COLT DATA CENTRE SERVICES

ECOLOGYSOLUTIONS

Part of the ES Group

PROJECT L4,
HAYES, LONDON

Bird Hazard Management Plan

Pursuant to Condition 15

January 2023
9903.BHMP.vf1

ecology solutions for planners and developers

CONTENTS

PLANS

APPENDICES

1. INTRODUCTION

1.1. Ecology Solutions was commissioned by Colt Data Centre Services in July 2022 to complete a Bird Hazard Management Plan for the site known as Project L4 in Hayes, London (see Plan ECO1).

1.2. This report has been written in order to discharge Condition 15. Condition 15 pertains to the potential for the development to cause an increase of bird strike in relation to its proximity to Heathrow Airport and Royal Air Force (RAF) Northholt. It states:

Prior to the commencement of any superstructure works for the development, or each development phase, a Bird Hazard Management Plan for the development, or each development phase, shall be submitted to and approved in writing by the Local Planning Authority (in consultation with Ministry of Defence and Heathrow Airport Safeguarding).

The submitted plan shall include details of:
- Management of any flat/shallow pitched/green roofs on buildings within the site which may be attractive to nesting, roosting and "loafing" birds.
The Bird Hazard Management Plan shall be implemented as approved and shall remain in force for the life of the buildings. No subsequent alterations to the plan are to take place unless first submitted to and approved in writing by the Local Planning Authority.

REASON
It is necessary to manage the roof in order to minimise its attractiveness to birds which could endanger the safe movement of aircraft and the operation of Heathrow Airport, to accord with the requirements of Policy DMAV 1 of the Hillingdon Local Plan: Part 2 (2020).

1.3. The site is located within the London Borough of Hillingdon and is approximately 4km to the northeast of Heathrow Airport and 4.4km to the southeast of RAF Northholt.

1.4. The site forms part of Springfield Road Industrial Area, a wider commercial area bound to the north by Uxbridge Road, the west by Springfield Road, to the east by the Yeading Brook, and to the south by Beaconsfield Road. The area comprises a mix of commercial operations with a number of retail developments and a hotel located predominantly in the northern part closer to Uxbridge Road and industrial, storage, and manufacturing operations across much of the central and southern areas.

1.5. The redevelopment of the site will deliver a new data centre campus including; two data centre buildings; associated energy and electricity infrastructure, buildings, and plant; security gatehouse, systems and enclosures; works to the highway, car parking and cycle parking; hard and soft landscaping; as well as associated infrastructure, ancillary office use, and associated external works.

1.6. The purpose of this document is to ensure that the risk of bird strike as a direct result of the development does not significantly increase.

1.7. The proposals have been assessed in the context of the regulatory framework published by the Convention on International Civil Aviation and European Commission Regulation 139/2014, and guidelines set out

in the UK Government DfT / ODPM Circular 1/2003 and CAP 772 Wildlife Hazard Management at Aerodromes, produced by the Civil Aviation Authority (CAA, 2014).

1.8. The information contained within this document identifies the potential hazards resulting from the proposed development, considers the likelihood of that potential and illustrates how risks of bird hazard will be minimised through implementation of measures during construction, through good design, and through management and monitoring during the operational phase, with the aim of reducing any residual risk to as low as reasonably practicable.

2. CONVENTION ON INTERNATIONAL CIVIL AVIATION ANNEX 14

2.1. Guidance on wildlife strike hazard reduction is provided by Annex 14 to the Convention on International Civil Aviation, published by the International Civil Aviation Organization (ICAO).

2.2. This is as follows[1]:

9.4 Wildlife strike hazard reduction

Note.—The presence of wildlife (birds and animals) on and in the aerodrome vicinity poses a serious threat to aircraft operational safety.

9.4.1 The wildlife strike hazard on, or in the vicinity of, an aerodrome shall be assessed through:

a) the establishment of a national procedure for recording and reporting wildlife strikes to aircraft;
b) the collection of information from aircraft operators, aerodrome personnel and other sources on the presence of wildlife on or around the aerodrome constituting a potential hazard to aircraft operations; and
c) an ongoing evaluation of the wildlife hazard by competent personnel.

9.4.2 Wildlife strike reports shall be collected and forwarded to ICAO for inclusion in the ICAO Bird Strike Information System (IBIS) database.

9.4.3 Action shall be taken to decrease the risk to aircraft operations by adopting measures to minimize the likelihood of collisions between wildlife and aircraft.

9.4.4 The appropriate authority shall take action to eliminate or to prevent the establishment of garbage disposal dumps or any other source which may attract wildlife to the aerodrome, or its vicinity, unless an appropriate wildlife assessment indicates that they are unlikely to create conditions conducive to a wildlife hazard problem. Where the elimination of existing sites is not possible, the appropriate authority shall ensure that any risk to aircraft posed by these sites is assessed and reduced to as low as reasonably practicable.

9.4.5 Recommendation.— *States should give due consideration to aviation safety concerns related to land developments in the vicinity of the aerodrome that may attract wildlife.*

2.3. Paragraphs 9.4.4 and 9.4.5 of this guidance are most relevant to the development, with the stipulation *to prevent the establishment of garbage disposal dumps or any other source which may attract wildlife to the aerodrome, or its vicinity*.

[1] American English text retained from the original.

