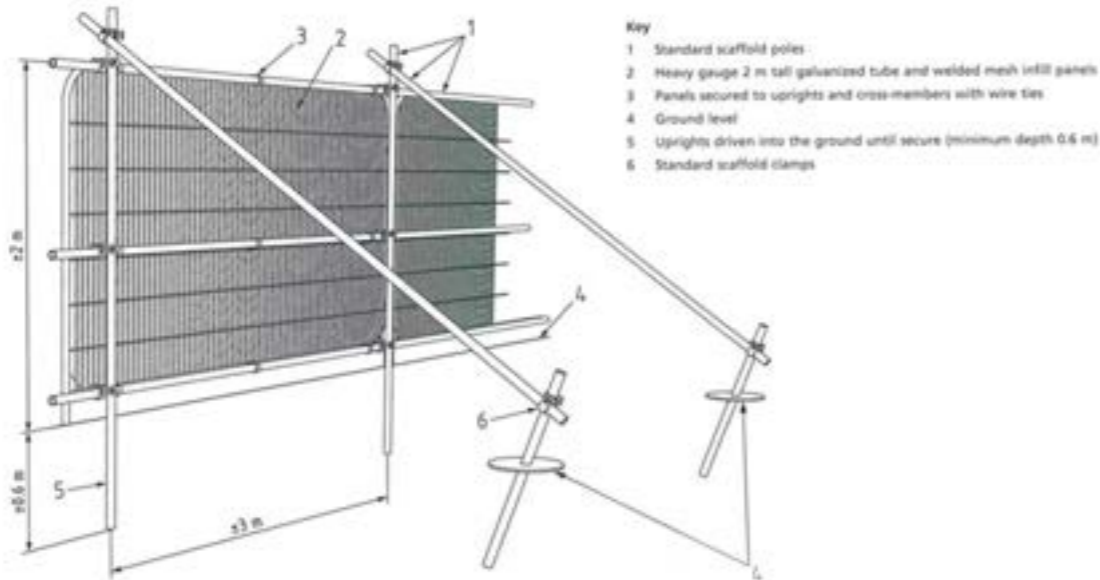
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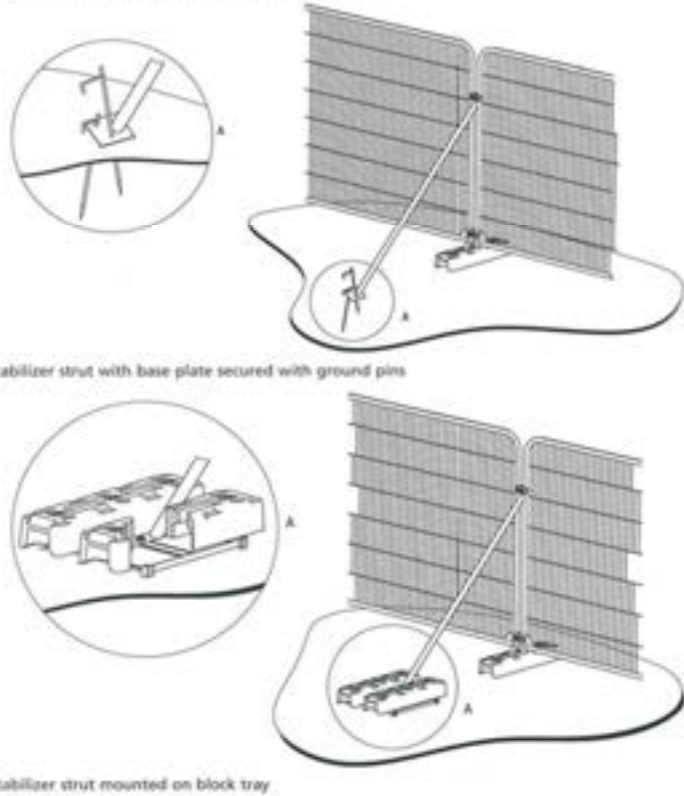
Appendix E
 Example Tree Protection Fencing
 (BS5837:2012 Fig 2 & 3)

