PROPOSALS FOR REMEDIAL TREE PLANTING AT FAIRSTEAD ESTATE AND LAND TO THE WEST OF QUEEN ELIZABETH WAY KINGS LYNN NORFOLK,

Prepared for Kings Lynn and West Norfolk Borough Council

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TREE SURVEYS

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1. Aims of the Landscape Planting

1.1 The client's instructions were to prepare tree planting proposals for 51 trees to remediate tree losses associated with the new Parkway residential development at Gayton. The proposed planting will fulfil Condition 25 of the planning conditions.

1.2 The sites include a new formal avenue of lime trees to be planted on one of the green spaces on the Fairstead Estate (Site1) and a scattered planting of native black poplar on the edge of a new nature reserve to be formed on land to the west of Queen Elizabeth Way (Site 2). The position of the sites relative to the Parkway development are shown on the site Location plan which forms Appendix 1.

1.3 Specifications for tree planting are based on the relevant sections of British Standard 8545:2014 "Trees from the nursery to independence in the landscape." Work will comply with BS 4428:1989 Code of practice for general landscape operations (excluding hard surfaces)

1.4 The proposed species and planting specification have been agreed with the Kings Lynn and West Norfolk District Council tree officer Mr Richard Fisher at a recent site meeting.

1.5 The tree planting will be undertaken during November/December 2022 with all planting to be completed by the end of the year.

2. Tree Species, Spacing and Planting Positions

Site 1

2.1 Forty-three containerised heavy standard lime trees (12 – 14 cm stem girth) *Tilia cordata* 'Greenspire' will be used to establish the new avenue. Two rows will be planed one each side of the existing mown grass ride running diagonally across the site. Within the rows trees will be planted at 8 m centres and the two rows will be set 10 m apart. Tree planting positions are shown on the planting plan that forms Appendix 2.

Site 2

2.2 Eight Native Black poplars *Populus betulifolia*, a rare and declining species in the Norfolk countryside, will be planted. Stock will be sourced from existing native stock of local provenance. The proposed location of these Poplars has been shown on the planting plan Appendix 3.

2.1 Poplars will be planted as unrooted sets 1.8 to 2.4 m from stool beds in Norfolk. Sets to be positioned in prepared pit (0.5m x 0.5 m x 0.5m) and pushed into a hole, made with an iron bar, in the centre of the pit to a depth of 300 mm before back filling the pit. No imported planting stock will be used.

2.2 The minimum spacing between trees will be 8 m. However, regular positioning will be avoided and, if necessary, positions adjusted

3. The Soils

3.1 Based on research on the British Geological Survey web site, the superficial geology in the area is Clay, Silt, Sand And Gravel. Superficial Deposits formed up to 3 million years ago in the Quaternary Period.

3.2 Site 1

3.3 The site was reported by the clients to be a former land fill site with a disturbed profile. Therefore, a soil investigation was undertaken on Friday June 17th to establish the depth and quality of the soils. Trial holes were excavated at five different locations at varying depths, on the line of the proposed avenue and the results are detailed in table 1 below.

3.4 Table 1. Trial Pit Results

Trial Pit No.	pH Result	Pit Depth	Topsoil depth
1	5.7	800 mm	<750mm
2	6.6	800 mm	<800 mm
3	7.3	700 mm	<700 mm
4	6.9	750 mm	<750 mm
5	7.4	650 mm	<650 mm

3.5 The depth of soil over all five pits was acceptable in terms of providing sufficient rooting medium. The range of pH neutral

3.6 Site 2

3.7 No soil investigation was completed site 2. However, the soil thought to be an alkaline fen soil with impeded drainage

4. Ground Preparation

4.1 On sites 1 and 2 prior to planting the planting sites will be cleared of any vegetation and extraneous matter.

5. Planting Stock

5.1 All planting stock will be well grown and disease free and conform to the following specification: -

Foliage

- Foliage should be free from discoloration
- Shoot Extension growth should be comparable with the previous season
- The tree should be free from dieback

Branch and stem

- The growth of the scion should be proportional to the root stock
- The species and origin of the root stock should be made available to the purchaser
- The graft union must be above the soil level
- There should be no epicormic growth arising from the root stock
- Trees should have a defined leader and all lateral branches should be subordinate
- Formative pruning wounds should have a defined branch bark collar and signs of occlusion
- Crossing and poorly attached branches should be removed
- Trees should have a clearly defined stem taper and root flare
- Trees should be entirely self-supporting at the time of dispatch

Root system - Containerised and Container-grown trees and shrubs

- Trees and shrubs in containers should not have circling or girdling roots
- The amount of time the plants have been growing in the containers should be established
- The root flare of the trees should be visible on the container surface.
- Where containerised stock has been potted on circling roots should be shaved off before dispatch

Biosecurity

- All imported trees and shrubs should be grown in quarantine for at least one growing season during which time regular plant heath checks should be carried out.
- Plants should be provided with an audit trail stating the country origin and the time held in quarantine. This audit should extend to the planting site to allow them to be traced if a bio-security problem arises.