3. EUROPEAN COMMISSION REGULATION 139/2014

3.1. Regulation 139/2014 sets out the regulatory framework at the European level and is administered by the European Aviation Safety Agency (EASA). Sections relevant to wildlife management at aerodromes are as follows:

Article 9

Monitoring of aerodrome surroundings

Member States shall ensure that consultations are conducted with regard to human activities and land use such as:

…

(e) the creation of areas that might encourage wildlife activity harmful to aircraft operations;

…

Article 10

Wildlife hazard management

1. Member States shall ensure that wildlife strike hazards are assessed through:

(a) the establishment of a national procedure for recording and reporting wildlife strikes to aircraft;

(b) the collection of information from aircraft operators, aerodrome personnel and other sources on the presence of wildlife constituting a potential hazard to aircraft operations; and

(c) an ongoing evaluation of the wildlife hazard by competent personnel.

2. Member States shall ensure that wildlife strike reports are collected and forwarded to ICAO for inclusion in the ICAO Bird Strike Information System (IBIS) database.

3.2. This document considers the potential hazards arising as a result of the development and the means by which they will be addressed.

4. DfT / ODPM CIRCULAR 1/2003

4.1. Department for Transport / Office of the Deputy Prime Minister Circular 1/2003 places responsibility for aerodrome safeguards with the aerodrome operators and introduces a consultation process for any development proposals which may affect an aerodrome.

4.2. Heathrow Airport and Ministry of Defence (MoD) are relevant aerodrome operators and so must be consulted on any planning application considered to have the potential of increasing bird strike.

4.3. It is the responsibility of the aerodrome operator to take all *reasonable* steps to ensure that the aerodrome and its surrounding airspace are safe at all times for use by aircraft.

4.4. One of the purposes of safeguarding of aerodromes in this way is to "…*ensure that their operation and development are not inhibited…by developments which have the potential to increase the number of birds or the bird hazard risk"* [Circ 1/2003 Annex 2 para 3].

4.5. Notwithstanding this reference, it is important to note that an increase in the number of birds in the vicinity of an aerodrome is not in itself a problem; it is the possible increase in bird strike risk that is the issue of concern which plans are required to address. An increase in non-problem bird species is of no significance to the overall bird strike risk.

4.6. Annex 2 to Circ 1/2003 sets out particular advice on bird strike hazard and identifies particular forms of development which are most important and where the primary aim is to guard against new or increased hazards. These are: *"…facilities intended for the handling, compaction, treatment or disposal of household or commercial wastes; the creation or modification of areas of water such as reservoirs, lakes, ponds, wetlands and marshes; nature reserves and bird sanctuaries; and sewage disposal and treatment plant and outfalls"* [Circ 1/2003 Annex 2 para 8].

4.7. Annex 2 also advises that *"…A local planning authority will need to consider not only the individual potential bird attractant features of a proposed development but also whether the development, when combined with existing land features, will make the safeguarded area, or parts of it, more attractive to birds or create a hazard such as bird flightlines across aircraft flightpaths"* [para 9].

4.8. For the types of development described in paragraph 8 of the Circular a Local Planning Authority is advised to ask an applicant to demonstrate by means of a risk assessment that the development would not be likely to increase the bird hazard risk to aircraft.

5. CAP 772 WILDLIFE HAZARD MANAGEMENT AT AERODROMES

5.1. CAP 772 sets out guidelines for the control of bird hazards in and around aerodromes. Whilst the document concentrates on bird control on aerodromes there is some relevant guidance for landscape areas in the vicinity.

5.2. The principal hazards are Gulls *Larus sp.*, wading birds, Pigeons *Columbia* sp. and Starlings *Sturnus vulgaris*, and to a lesser extent corvids. Other species such as Canada Geese *Branta canadensis* and Greylag Geese *Anser anser* are considered in the CAA Safety Regulation Group document *Large Flocking Birds – An International Conflict Between Conservation and Air Safety*, but are of lower concern in a UK context. The objective of CAP 772 is to reduce the potential for roosting and to make sure that landscape areas are not attractive to such large flocking bird species. Smaller birds that do not form dense flocks have a low hazard potential.

5.3. Typical measures to accommodate the recommendations of CAP 772 are:

- Reduce tree planting density to 4m centres or lower, use open rides and thin existing stands to avoid formation of Starling roosts;
- Reduce species providing abundant winter food source, the most attractive of which are Holly *Ilex aquifolium* (female), Rowan S*orbus aucuparia*, Hawthorn *Crataegus monogyna*, *Viburnum* spp. and *Cotoneaster* spp. together with Crab Apple *Malus sylvestris* and Honeysuckle *Lonicera* spp.;
- Pay attention to normal management programmes such as trimming Hawthorn hedges, which can limit berry production and thereby form part of a mitigation strategy; and
- Avoid larger, permanent open water sites.

6. SAFEGUARDING OF AERODROMES ADVICE NOTE 8

6.1. Advice Note 8 sets out the hazards which may arise from building design and advises on measures to avoid them, or where this is not possible to mitigate and manage these hazards to reduce them to acceptable levels.

6.2. Section 4 of Advice Note 8 states that the following features should be considered when designing a building:

- Roof overhangs should be kept to a minimum;
- Ledges beneath overhangs and external protrusions should be avoided where possible;
- Steeply pitched roofs should be used to deter Gulls from nesting, roosting and loafing;
- The roof space be designed in such a way as to prevent access by birds;
- Self-closing doors to prevent access to birds or openings should have plastic strip curtains fitted; and
- Where flat and / or shallow pitched roofs greater than 10m x 10m cannot be avoided in the design, there must be access available by foot to all areas of the roof to ensure that any hazardous birds, nesting, roosting and loafing can be dispersed and where necessary any nests and eggs can be removed (see note below regarding licences).