Figure 2 Default specification for protective barrier

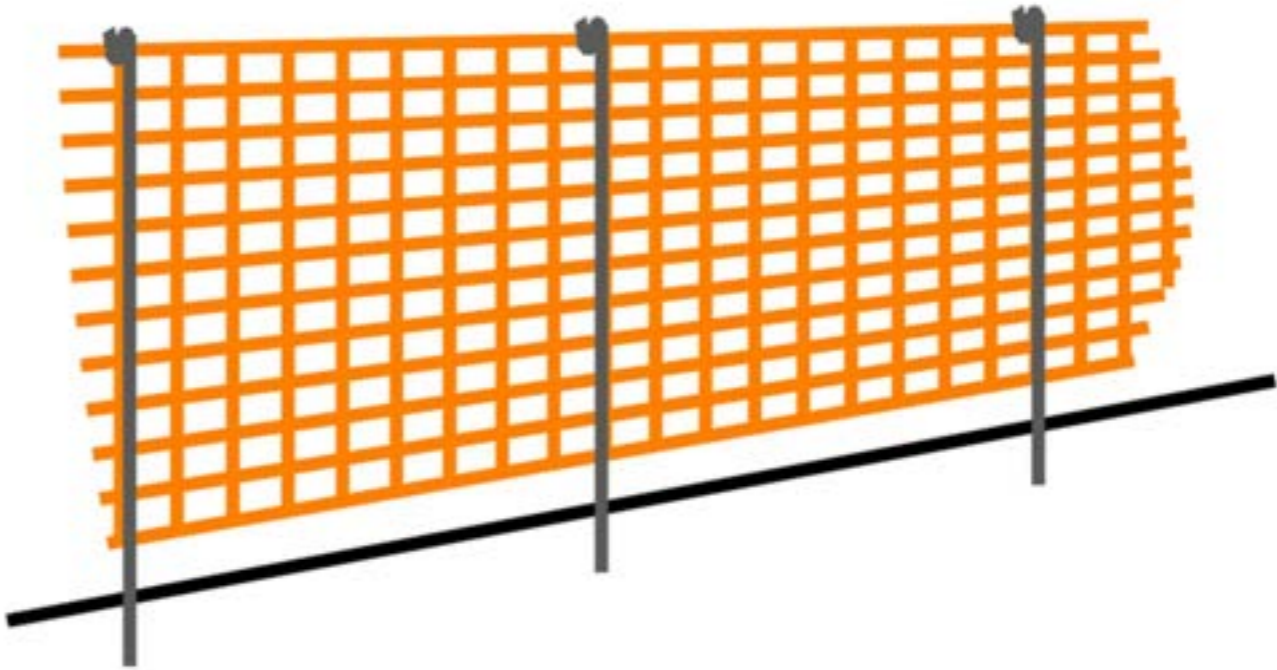


- Key**
- 1 Standard scaffold poles
 - 2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
 - 3 Panels secured to uprights and cross-members with wire ties
 - 4 Ground level
 - 5 Uprights driven into the ground until secure (minimum depth 0.6 m)
 - 6 Standard scaffold clamps

Figure 3 Examples of above-ground stabilizing systems



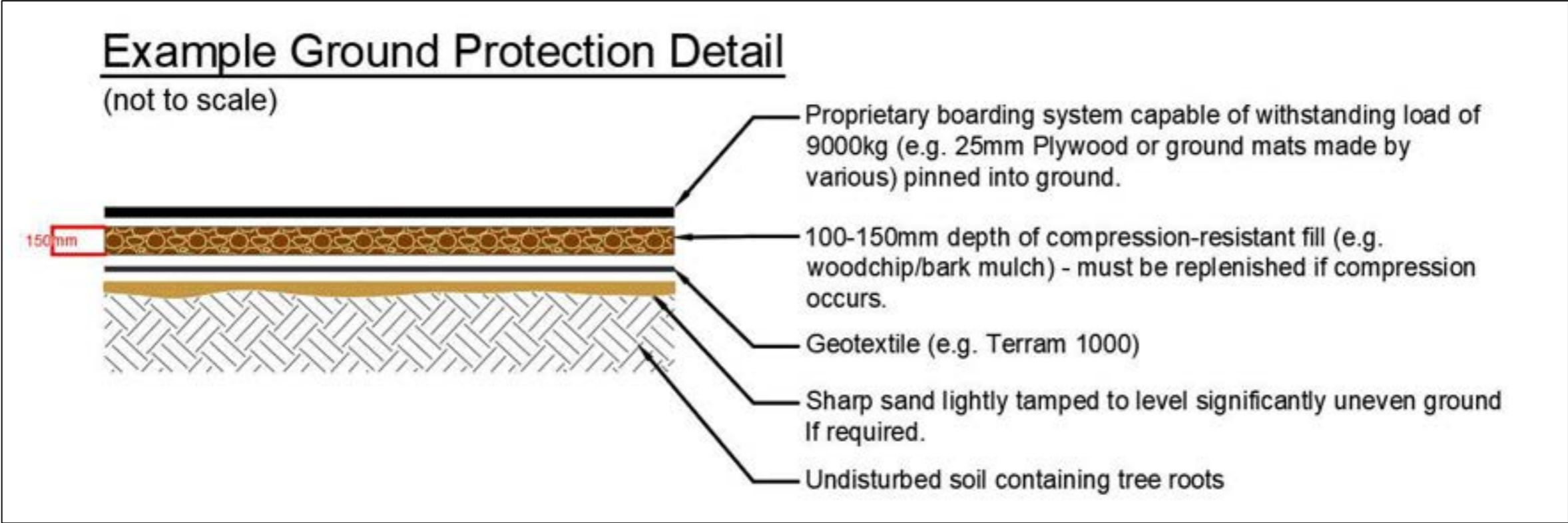
VISUAL TREE PROTECTION BARRIER
 Secondary tree protection barrier
 (Not to scale)



