APPENDIX A – LANDSCAPE SPECIFICATIONS

A1.1 Planting Proposals Generally

A1.1.1 Tree Planting

Trees chosen will reflect species that already exist on site. Trees with a good shape crown and be capable of withstanding rigid pruning will all be considered.

A1.1.2 Woodland Whip Planting

Woodland whip planting will also be chosen, using established landscape techniques, which will adapt readily to disturbed ground. Selected shrub species will form the first few metres of planting next to the edge of the road / footpath and provide a gradual gradation of planting heights back to the site boundary.

A1.1.3 Outline Of Operations / Programme

Planting on the site will commence with the completion of each stage of the works and as a result the programme is closely tied to construction operations. Ground preparation will precede planting and will include weed clearance and amelioration where necessary. Planting of species will be carried out in the dormant period from November – March, with grass seeding carried out from April – September, this will ensure ample opportunity for planting to establish properly and reduce casualties during the maintenance period.

Intensive landscape aftercare for each area will run for 12 months from the practical completion date using contact herbicides and hand weeding. There will be a period of 12 months defects liability on all planting with plant failures being replaced in the following planting season.

A1.2 Suggested Species Lists

A1.2.1 TREE PLANTING

Trees will be selected from the list of species outlined below. The planting size for trees will vary from whips and feathers (2-3yr old transplants / 1.2-1.5m height) to standard trees (8-10cm / 3.0 – 4.0m height) depending on location through the scheme.

TREE PLANTING
Alnus glutinosa
Betula pendula
Betula pubescens

Fraxinus excelsior
Prunus avium
Quercus petraea
Quercus robur
Sorbus aucuparia
Salix caprea
Tilia vulgaris
Pinus sylvestris

SEMI-NATIVE SHRUBS / WHIP PLANTING

Plant name
Corylus avellera
Ilex aquifolium.
Cornus spp
Rosa rugosa
Prunus spinosa
Viburnum opulus
Rosa canina
Crateagus monogyna
Symphoricarpos x 'Chenantii Hancock'
Ulex europeaus

A1.3 Outline Specification

A1.3.1 Materials

All plant material shall be good quality nursery stock, free from fungal, bacterial or viral infection. Aphis, Red Spider or other insect pest, and physical damage. It shall comply with the requirements of the following sections of B.S. 3936, Specification for Nursery Stock, where applicable:

Part 1: 1965: Trees and Shrubs.
Part 2: 1966: Roses.
Part 4: 1984: Forest Trees.
Part 5: Poplars and Willows.
Part 9: 1968: Bulbs, corms and tubers.

All plants shall have been nursery grown in accordance with good practice and shall be supplied through the normal channels of the wholesale nursery trade. They shall have the habit of growth that is normal for the species.

Except for any cultivated varieties or exotic species which do not set viable seed in Ireland, all plants shall have been grown from seed.

The Contractor will be deemed to have advised his suppliers of the relevant sections of this specification, including all protection required, at the time of enquiry and shall in all cases be liable to replace materials brought on site which are not in accordance with this specification.

A1.3.2 Species

All plants supplied shall be exactly true to name as shown in the plant schedules. Unless stipulated, varieties with variegated or otherwise coloured leaves will not be accepted, and any plant found to be of this type upon leafing out shall be replaced by the Contractor at his own expense.

Bundles of plants shall be marked in conformity with the relevant part of B.S. 3936. The contractor shall replace any plants which are found not to conform to the labels. An inspection of plants shall be undertaken prior to planting to ensure quality control.

A1.3.3 Selected Standard and Standard Trees

Selected standard trees shall have a total height of 3.0 to 3.5 metres and a girth of 10-12 cm at 1m above ground level. Standard trees shall have a clear stem 1.70 m to 1.85 m in height from ground level to the lowest branch, a minimum girth of 8 cm measured at 1m above ground level and a total height of 2.5 to 3.0 metres.

Trees shall have a sturdy, reasonably straight stem, a well defined and upright central leader, with branches growing out of the stem with reasonable symmetry, or a well balanced branching head according to the Schedule. The crown and root systems shall be well formed and in keeping with the nature of the species. Roots shall be in reasonable balance with the crown and shall be conducive to successful transplantation.

Trees shall be supplied bare rooted unless otherwise specified. They shall have been regularly undercut or transplanted. They shall have been lifted carefully to avoid tearing of major roots and to preserve a substantial proportion of smaller and fibrous roots. Trees shall have been grown on their own roots. Budded or grafted trees will be rejected.

A1.3.4 Transplants

Transplants shall not be less than three years old, and shall have been transplanted at least once. Trees of species not listed in B.S. 3936: Part 4: 1984 shall be sturdy, with a balanced root and shoot development. Sizes shall range from 600-900 and 900-1200 mm.

Trees shall be well furnished with lateral and fibrous roots, and shall be lifted without severance of major roots. Roots shall be of the habit normal for the species.

Salix shall have been stumped and transplanted at the end of the first year in the nursery.

A1.3.5 Shrubs

Shrubs shall be of the minimum size specified in the schedules, with several stems originating from or near ground level and of reasonable bushiness, healthy, well grown, and with a good root system. Pots or containers shall be as scheduled. Plants shall not be pot bound, nor with roots deformed or restricted. Bare root material will only be accepted where specified.