6.3. Prevention, inspection and dispersal measures are included at Section 5, and comprise the following:

- Netting;
- Bird spikes;
- Pyrotechnics;
- Distress Calls;
- Removal of Nests and / or Eggs (under the relevant Natural England licence as appropriate); and
- Inspections, where flat or shallow pitched roofs are present.

6.4. Management of birds relating to flat or shallow pitched roofs would include the following measures:

- Confirmation that access to all areas of the roof is available and by what method, to ensure that inspections can be carried out;
- Confirmation that inspections will be carried out year-round with increased frequency during the breeding season;
- Confirmation that any nests / eggs will be removed, with the appropriate licences first being obtained;
- Confirmation that any hazardous birds found nesting, roosting and loafing will be dispersed when detected or when requested by Airfield Operations staff. In some instances, it may be necessary to contact Airfield Operations staff before bird dispersal takes place;
- Details of any dispersal methods to be used; and
- A log to be kept of bird numbers and species utilising the roof(s).

7. SAFEGUARDING OF AERODROMES ADVICE NOTE 3

7.1. Advice Note 3 considers the types of development that may come forward in the vicinity of an aerodrome and the particular issues that can arise. Parts of the advice are similar to that provided in the (earlier) Advice Note 8.

7.2. Developments such as housing, factories, industrial estates / units, mineral extraction and green roofs can provide food and shelter for urban species such as Pigeons, Gulls, Corvids, Starlings etc.

7.3. Buildings with flat roofs can provide nesting opportunities for gull colonies; Feral Pigeon *Columba livia*, Jackdaw *Corvus monedula* and Starlings can take advantage of ledges and gullies for nesting sites and perching areas.

7.4. The advice sets out ways in which these potential risks could be reduced, as follows:

- Netting to proof roofs and exclude hazardous species;
- Roof overhangs kept to a minimum;
- Ledges beneath overhangs and external protrusions avoided where possible;
- Redesign roof to steeply pitched to deter Gulls from loafing, roosting and resting;
- Lighting structures proofed to prevent perching;
- Choice of roof material to reduce attractiveness (smooth surfaces with minimal protrusions or vents to reduce breeding opportunities);
- Roof spaces to be designed in such a way as to prevent access by birds;
- Self-closing doors to prevent access to birds or openings fitted with netting or plastic strip enclosure materials;
- Safe access by foot access to all areas of roof that cannot be proofed;
- Outside dining areas enclosed or avoided in close proximity to an aerodrome.

7.5. Advice is provided with regards to monitoring and inspection of Gulls, as follows:

During the breeding season for Gulls, for example, inspections to assure compliance with a 'no breeding' BHMPs should be carried out at least weekly during the breeding season, (e.g. Gulls typically April to June). To ensure that all hazardous birds found nesting are dispersed and any nests and / or eggs are removed. This process should be fully documented to provide an audit trail.

For roosting or loafing (resting) birds, regular inspections should be carried out and if the threshold level is exceeded then birds should be dispersed. The frequency of inspections should be dictated by the presence of hazardous birds and be sufficient as to ensure the efficacy of the plan. This process should be fully documented to provide an audit trail and compliance site visits from the aerodrome operator may be required, subject to the necessary Health and Safety considerations.

8. RISK ASSESSMENT OF PROJECT L4, HAYES, LONDON

8.1. The proposed development will include the construction of a new data centre campus including two data centre buildings; associated energy and electricity infrastructure, buildings and plant; security gatehouse, systems and enclosures; works to the highway, car parking and cycle parking; hard and soft landscaping; as well as associated infrastructure, ancillary officer use, and associated external works.

8.2. This does not constitute one of the 'most important' types of development that create new or increased birdstrike hazards, such as landfill and mineral extraction, as set out in DfT / ODPM Circular 1/2003 Annex 2 paragraph 8.

8.3. The principal source of potential risk for the development is the establishment of a small biodiverse green roof, four small sedum roofs and unvegetated flat roofs. Shallow and flat roofs are attractive to some bird species, such as Gulls, to roost, nest and loaf. An additional roof terrace will be established although this comprises ornamental shrub and herbaceous species.

8.4. New landscaping at lower levels of the development will comprise both trees and shrubs that may offer opportunities for nesting and roosting birds, although this is likely to favour non-problematic bird species.

8.5. Given the pre-development status of the site, that largely of buildings and hardstanding, it is not likely that the construction phase would give rise to any significant additional risk. Significant areas of topsoil will not be exposed, and no significant areas of standing water are expected to establish.

8.6. Chapter 4 of CAP 772 identifies the various risks that can arise within and adjacent to an aerodrome, which include the presence of food sources, nest and roost sites and the presence of open water.

8.7. The development of the site does, in the absence of mitigation, pose potential increase in food waste thereby potentially attracting species such as Feral Pigeon *Columba livia*, Corvids, Gulls *Larus* sp., and Starlings.

8.8. CAP 772 states that buildings and structures with access holes and crevices provide nest sites and roosts, especially for Feral Pigeons and Starlings, but also gulls. Pigeons roost and nest inside buildings and on ledges on their exteriors. It is recommended that wherever possible flat roofs be avoided, and that where they are constructed, they be fully accessible for inspection purposes.

8.9. Section 5 of Chapter 4 lists off-aerodrome bird attractant habitats. The proposed development is not located on *The Coast* and does not include *Landfills for Food Wastes; Sewage Treatment and Disposal*; or *Sand Gravel and Clay Pits*.