- To identify trees and vegetation not immediately adjacent to construction works.
- 1m high heavy duty hi-vis barrier mesh
- Erected and fitted to metal poles, timber stakes or railway pins driven into the ground at regular intervals

Appendix F
Example Construction Exclusion Zone (CEZ) Sign





Appendix H
Table of Trenchless Utility Installation

| Trenchless solutions for differing utility apparatus installation requirements (BS 5837:2012) | | | | | |
|-----------------------------------------------------------------------------------------------|-------------|------------------|----------------------|-------------------------------------------------------------------------|-----------------------------------------------------------------------|
| Method | Accuracy mm | Bore dia. (A) mm | Max sub (B) length m | Applications | Not suitable for |
| 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, eg. 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, eg. from street to property | Any application that requires accuracy over distances in excess of 5m |

(A) Dependent on strata encountered.

(B) Maximum subterranean length.

(C) Pit-launched directional drilling can be used for gravity fall pipes up to 20m 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 300mm bore achievable with multiple passes.

Appendix I

Arboricultural Glossary

Age-class - A general classification of the tree into either - young, semi-mature, early mature, mature, over-mature, or veteran.

Apical Bud/Shoot – The apical bud, also known as the leading shoot, is responsible for shoot extension and is dominant.

Apical Dominance – A singular, leading shoot remains dominant.

Arboreal - In connection with, or in relation to, trees.

Arboriculturist – Person who has, through relevant education, training and experience, gained recognised qualifications and expertise in the field of trees in relation to construction.

Arboricultural Implications Assessment (AIA) – Study, undertaken by an arboriculturist, to identify, evaluate and possibly mitigate the extent of direct and indirect impacts on existing trees that may arise as a result of the implementation of any site layout proposal.

Arboricultural & Vegetation Method Statement (AVMS) – Methodology for the implementation of any aspect of development that has the potential to result in the loss of or damage to a tree. Note The AVMS is likely to include details of an on-site tree protection monitoring regime.

Asymmetric crown- Crowns that have a morphological bias in a particular direction. This can give the tree an aesthetically unfavourable appearance but can also subject the tree to uneven wind- loading forces and potentially result in failure.

Basal – Referring to the bottom part of a tree's stem.

Basifugal mortality – A natural process seen in trees in an advanced life stage whereby the trees extremities die back, and the inner crown expresses new growth, in order to conserve energy reserves.

Bifurcated - A growth characteristic, where two stems of similar size grow from the same point. Can create an inherent weakness.

Branch union/junction - The point at which a branch joins a larger stem. Can be a point of weakness, especially in certain species.

Brown Rot- Decay caused by certain species of fungus which results in the affected wood becoming brittle and liable to suddenly 'break out', especially if in key structural areas.

Buttress flares – Extensions of the basal stem of a tree that provide additional structural support. See reaction wood.

Bifurcated- A growth characteristic, where two or more stems of similar size grow from the same point. Can create an inherent weakness.

Cable braces – Cable braces used to support the crown of a tree, reduce impacts caused by wind- throw oscillation.

Canker – A clearly defined area of dead and sunken or malformed bark, caused by bacteria or fungi. Can have a bearing on structural integrity of infected limb(s) depending on size and location.

Central leader- See apical dominance.

Chalara ash dieback- A disease affecting ash trees caused by the fungus *Hymenoscyphus fraxineus*. Usually fatal, the disease causes leaf loss and crown dieback in infected trees. It was first confirmed in Britain in 2012.

Chlorosis- yellowing of leaves which can be caused by a range of factors, often an indicator of nutrient deficiency.

Compaction - The compressing & hardening of soil around tree root systems, due to vehicular/pedestrian use etc. Loss of pore space between soil granules limits water movement and gaseous exchange and inhibits root growth.