A1.3.6 Herbicides

Glyphosate - 'Roundup' by Monsanto Chemicals Ltd. Do not apply when rain is forecast within six hours. Do not apply when wind is likely to cause spray drift (over 24 kph/15 mph). Allow leaf symptoms to develop before carrying out any cultivations.

Paraquat - 'Gramoxone 100' by ICI Plant Protection Ltd. Do not spray when wind is likely to cause drift (over 24 kph/15 mph). Protect all foliage of transplants or shrubs.

Propyzamide - 'Kerb 50W', obtainable from T. P. Whelehan, Son and Co. Ltd., Finglas, Dublin 11. Tel. (01) 342233. Apply between 1st October and 20th December only, when ground is damp. Ensure complete cover of the ground.

The contractor may use alternative formulations of the above herbicides, by other manufacturers, with the prior approval of the landscape architect. Such alternative formulations shall be applied to give the same degree of control as the application noted above.

A1.3.7 Weedkiller Application

All weedkiller shall be applied with properly designed equipment, maintained in good working order and calibrated to deliver the specified volume, evenly and without local over-dosing. Measure all quantities of weedkiller with a graduated measuring vessel.

A1.3.8 Bulky Organic Manure/ Mushroom Compost

Bulky organic manure shall consist either of spent peat compost, mushroom compost, as described above, spent hops, or of well rotted farm manure. Farm manure shall consist of predominantly of faecal matter and shall be free of loose, dry straw and of undigested hay.

Manure shall be free of surplus liquid effluent. This shall be used on mounds only. Well spent mushroom compost shall be used in all ornamental planting areas.

A1.3.9 Fertilisers

Controlled release fertiliser N:P:K 15:9:11 plus trace elements - Osmocote plus or similar approved applied at specified rates.

Fertiliser shall be supplied in sealed bags or containers bearing the manufacturer's name, the net weight and analysis.

A1.3.10 Stakes for Standard Trees

Stakes shall be of peeled larch, pine or douglas fir, preserved with water-borne copper-chrome-arsenic to I.S. 131, to a net dry salt retention of 5.3 kg. per cubic metre of timber. Stakes shall be turned, and painted one end. Sizes shall be as follows:-

For selected standard trees: 2700 x 75 mm dia.

For standard trees: 2700 x 75 mm dia.

Set stakes vertically in the pit, to the western side of the tree station, and drive before planting. Drive stake with a drive-all, wooden maul or cast-iron headed mell, not with a sledge hammer.

A1.3.11 Tree Ties

Tree ties shall be of rubber, P.V.C. or proprietary fabric laminate composition, and shall be strong and durable enough to hold the tree securely in all weather conditions for a period of three years. They shall be flexible enough to allow proper tightening of the tie.
Ties shall be min. 40 min. wide for standard trees. Provide a simple collar, free of rough or serrated edges, to prevent chafing. Provide for subsequent adjustment of the tie either by means of a buckle (nail tie to stake immediately behind it) or by leaving heads of securing nails slightly proud, to permit easy extraction and repositioning. All nails shall be galvanised.

A1.3.12 Protection

The interval between the lifting of stock at the nursery and planting on site is to be kept to an absolute minimum. Plants shall be protected from drying out and from damage in transport. All stock awaiting planting on site shall be stored in a sheltered place protected from wind and frost, from drying out and from pilfering. Bare rooted plants not immediately required shall be heeled-in in a prepared trench, the bundles of plants first having being opened, the plants separated and

each group separately heeled-in and clearly labelled. The roots shall be covered with moist peat or soil and shall be kept moist until planted. Pots shall not be removed until plants have been carried to their planting station. Plants packed in polythene must be stored in shade.

All forest transplants and bare root shrubs shall be wrapped in polythene from the time of lifting to conserve moisture. Except when heeled-in, they shall be protected in polythene at all times until planted into their final position on site.

Plants shall be handled with care at all times, including lifting in and despatch from the nursery. Plants or bundles of plants shall not be tossed, dropped of subjected to any stress likely to break fine roots.

A1.3.13 Damage

Any roots damaged during lifting or transport shall be pruned to sound growth before planting. On completion of planting any broken branches shall be pruned.

A1.3.14 Setting Out

Setting out shall be from figured dimensions where indicated, and otherwise by scaling. Transplants shall be planted at the spacings indicated, in staggered rows. Transplants in mixtures shall be planted at the spacings indicated, in staggered rows or at random according to instructions on the contract drawings. Species shall be planted in groups in each area. Set out groups avoiding obvious repetition, regularity, and single lines of one species.

Shrubs and ground covers planted in mass shall be at the spacing indicated on the drawings. Shrubs shall not generally be planted closer to a kerb or to the edge of a planting area than a distance equal to half the spacing indicated for that species.

A1.3.15 Ripping

Rip all disturbed ground a minimum of 600 mm deep with a subsoiler approved by the Landscape Architect in two transverse directions.

A1.3.16 Topsoiling

Excavate for shrub beds and hedge trenches to 400 mm below finished levels. Dispose of material to tip off site or to areas of filling on site as directed by the Landscape Architect. Break up base of beds and trenches min. 150 mm deep. Decompact base of planting bed to allow drainage. Load and carry topsoil from stockpiles on site, and backfill beds/trenches in layers each not more than 150 mm deep, lightly consolidating each as the work proceeds. Leave area slightly mounded, to allow for settlement. Incorporate ameliorant and fertiliser, as specified.