8.10. Overall, the development of the site has the potential to increase bird hazards in the vicinity of Heathrow Airport and RAF Northolt if not subject to appropriate avoidance and mitigation measures.

8.11. The Bird Hazard Management Plan is concerned with managing potential risks that may arise during the operational phase.

9. BIRD HAZARD MANAGEMENT PLAN

9.1. Taking into account the regulations and guidance reviewed in the previous sections, this section sets out the means by which bird hazards will be addressed and monitored as part of the development.

9.2. The overarching principle of this plan is that the developer implements all reasonable endeavours to maintain the bird strike risk associated with the development as low as reasonably practicable, in line with published guidance and legislation.

Operational Phase

Roof Overhangs

9.3. The design of the roof of the building is such that these are kept to a minimum to reduce nesting opportunities. Any vents or skylights will be fitted with appropriate grilles or netting to prevent nesting opportunities by problematic species.

Roof Inspections

9.4. All areas of flat roofs, such as biodiverse and sedum roofs, will be accessible for safe inspection.

9.5. All areas of flat roof will be inspected on a weekly basis (or sooner if bird activity dictates) from March to August inclusive. Inspections will be undertaken by a designated person or company. During the remainder of the year inspections would be undertaken on a monthly basis. In the event that bird activity during any given period is found to be high, the frequency of inspections would increase.

9.6. All accessible roof spaces would be searched for roosting, loafing and nesting birds. Any roosting or loafing birds would be dispersed by means of human presence and activity. Moving slowly towards the birds is likely to be sufficient.

9.7. Where nesting birds are found an ecologist would be contacted for advice. All wild birds are protected while nesting and removal of nests and eggs may require a Natural England licence. If required, A Natural England CL12 licence can be used to catch alive or kill specific species of wild birds on an aerodrome and within a 13km radius for the following purposes:

1. For the purposes of preserving air safety;
2. Where it is strictly necessary to take action to preserve air safety, and
3. Where reasonable steps to prevent problems by lawful methods have been and continue to be taken.

9.8. If it is clear that eggs are not present, then any nest in the process of being constructed can be cleared away without the need for further advice or intervention.

Bird Spikes

9.9. Bird spikes will be located at the edges of rooftops, on gutters and ledges, and on the ridges of the building roofs where risk of roosting is considered likely. Wherever possible, bird spikes would be affixed to the top of lighting columns. These would be inspected and replaced if necessary, as part of annual site maintenance.

Log of Activity

9.10. A paper and electronic log of monitoring activity will be kept by the designated individual or company and will be available for inspection by interested parties. Details of activities undertaken and of birds recorded will be kept, together with views on the efficacy of measures taken. An example of a recording sheet is included at Appendix 2.

Reassessment

9.11. The effectiveness of these measures will be reassessed on a three-monthly basis. Where they are considered to be lacking then additional methods such as netting of areas of roofs and use of installed sonic deterrents will be considered.

9.12. Where an increased risk of birdstrike associated with the development site is identified RAF Northolt and/or Heathrow Airport can trigger a specific review of the measures used.

Landscaping

9.13. While there will be an increase in tree and shrub planting over current conditions, it is not considered that these would improve attractiveness to “loafing” and problematic species, with new planting likely to be attractive to non-flocking birds.

9.14. Biodiverse roof planting will avoid any tree or shrub planting, focussing on wildflower grassland and sedum mixes. The roof terrace will comprise ornamental shrubs and herbaceous species that are unlikely to provide opportunities for birds. In addition, this area will be subject to greater levels of human activity which will deter bird activity.

9.15. Biodiverse roof planting will be subject to a relaxed management to promote a taller sward height and offer unfavourable conditions for problematic species. Sedum roofs, given their nature, will not require any specific management regime.

Water Features

9.16. No water features are included as part of the proposed development.

Waste Imports and Monitoring

9.17. As the proposals do not feature use of the site for landfill, incineration or the treatment of hazardous wastes, no wastes are to be brought onto the site.

Waste Collection and Storage

9.18. Chapter 5 of CAP 772 states that:

Waste food is an attractant to gulls, corvids, pigeon species and starlings in particular and should not be tolerated [...]. Where food waste could occur, all bins and skips provided should be of designs that prevent animals (such as foxes and rodents) and birds getting in; for example, with drop-down or swinging lids. They should be emptied before they overflow.

9.19. Any food or other putrescible wastes produced within the proposed development will be disposed of in appropriate refuse bins, which will be installed at suitable locations.

9.20. Bins will be of designs that exclude birds (e.g., with drop-down or swinging lids), as will any skips used for refuse. Bins will be subject to standard collections.

Obligations and Undertaking

9.21. The following section sets out the commitment of the end user of the development to implement the Bird Hazard Management Plan as set out in this section.

10. OBLIGATIONS AND UNDERTAKING

I / we can confirm the following:

- That the roofs are constructed in such a manner so that all areas are safely accessible to enable any nests and eggs to be cleared and birds to be dispersed.

- Checks will be made weekly or sooner if bird activity dictates, during the breeding season by an appointed person / company. The breeding seasons for gulls typically runs from March to August.

- Any birds found nesting and/or roosting and / or loafing during the breeding season will be dispersed when detected and / or when requested by Heathrow Airport Operations staff and/or MoD staff.

- Any nests or eggs found will be removed, the appropriate licence(s) will be obtained from Natural England beforehand if required.

- Checks will be made on a regular basis, as dictated by bird activity, outside of the breeding season by a nominated person/company.