Companion shelter- Shelter provided by neighbouring trees in groups to one another, factors such as wind throw are reduced due to supporting branches and interlocking root systems. Removing individual trees on the peripheries of such groups can expose neighbouring trees to environmental factors they have not previously been subjected to and can lead to individual failure.

Competent person – Person who has training and experience relevant to the matter being addressed and an understanding of the requirements of the particular task being approached

Note 1 A competent person understands the hazards and the methods to be implemented to eliminate or reduce the risks that can arise. For example, when on site, a competent person is able to recognise at all times whether it is safe to proceed.

Note 2 A competent person is able to advise on the best means by which the recommendations of this British Standard may be implemented.

Condition – Assessment based on a visual and professional view giving consideration to many factors such as tree health, structural integrity and suitability of its position.

Conservation dead- wooding- Removal of deadwood using 'coronet cuts' that mimic the way a branch would naturally break off, maximising deadwood habitat availability for invertebrates.

Coppice - The method of managing trees by cutting the stems at between 1.0 inch and 1.0 foot from the ground level on a regular cycle, the cut stumps of the trees or shrubs are allowed to re-grow many new stems.

Crown spread - Gives distances between extreme limits of the crown and the stem, usually along the four compass points. Helps to show crown symmetry.

Crown Reduction – The removal of branch ends to reduce the extreme limits of a tree's branch spread and height.

Crown Thin – The removal of selected branches within the crown to thin the internal branch structure.

D.B.H. - 'Diameter at Breast Height', an industry standard to gauge tree stem size and development. Within arboriculture, breast height is taken to be 1.5m above ground level.

Dieback - The reduction in crown vigour and extension growth progressing to death of distal parts; often associated with decline.

Epicormic growth - New growth from dormant buds that can often form tenuous attachments. Although some species readily form such shoots, it can be an indication of stress.

Form - A general assessment of the shape and position of the tree within its environment.

Hanger – Term used to describe a branch that has become detached and is being supported by other branches. Can be a hazard to persons and property below.

Hazard Beam – After the loss of a distal part, a limb concentrates growth upwards creating adverse end weights that can render the limb susceptible to failure.

Included bark – Growth characteristic usually caused when two or more stems/branches growing in close proximity 'fuse' together entrapping the bark from when the parts were separate in the middle, creating a structural weakness.

Invertebrate tower – Pollarding of a (usually dead) tree to a safe height that leaves part of the main stem as a deadwood habitat for invertebrate species.

Occlusion/Occluded – Normally used to describe the overgrowth of a wound. Also, immovable foreign objects in contact with a tree part can become encased or 'occluded' by the tree as it grows incrementally.

Pathogen - An agent that causes disease, especially a living microorganism such as a bacterium or fungus.

Phototropic growth – Growth responding to a light stimulus i.e. the sun. This can influence the form of a tree, particularly where other factors e.g. buildings or other trees, affect the amount/ direction light is received.

Pollard – The removal and subsequent regular re-removal of the crown of a tree above animal browsing height. Can be an effective method of controlling the size of trees in urban areas. This is ideally begun in the trees early stages and maintained throughout its life.

Reaction wood - Essentially additional wood laid down by the tree to compensate for structural defects such as cavities.

Rhizosphere - The rhizosphere is the narrow region of soil that is directly influenced by root secretions and associated soil microorganisms. In particular, mycorrhizal fungi form a symbiotic relationship with trees and assist in the assimilation of phosphates essential to the tree's health.

Ring barking/Girdling – the removal of bark around the entire circumference of a stem or branch, causing the death of all distal parts.

Root Protection Area (RPA) – Layout design tool indicating the area surrounding a tree that contains sufficient rooting volume to ensure the survival of the tree, shown in plan form in m².

Scaffold limbs - The main structural branches within the crown.

Tree Removal & Protection Plan – scale drawing prepared by an arboriculturist showing the finalised layout proposals, tree retention and tree and landscape protection measures detailed within the Arboricultural & Vegetation Method Statement (AVMS), which can be shown graphically.

U.L.E – 'Useful Life Expectancy' is an estimate based on currently known factors of the possible remaining life of the tree as an asset. AKA 'Estimated remaining contribution'.

Veteran tree – Tree that, by recognised criteria, shows features of biological, cultural or aesthetic value that are characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned.

Vigour - A general classification, as to the present and future potential growth and development of a tree. A comment regarding the health status of the tree specific to its species.

White Rot - A type of decay caused by certain species of fungi which results in the affected wood becoming flexible with little compressive strength.