A1.3.17 Site Preparation

Preliminary Weedkilling: 'Roundup' @ 5.0 litres per hectare, in water @ 200 litres per hectare, and application pressure not exceeding 2 bars.

Transplants: Weedkill full ground area. Apply a first treatment before 15th July, and a second not later than 15th September to kill regrowth.

Hedge Trench: Weedkill. Excavate trench 600 x 400 mm. Add ameliorants as follows, incorporate evenly into excavated material, and backfill:-

Organic Manure: 75 mm deep
Osmocote plus : 70 gm/m

Shrub Planting: Weedkill. Spread over all planting areas:-

Organic Manure: 50 mm deep
Osmocote plus : 75 gm/msq

Cultivate beds 225 mm deep, incorporating ameliorants evenly. Remove stones, rubbish over 50 mm dia.

A1.3.18 Standard and Selected Standard Tree Planting

Excavate tree pits to 0.5 cubic metres volume (1.0 m diameter x 60 cm deep). The base of the pit shall be broken up to a depth of 15 cm and glazed sides roughened. Remove subsoil, stones and rubbish to tip on site as directed by the Architect/Engineer. Supply and drive the stake.

For planting in areas of made up ground, load and carry topsoil from stockpile on site. In undisturbed ground, backfill with excavated material. Mix the following ameliorants evenly throughout the topsoil while it is stacked beside the pit. (Quantities are calculated for a pit of the specified dimensions):-

Organic Manure: 0.047 cubic m (equivalent to manure 6 cm deep over 1 m diam of tree pit).
Osmocote plus : 250 gm

Trees shall be planted at the same depth as in nursery, as indicated by the soil mark on the stem of the trees. They shall be centred in the planting pit and planting upright. The roots shall be spread to take up their normal disposition. Fit tie. Clean a neat circle 1000 mm dia. of all grass.

A1.3.19 Planting of Shrubs and C.G. Transplants

Remove all plastic and non-degradable wrappings and containers before planting. Make four vertical cuts with a sharp knife on the quadrants through the edge of C.G. rootballs to sever girdling roots. Excavate hole to min. 10 cm greater diameter than the root spread, and to a depth to allow planting to same depth as in the nursery. Spread out roots of bare root species. Backfill in layers of not more than 10 cm, firming each layer and on completion.

A1.3.20 Replacements

The planting will be inspected in September following planting. Any tree or shrub found to have died from any cause except as provided below or the work of other contractors shall be replaced by the contractor at his own expense. Replacement planting shall conform in all respects with this Specification, including all specified excavation, provision and incorporation of all fertilizers and ameliorants, and weedkiller treatments.

Failures will not be charged to the Contractor in the following cases:-

- Damage by hares or rabbits, where not protected by fencing or shelters.
- Failure solely due to prolonged dry weather, except in where the contractor will be responsible for watering.
- Losses due to theft, vandalism or disturbance by other contractors.

Persistence of weed in planted areas will be regarded as a contributory cause of failure due to drought. Prolonged dry weather will not exonerate the Contractor if the scheduled aftercare operations have not been carried out as programmed.

THE SITE
EXISTING DEVELOPMENT AREAS
AGRICULTURAL/OPEN LANDS UNDER 50m (O.D. Malin)
AGRICULTURAL/OPEN LANDS BETWEEN 50m & 100m (O.D. Malin)
AGRICULTURAL/OPEN LANDS BETWEEN 100m & 200m (O.D. Malin)
RIVER/LAKE/RESEVOIR
SIGNIFICANT EXISTING TREE VEGETATION
PRIMARY VISUAL RIDEGLINE
BUILDINGS
VISUAL ENVELOPE (Greyed areas indicate where there are little or no views into the site due to topography)
HERITAGE SITES
GOLF CLUBS
DESIGNATED SCENIC LANDSCAPE (Cork County Council Development Plan 2003)
A63 DESIGNATED SCENIC ROUTE (Cork County Council Development Plan 2003)
2 PHOTOVIEW LOCATIONS