- Any birds found roosting and / or loafing outside of the breeding season will be dispersed when detected and / or when requested by Heathrow Airport Operations staff and/or MoD staff.

- The methods of dispersal used will be as follows:

  - Physical disturbance through human presence

- A log will be kept which will detail the following:

  - Dates and times of inspections;
  - Who carried out the inspections;
  - Bird numbers and species seen;
  - Details of any dispersal action taken along with details of any nests/eggs removed; and
  - The log must be available to Heathrow Airport Operations staff and/or MoD staff to view upon request.

Failure Criteria

The management plan will be assessed as a failure if the any one of the following criteria are met:

1. Failure to prevent problematic species, such as large Gull species and/or Feral Pigeon, from successfully breeding on site;
2. Failure to maintain deterrent measures as set out within this management plan; and
3. Failure to ensure effective monitoring and log taking as per set out in the management plan.

Review of the Management Plan

The management plan shall be subject to review to reflect changes in habitat or populations of bird species. Should the airport deem it necessary, a meeting between Heathrow Airport and/or MoD, the developer / operator and / or Hillingdon Council will be convened at the earliest opportunity to discuss and agree any changes which may be necessary.

Where the management plan is found to be failing against the criteria set out above, an immediate review of the management plan will be actioned, and measures set out reviewed in consultation with Heathrow Airport and/or MoD.

Inspection & Site Access

Heathrow Airport and/or MoD or their nominated representatives will be allowed access to the site by prior arrangement, to evaluate the success of the Management Plan and to review any remaining birdstrike hazard.

Long Term Management

This Management Plan will remain enforceable by Heathrow Airport and/or MoD, Hillingdon Council, the CAA or any successor to these bodies throughout the existence of the buildings. These obligations will be passed to any subsequent owners/operators of these buildings and land.

Signed:

On Behalf of:

Date:

11. SUMMARY AND CONCLUSIONS

11.1. Ecology Solutions was commissioned by Colt Data Centre Services in July 2022 to complete a Bird Hazard Management Plan for the site known as Project L4 in Hayes, London.

11.2. The site is located within the London Borough of Hillingdon and is approximately 4km to the northeast of Heathrow Airport and 4.4km to the southeast of RAF Northholt.

11.3. The site forms part of Springfield Road Industrial Area and comprises a mix of commercial operations with a number of retail developments and a hotel located predominantly in the northern part closer to Uxbridge Road and industrial, storage, and manufacturing operations across much of the central and southern areas.

11.4. The proposed development comprises a new data centre campus and associated buildings, infrastructure and landscaping.

11.5. The purpose of this document is to ensure that the risk of birdstrike as a direct result of the proposed development does not significantly increase. The proposals have been considered in the context of the relevant regulations and guidelines.

11.6. The considered principal issue of the development scheme is the establishment of several flat roofs that may be attractive to problem bird species. All roof areas are safely accessible and will be subject to regular inspection to disperse any birds that may be present. A log of activity will be kept. The proposed landscape scheme will be subject to a relaxed management plan creating conditions not favoured by problem species, while the effects of the construction phase are considered to be negligible.

11.7. The end user of the development will be required to implement the Bird Hazard Management Plan with regular reviews undertaken to ensure its effectiveness is maintained.

11.8. Overall, with these measures in place it is considered that the development of the site that would not result in an additional significant bird strike risk to Heathrow Airport and MoD activities during the construction or operational phases.

12. REFERENCES AND BIBLIOGRAPHY

Anon (2003). *Department for Transport (DfT) / Office of the Deputy Prime Minister (ODPM) Circular 1/2003 – Advice to Local Planning Authorities on Safeguarding Aerodromes and Military Explosives Storage Areas*. HMSO, London.

Airport Operators Association & General Aviation Awareness Council (2008). *Safeguarding of Aerodromes Advice Note 8: Potential Bird Hazards from Building Design*.

Airport Operators Association in Association with Civil Aviation Authority (2016). *Safeguarding of Aerodromes Advice Note 3: Wildlife Hazards around Aerodromes.*

Civil Aviation Authority. *Large Flocking Birds – An International Conflict Between Conservation and Air Safety.* Civil Aviation Authority, London.

Civil Aviation Authority (2002). *CAP 680 Aerodrome Bird Control*. Civil Aviation Authority, London.

Civil Aviation Authority (2003). *CAP 738 Safeguarding of Aerodromes.* Civil Aviation Authority, London.

Civil Aviation Authority (2008). *CAP 772 Birdstrike Risk Management for Aerodromes.* Civil Aviation Authority, London.

Civil Aviation Authority (2014). *CAP 772 Wildlife Hazard Management at Aerodromes.* Civil Aviation Authority, Gatwick.

European Commission (2014). *Commission Regulation (EU) No 139/2014 of 12 February 2014 laying down requirements and administrative procedures related to aerodromes pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council*.

ICAO (2013). *Annex 14 to the Convention on International Civil Aviation*. Sixth Edition. Volume I Aerodrome Design and Operations. International Standards and Recommended Practices. International Civil Aviation Organization, Montréal.