5.2 The plant sizes to be as detailed in the Tree Planting Schedule - Appendix 1.

6. Transport to the Sites

6.1 When transporting trees for transplanting there are several points which must be taken into consideration, the key principles of which are outlined below:

- Unnecessary movement of the tree should be avoided to prevent disturbance to the root ball.
- Before unloading or moving a tree from temporary storage the depth and diameter of the root ball should be measured so that, if necessary, adjustments to the size of the pit can be made.
- Any branches which were damaged during transit should be removed.
- Trees should be unloaded carefully and not dropped at any point in the process.

7. Planting Pits

7.1 Trees will be planted in pits that are at least 75 mm wider than the root ball or container. The planting depth will be no deeper than the depth of the container. The trees should be set in the tree pit and should be positioned with the minimum of delay, when finally positioned, the topsoil of the root ball should not be below the surrounding soil.

7.2 Further key principles are outlined below:

- At no point should trees at the planting site be left with their root systems exposed or vulnerable to drying out if trees are to be left overnight or in prolonged exposure to sunlight their root systems must be covered with moist hessian to limit desiccation.
- Tree pit sides should not have compacted, glazed or smeared sides from digging. If the sides of the planting pit have been smeared or smoothed during excavation, they must be scarified to allow root penetration.
- During excavation of the tree pit, the soil dug should be placed to one side separating topsoil and subsoil as far as is practical.

8. Backfilling

8.1 Before a tree pit is backfilled all pots, wrapping, insulation materials and padding must be removed from around the roots and the pit. In the case of root balled stock, the wire basket should be folded back to allow unfettered growth of the lateral root system.

8.2 The pit should be backfilled using previously saved soil or, if necessary, an imported soil of similar texture. Backfilling should be added gradually, in layers of 150 mm to 230 mm with firming gently at each stage to ensure that no air pockets are left around the root ball, but with care being taken not to excessively compact the soil. The final layer of backfilling should not be consolidated but should be of sufficient depth to allow for settlement and mulching. The newly planted tree should be watered slowly to moisten root ball thoroughly.

9. Mulching

9.1 An ornamental grade bark mulch will be applied to a 0.5 m radius around each tree to conserve moisture and inhibit weed growth to a minimum depth of 50 mm.

10. Tree Protection

10.1 All trees will be individually protected with 4 treated softwood posts (2.4 m x 75 mm x 75 mm) positioned in a square around the stem of the tree strengthened with 8 short treated soft wood rails (900 mm x 75 mm x 40 mm) 4 set at 50 mm above ground and 4 at 1.6 m nailed to the posts (dug in to 1.8 m) around the tree to form a solid frame

10.2 Two extended tree ties will be used to secure each tree to the timber frame.

10.3 The framework is designed to deter casual vandalism. However, in the event of deer damage the guards will be strengthened with plastic mesh (1.2 m in height and a hole width of 25 mm) wrapped around the tree guard frame to protect from mammalian damage. Alternatively sweet chestnut fencing could be used around the sawn posts.

11. Post Planting Management and Maintenance

11.1 All failures that occur within a five-year period from the date of planting will be replaced with trees of the same species, size and quality.

11.2 Any weed growth that develops in the mulched area should be removed by cultivation, herbicides or the addition of more mulch. Weed growth should also be suppressed for at least 5 years in an area at least 150 mm beyond the perimeter of the tree pit.

11.3 Mulch should be topped up as necessary to maintain a depth of 50 mm.

11.4 Watering is essential during periods of hot and dry weather during the first 2 years from planting until the trees are established and this can be best achieved through a maintenance contract or community watering scheme.

11.5 The timing and frequency of irrigation should consider the prevailing weather conditions, soil moisture release characteristics, and the response of the tree species to water deficits or periods of prolonged soil saturation.

11.6 All stakes, guards and ties should be checked at least annually to ensure that the root system remains stable in the ground and that ties are still effective and not causing damage to the tree. Any stakes, guards or ties which are found to be not fit for purpose will be removed and replaced where necessary.

11.7 A formal assessment of the trees and shrubs health and development should be carried out annually. This assessment should focus on several aspects of physiological health outlined below:

a) Foliage appearance (i.e., lack of leaf chlorosis or necrosis, leaf size and leaf canopy density)

b) Extension growth and incremental girth development.

c) Continual assessment on an ad hoc basis should be carried out throughout the post planting maintenance period, to inform maintenance requirements.

d) The soil around newly planted trees should be regularly inspected for soil capping or compaction. Remedial action should take place where necessary.

e) All trees should be checked for mammal, human and other external damage. Remedial action should be implemented as soon as is practicable following discovery.

f) Inspect trees for pest and disease regularly. Remedial action should take place where necessary.

g) Unless specific nutritional deficiencies are identified, no fertilizer should be applied to newly planted trees in the first season.

11.8 All ties should be removed as soon as the developing root system is strong enough to support the tree, two full growing seasons are usually enough for this to occur. Tree guards should be removed as soon as it is no longer necessary to protect the tree, or where there is a risk of physical damage to the tree.