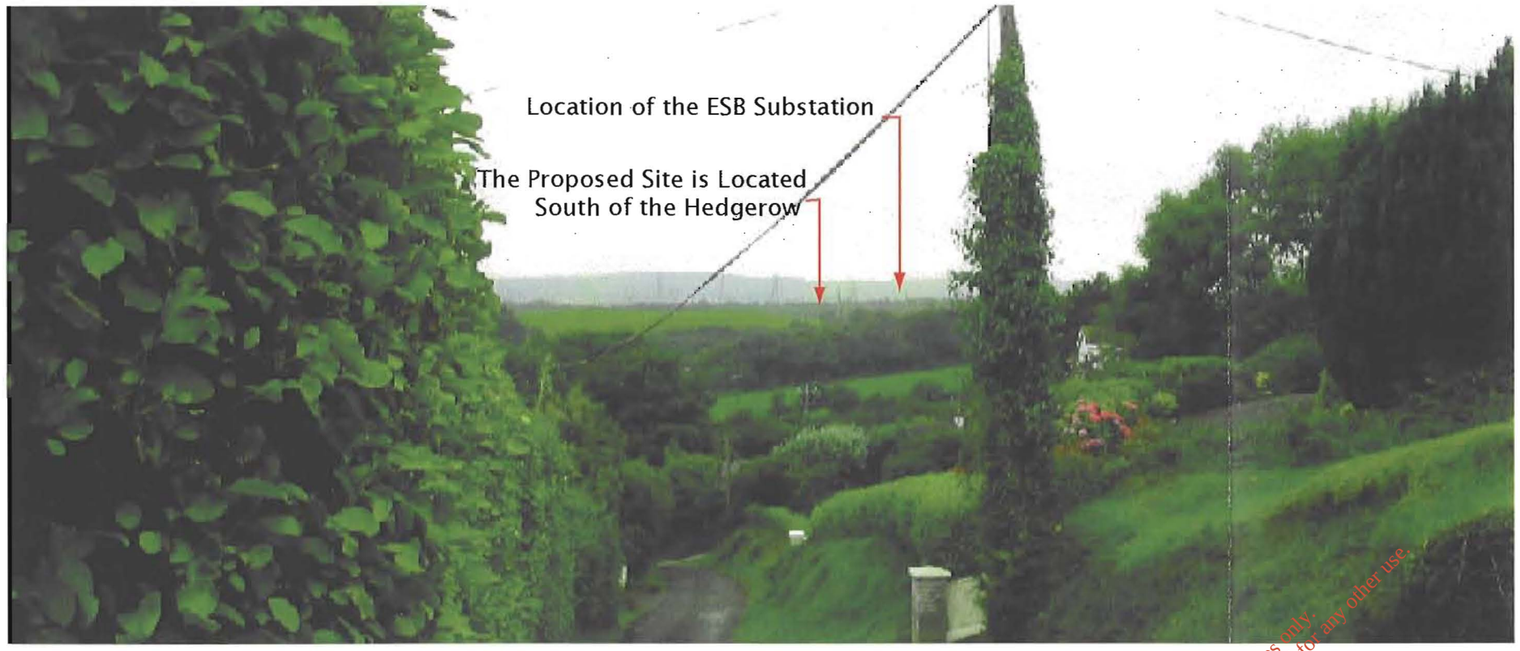
BRADY SHIPMAN MARTIN
Landscape Architects
Unit 33, Webworks,
Eglington Street, Cork, Ireland.