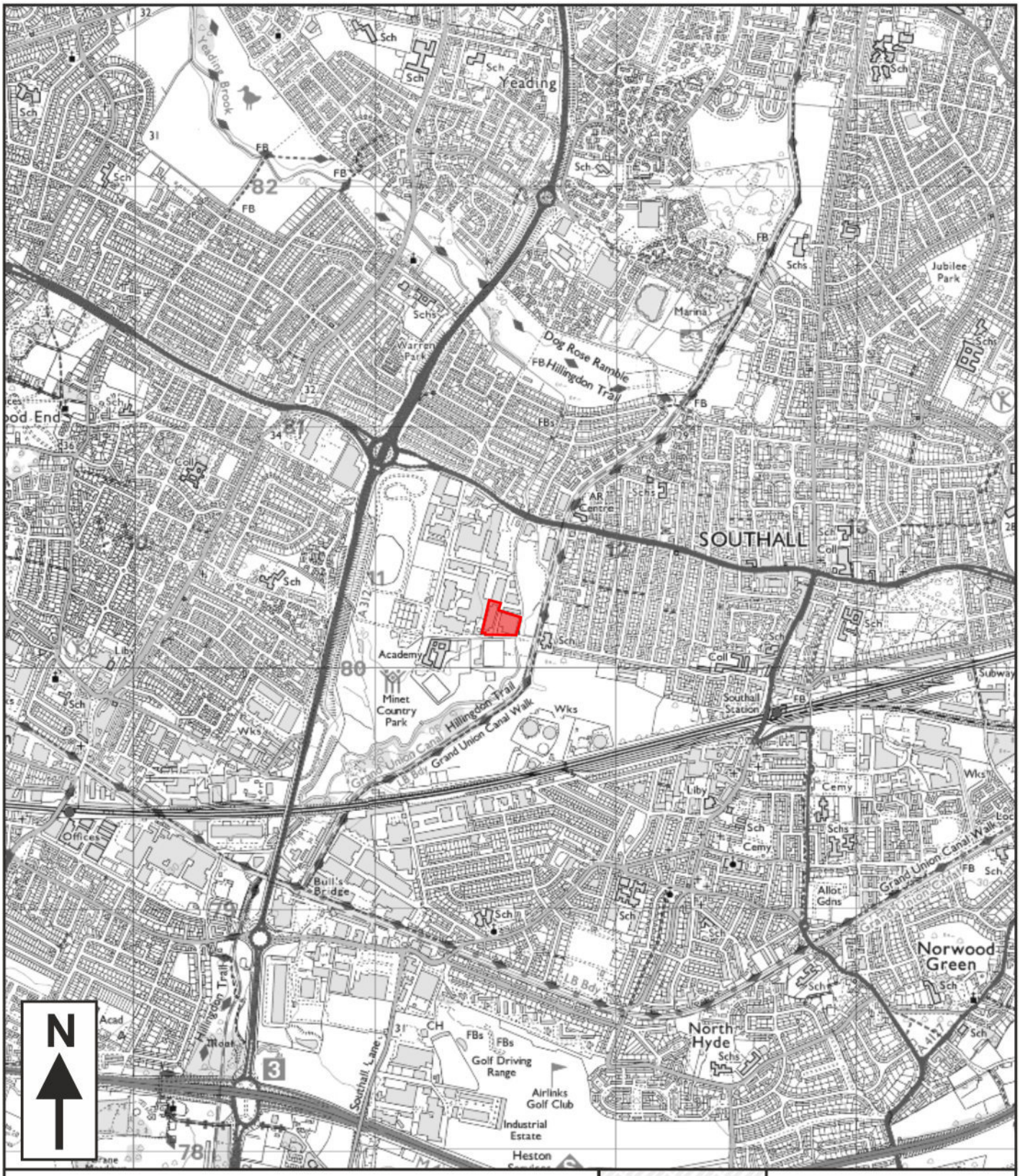
International Bird Strike Committee (2006). *Recommended Practices No. 1: Standards For Aerodrome Bird / Wildlife Control.*

Stefanioros, V and Olah, Z (2014). *Requirements for wildlife control at aerodromes*. Powerpoint presentation. European Aviation Safety Agency, Cologne.

PLANS

PLAN ECO1

Site Location



KEY:

SITE LOCATION

ECOLOGYSOLUTIONS
Part of the ES Group

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9903: PROJECT L4, HAYES, LONDON