11.9 Formative pruning will be carried out as required to maintain a central leader.

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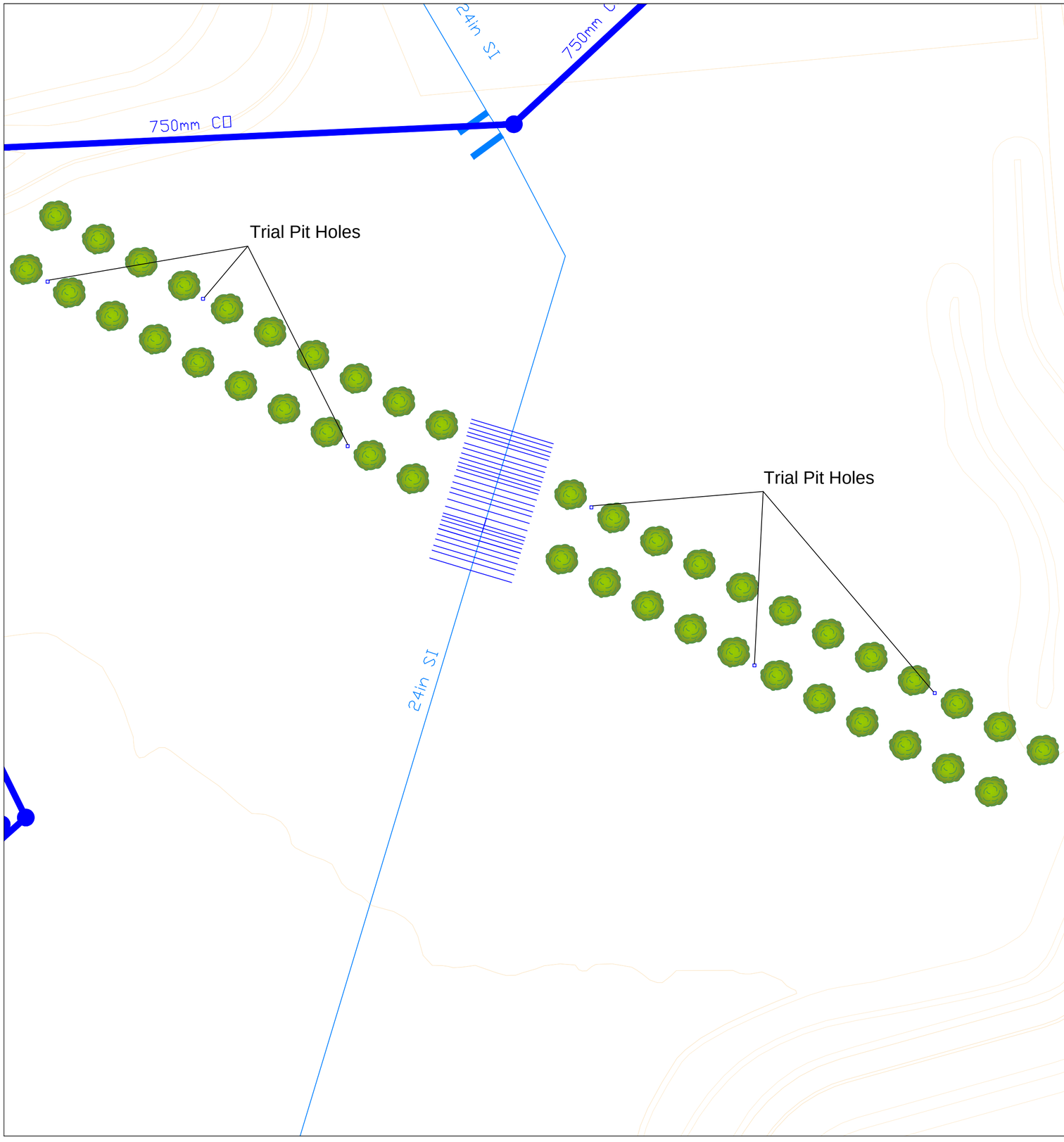
Appendix 1 - Site Location Plan



Drawing Title:

Appendix 2 - Tree Planting Plan

Site:

Fairstead Estate, Kings Lynn

Client:

Lovells

NORTH

To Scale 1:500 At A2

KEY

Tree Positions

SI Water Pipe Easement

Drawn By: RG	Date: 09/06/2022

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Drawing Title:

Appendix 3 - Tree Planting Plan on Land Wetland to the East of the Development

Site:

Land to the West of Queen Elizabeth Way, King's Lynn

Client:

Lovell

NORTH

To Scale 1:500 at A0

Key

- Existing Tree Positions
- Existing Tree and Shrub Mass Groups
- Scrape cluster
- Proposed Populus nigra subsp.betuifolia Planting
- Proposed Footpath
- Site Boundary
- Proposed Bat Box (B)
- Proposed Bird Box (BI)
- Proposed Hibernacula (H)
- Proposed Owl Box (O)
- Proposed Information Boards (I)
- Proposed Hibernacula Banks (HB)
- Proposed Riparian Management
- Proposed Areas for Coppicing and scrub managment
- Proposed Area to be Reverted to Fen

Drawn By: RG

Date:29/04/2022

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