CORK LOWER HARBOUR WASTE WATER TREATMENT PLANT

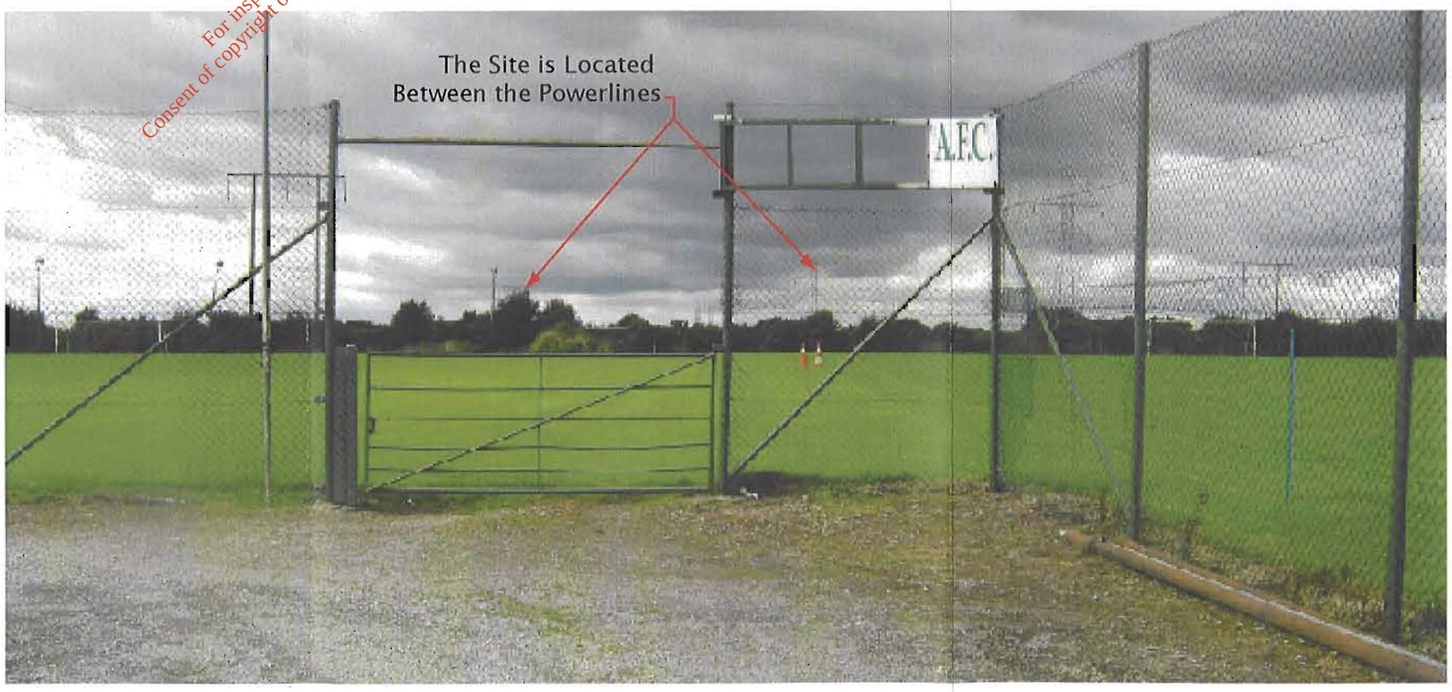
VISUAL ENVELOPE & PHOTO LOCATIONS

DECEMBER 2007

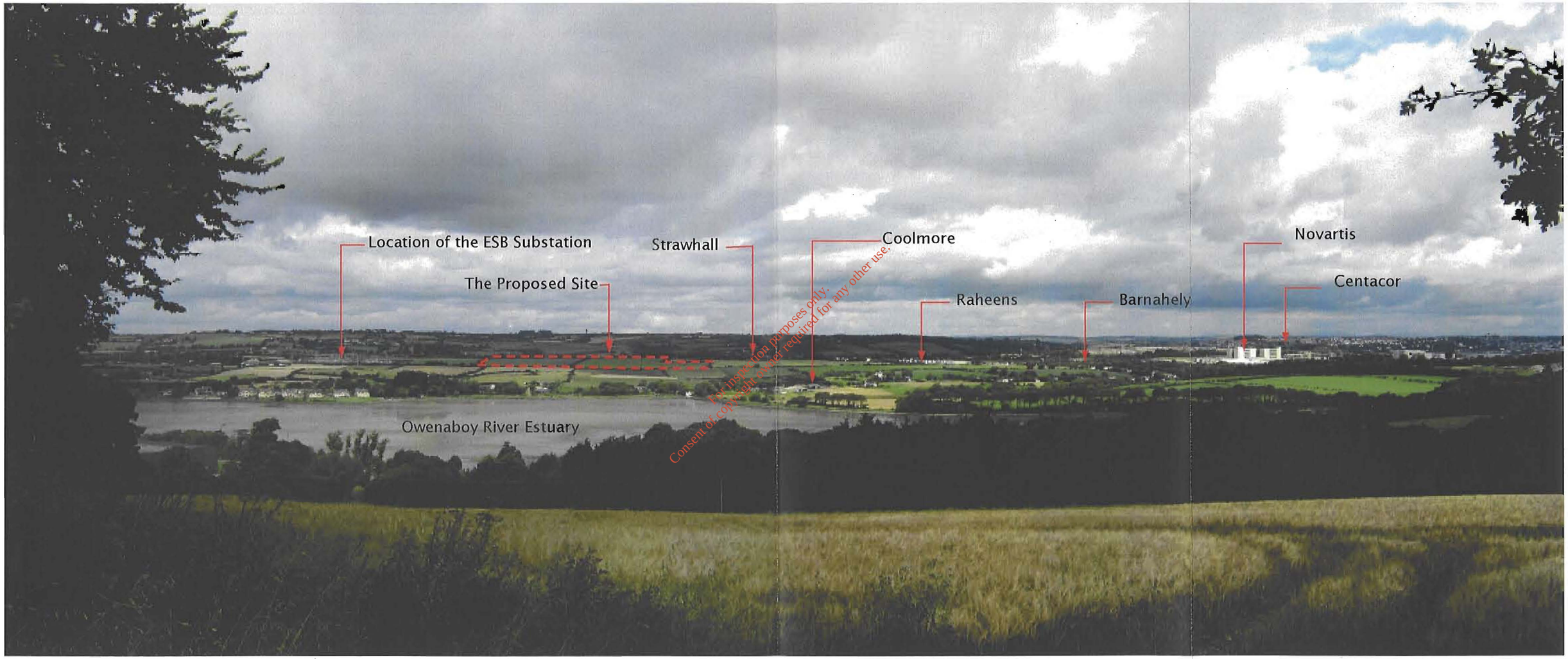
Figure 3.9.1



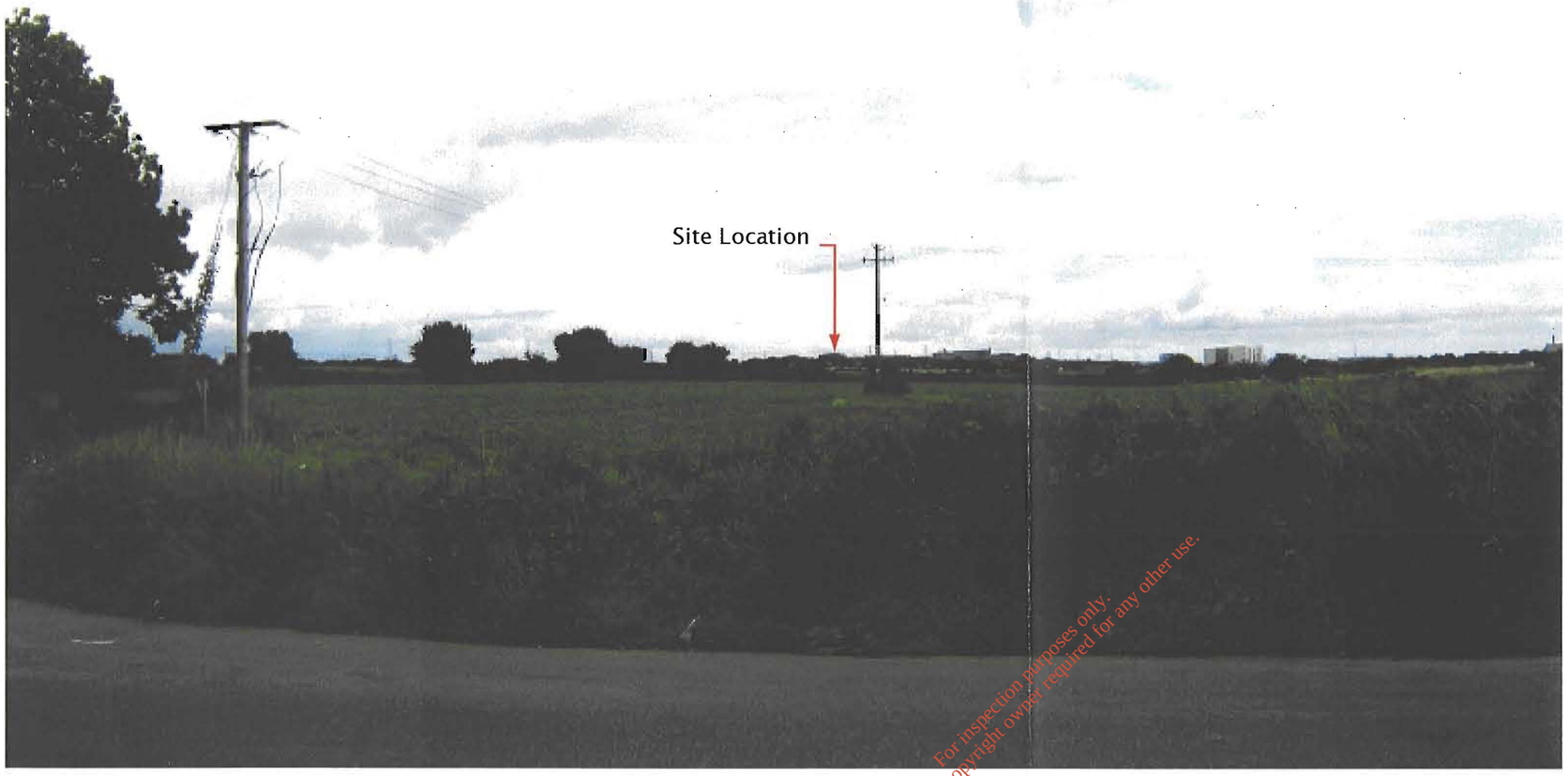
Photograph View 1 - View From the North Towards the Site Which is Barely Visible on the Ridgeline.