PLAN ECO1: SITE LOCATION

Rev: A

Aug 2022

APPENDICES

APPENDIX 1

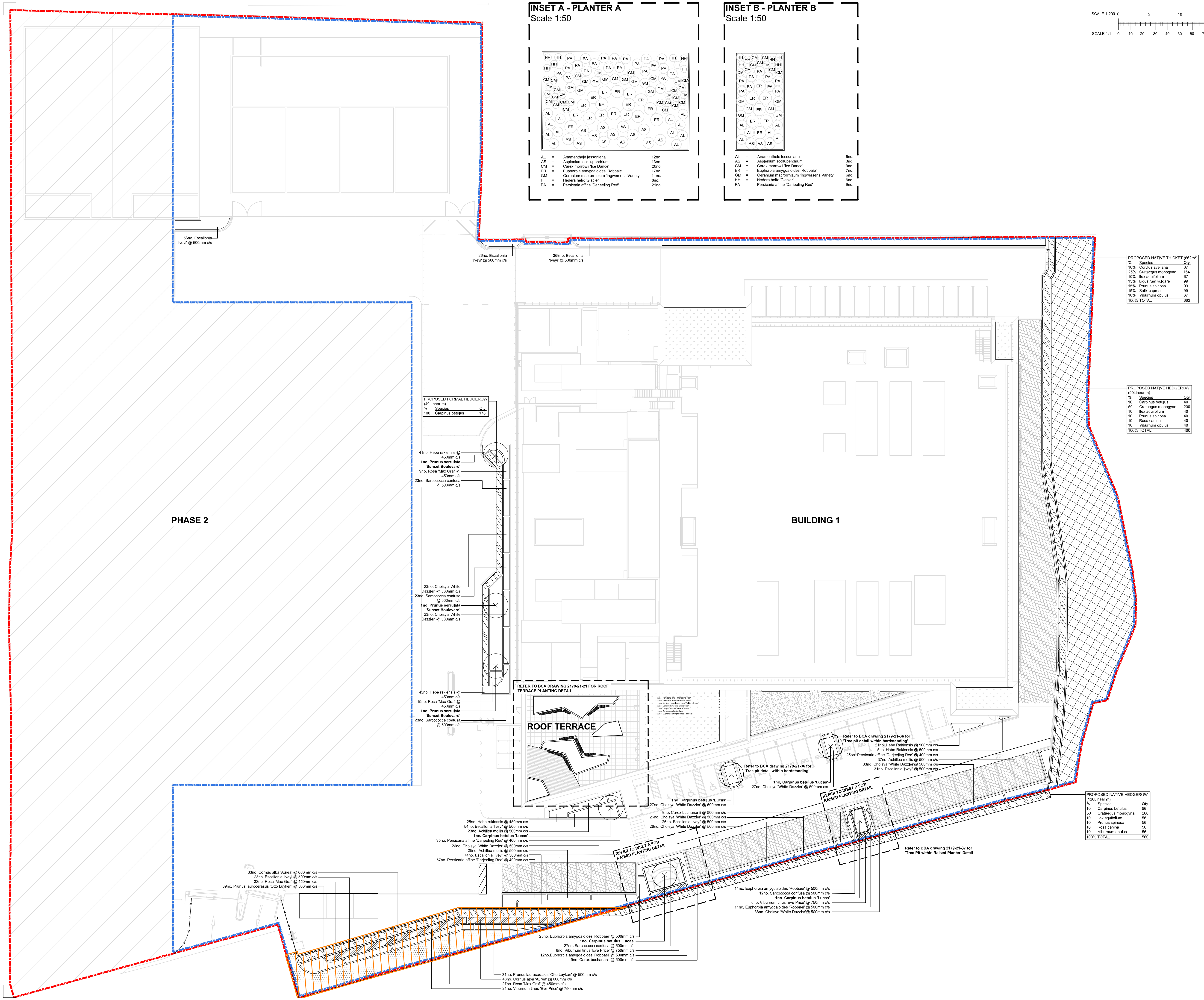
Detailed Planting Plan – Phase 1

INSET A - PLANTER A
Scale 1:50

AL	=	Anamenthele lessoniana	12no.
AS	=	Asplenium scollupendrium	13no.
CM	=	Carex morrowii 'Ice Dance'	28no.
ER	=	Euphorbia amygdaloides 'Robbaie'	17no.
GM	=	Geranium macrorrhizum 'Ingwersens Variety'	11no.
HH	=	Hedera helix 'Glacier'	8no.
PA	=	Persicaria affine 'Darjeeling Red'	21no.

INSET B - PLANTER B
Scale 1:50

AL	=	Anamenthele lessoniana	6no.
AS	=	Asplenium scollupendrium	3no.
CM	=	Carex morrowii 'Ice Dance'	9no.
ER	=	Euphorbia amygdaloides 'Robbaie'	7no.
GM	=	Geranium macrorrhizum 'Ingwersens Variety'	6no.
HH	=	Hedera helix 'Glacier'	6no.
PA	=	Persicaria affine 'Darjeeling Red'	9no.



PROPOSED FORMAL HEDGEROW (40Linear m)

%	Species	Qty.
100	Carpinus betulus	178

PROPOSED NATIVE THICKET (662m²)

%	Species	Qty.
10%	Corylus avellana	67
25%	Crataegus monogyna	164
10%	Ilex aquifolium	67
15%	Ligustrum vulgare	99
15%	Prunus spinosa	99
15%	Salix caprea	99
10%	Viburnum opulus	67
100%	TOTAL	662

PROPOSED NATIVE HEDGEROW (90Linear m)

%	Species	Qty.
10	Carpinus betulus	40
50	Crataegus monogyna	200
10	Ilex aquifolium	40
10	Prunus spinosa	40
10	Rosa canina	40
10	Viburnum opulus	40
100%	TOTAL	400

PROPOSED NATIVE HEDGEROW (126Linear m)

%	Species	Qty.
10	Carpinus betulus	56
50	Crataegus monogyna	280
10	Ilex aquifolium	56
10	Prunus spinosa	56
10	Rosa canina	56
10	Vibumum opulus	56
100%	TOTAL	560

SCALE 1:200 0 5 10 15 20m
SCALE 1:1 0 10 20 30 40 50 60 70 80 90 100mm

NOTES

NORTH

KEY

EXISTING HEDGEROW AND TREES TO BE RETAINED AND PROTECTED

EXISTING HEDGEROW AND TREES TO BE REMOVED

EXTRA HEAVY STANDARD TREES
(*Tree pit size: 1500x1500x900mm - Refer to BCA drawing 2179-21-35 for detail*)
18-20cm stem girth
4.5-5.0m height
1.8-2.1m clear stem
Rootballed
Species
Carpinus betulus 'Lucas'

THICKET (WOODLAND EDGE) MIX PLANTING
(*300mm depth of topsoil + minimum 600mm depth subsoil*)
Where woodland or thicket is planted next to a hard surface/kerb/fence, it should be positioned 1m from the edge. Whips/ Transplants planted in groups of 3-9 of the same species on a 1.0m grid.