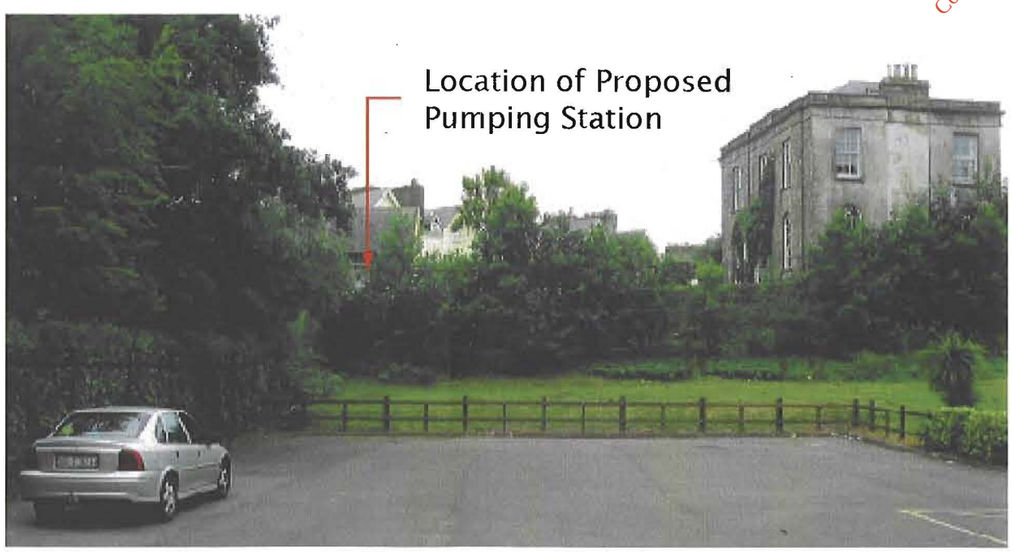
Photograph View 2 - View From the East at Raheens/Barnaheely, Local Hedges Screen the Site.



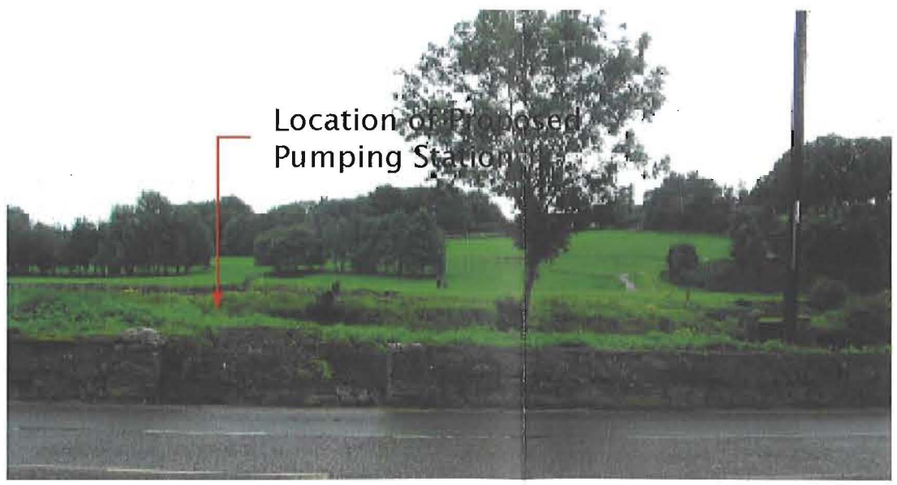
Photograph View 3 - View from the South at Frenchfurze Across the Owenaboy River to the Site
Relevant Local Locations are Highlighted.



Photograph View 4 View from the West at the Eastern Extents of Carrigaline. The Site is Barely Visible Beyond Existing Vegetation



Photograph View 5 - Proposed Location of the Monkstown Pumping Station

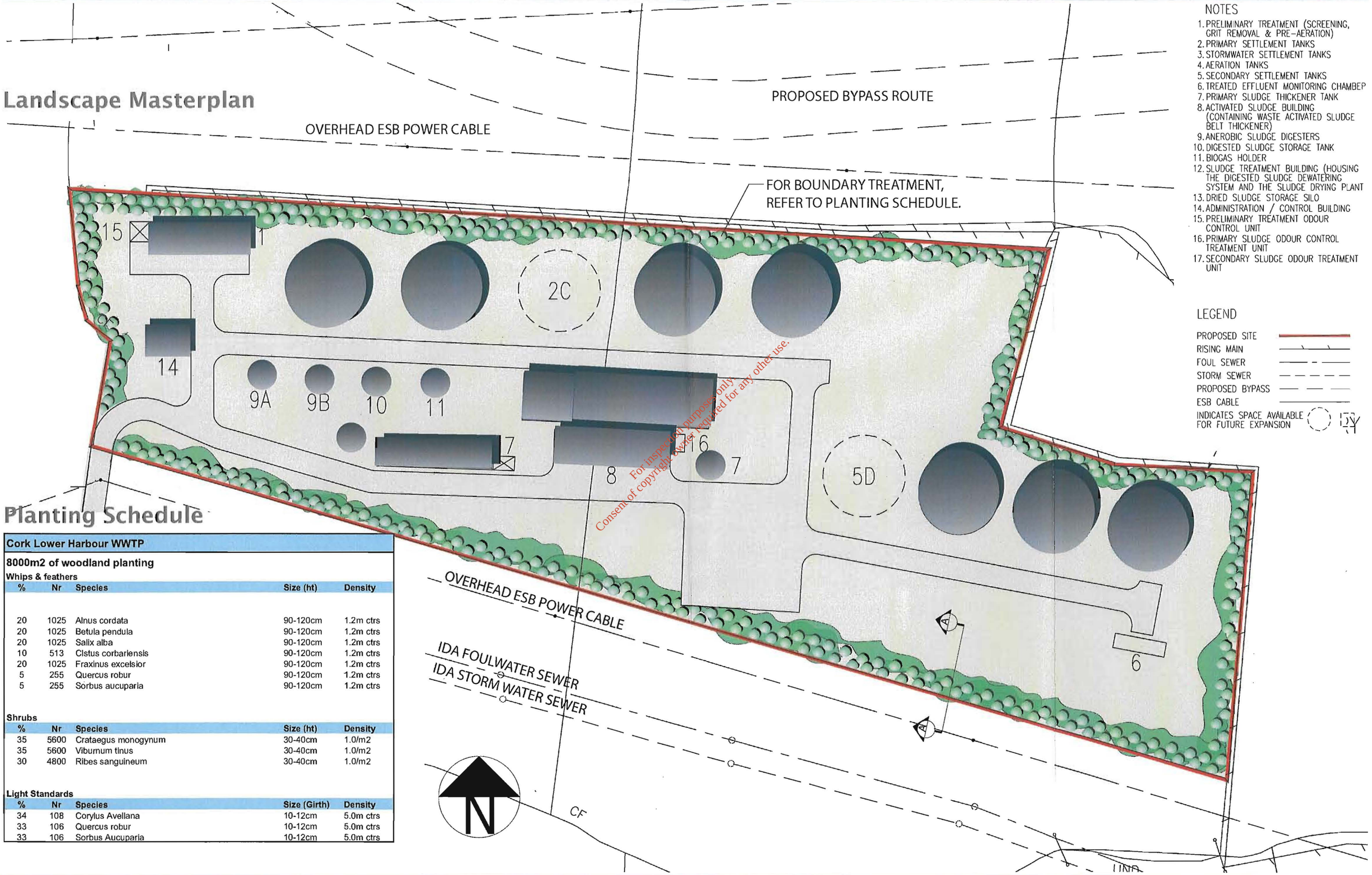


Photograph View 6 - Proposed Location of the Rafeen Pumping Station

Photograph View 7 View from the harbour wall at West Beach, Cobh towards the old Post Office Building

Photograph View 8 - View from Pearse Square to the harbour at West Beach, Cobh

Landscape Masterplan



Landscape Elements

NOTES

1. PRELIMINARY TREATMENT (SCREENING, GRIT REMOVAL & PRE-AERATION)
2. PRIMARY SETTLEMENT TANKS
3. STORMWATER SETTLEMENT TANKS
4. AERATION TANKS
5. SECONDARY SETTLEMENT TANKS
6. TREATED EFFLUENT MONITORING CHAMBEP
7. PRIMARY SLUDGE THICKENER TANK
8. ACTIVATED SLUDGE BUILDING (CONTAINING WASTE ACTIVATED SLUDGE BELT THICKENER)
9. ANEROBIC SLUDGE DIGESTERS
10. DIGESTED SLUDGE STORAGE TANK
11. BIOGAS HOLDER
12. SLUDGE TREATMENT BUILDING (HOUSING THE DIGESTED SLUDGE DEWATERING SYSTEM AND THE SLUDGE DRYING PLANT
13. DRIED SLUDGE STORAGE SILO
14. ADMINISTRATION / CONTROL BUILDING
15. PRELIMINARY TREATMENT ODOUR CONTROL UNIT
16. PRIMARY SLUDGE ODOUR CONTROL TREATMENT UNIT
17. SECONDARY SLUDGE ODOUR TREATMENT UNIT