Whip/Transplants

%	Species	Common Name	Size	Age	Root/Pot Size
10%	Corylus avellana	Hazel	600-800mm	1+1	OG
25%	Crataegus monogyna	Hawthorn	600-800mm	1+1	OG
10%	Ilex aquifolium	Holly	600-800mm		2L
15%	Ligustrum vulgare	Privet	600-800mm	1+1	OG
15%	Prunus spinosa	Blackthorn	600-800mm	1+1	OG
15%	Salix caprea	Goat willow	600-800mm	1+0	OG
10%	Viburnum opulus	Guelder Rose	600-800mm	1+1	OG

MIXED SPECIES NATIVE HEDGEROW
(*300mm depth of topsoil + minimum 600mm depth subsoil*)
Planted at 450mm centres in a double staggered row. Rows to be 500mm apart.

%	Species	Common Name	Size	Age	Root
10	Carpinus betulus	Hornbeam	600-800mm	1+1	OG
50	Crataegus monogyna	Hawthorn	600-800mm	1+1	OG
10	Ilex aquifolium	Holly	600-800mm		2L
10	Prunus spinosa	Blackthorn	600-800mm	1+1	OG
10	Rosa canina	Dog rose	600-800mm	1+1	OG
10	Viburnum opulus	Guelder rose	600-800mm	1+1	OG

ORNAMENTAL HEDGEROW
(*300mm depth of topsoil + minimum 600mm depth subsoil*)
Planted at 450mm centres in a double staggered row. Rows to be 500mm apart.

%	Species	Size	Pot
100%	Carpinus betulus	1000-1250mm	*1m trough*

TALL ORNAMENTAL SHRUB PLANTING
(*300mm depth of topsoil + minimum 300mm depth subsoil*)
Ultimate plant height is above 1m.

Species	Supply Size	Pot	Spacing
Cornus alba 'Aurea'	600-800mm	3L	600mm c/s
Viburnum tinus 'Eve Price'	600-800mm	5L	750mm c/s

LOW ORNAMENTAL SHRUB/HERBACEOUS PLANTING
(*300mm depth of topsoil + minimum 300mm depth subsoil*)
Ultimate plant height is below 1m.

Species	Supply Size	Pot	Spacing
Anamenthele lessoniana	300-400mm	3L	500mm c/s
Asplenium scolopendrium	200-300mm	3L	500mm c/s
Achillea mollis	*300-400mm*	*3L*	*450mm c/s*
Carex buchananii	*400-600mm*	*3L*	*500mm c/s*
Carex morrowii 'Ice Dance'	*200-300mm*	*2L*	*400mm c/s*
Choisya 'White Dazzler'	*400-600mm*	*3L*	*500mm c/s*
Escallonia 'Iveyi'	*400-600mm*	*3L*	*500mm c/s*
Euphorbia amygdaloides 'Robbaie'	300-400mm	3L	*500mm c/s*
Geranium macrorrhizum 'Ingwersens'	200-300mm	3L	*450mm c/s*
Hebe rakiensis	*300-400mm*	*3L*	*500mm c/s*
Hedera helix 'Glacier'	*200-300mm*	*2L*	*400mm c/s*
Persicaria affine 'Darjeeling Red'	*200-300mm*	*3L*	*400mm c/s*
Prunus laurocerasus 'Otto Luyken'	*300-400mm*	*3L*	*500mm c/s*
Rosa 'Max Graf'	*400-600mm*	*3L*	*450mm c/s*
Sarcococca confusa	*300-400mm*	*3L*	*500mm c/s*

GRASS SEEDED AREAS
(*150mm depth of topsoil + minimum 150mm depth subsoil*)
To be sown with DLF PM 120 'Slowgrowth' or similar approved
Sown at a rate of 35-50g/m²

PROPOSED GRASSCRETE AREAS
(*150mm depth of topsoil onto 150mm depth subsoil*)
Geosynthetics 'Golpla Pre Grown' System or similar approved to be installed in line with manufacturers recommendation.

PROPOSED SEDUM GREEN ROOF PLANTING
(To Architects Specification)

PROPOSED SPECIES RICH GREEN ROOF PLANTING
(To Architects Specification)

PROPOSED SECURITY FENCE
(Refer to NWA drawing DCS20109-NWA-DC-01-LP-DR-A-10201 for detail)

TEMPORARY LANDSCAPE AREA

PHASE 1 BOUNDARY
(Refer to NWA drawing DCS20109-NWA-DC-01-LP-DR-A-10201 for detail)

APPLICATION BOUNDARY
(Refer to NWA drawing DCS20109-NWA-DC-01-LP-DR-A-10201 for detail)

REV NOTE DATE AUTH

BARRY CHINN associates Landscape Architects

CLIENT
COLT DATA CENTRE SERVICES

PROJECT
COLT L4

DRAWING
DETAILED PLANTING PLAN - PHASE 1

CONTRACT	2179-21			DRG NO. 20
DATE	04-07-22	DRAWN	HC	
ISSUE	PLANNING	CHECKED	MAB	
SCALE	As Shown	ORIG SHEET	A0	REV -
CAD FILE	2179-21-20_21 - Detailed Planting Plans.dwg			

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APPENDIX 2

Example Bird Hazard Management Log

Bird Hazard Management Log

DATE	TIME	INITIALS	BIRD SPECIES AND NUMBERS			ACTION TAKEN

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