LEGEND

- PROPOSED SITE
- RISING MAIN
- FOUL SEWER
- STORM SEWER
- PROPOSED BYPASS
- ESB CABLE
- INDICATES SPACE AVAILABLE FOR FUTURE EXPANSION

Planting Schedule

Cork Lower Harbour WWTP

8000m2 of woodland planting

Whips & feathers

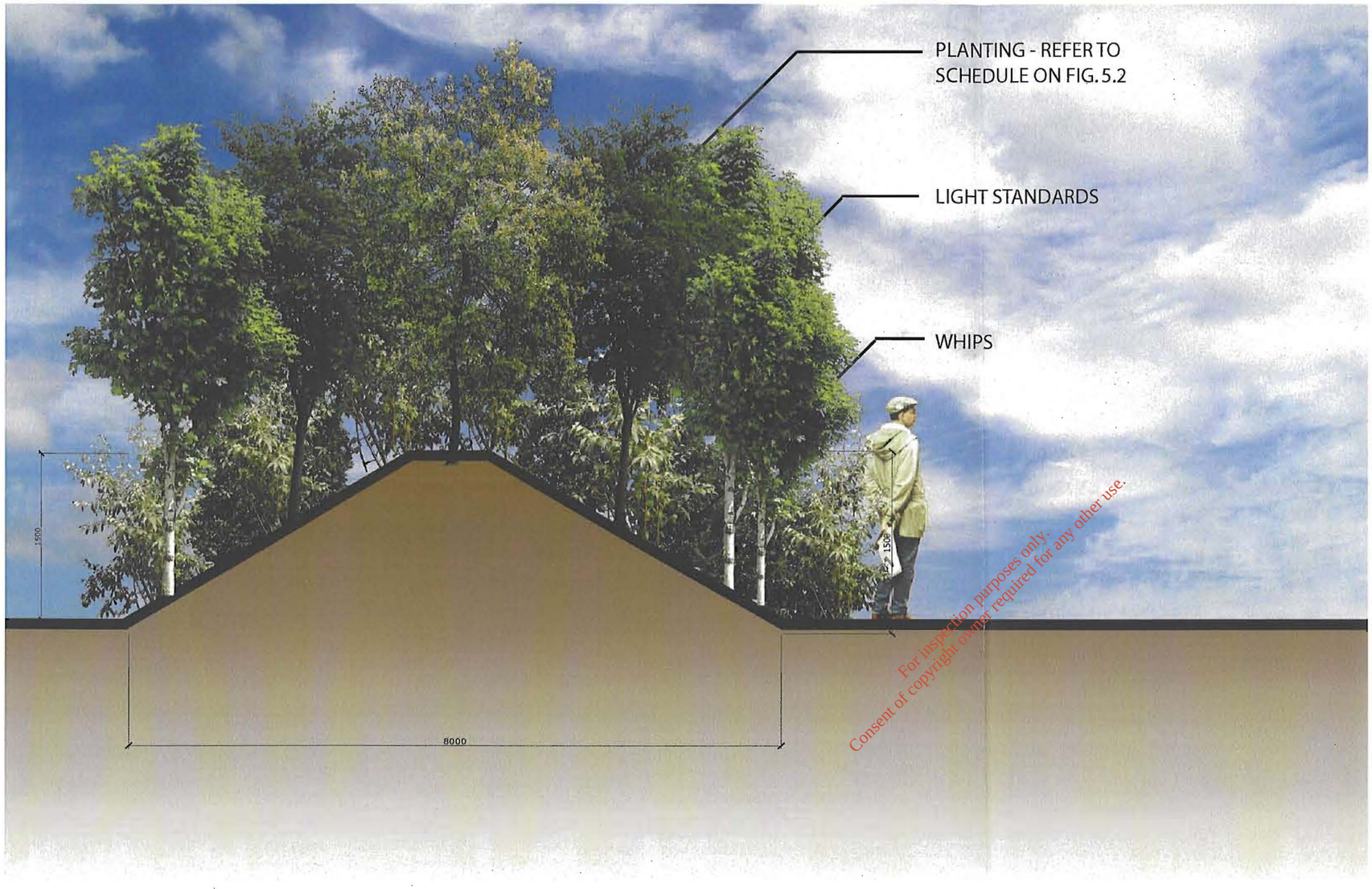
%	Nr	Species	Size (ht)	Density
20	1025	Alnus cordata	90-120cm	1.2m ctrs
20	1025	Betula pendula	90-120cm	1.2m ctrs
20	1025	Salix alba	90-120cm	1.2m ctrs
10	513	Cistus corbariensis	90-120cm	1.2m ctrs
20	1025	Fraxinus excelsior	90-120cm	1.2m ctrs
5	255	Quercus robur	90-120cm	1.2m ctrs
5	255	Sorbus aucuparia	90-120cm	1.2m ctrs

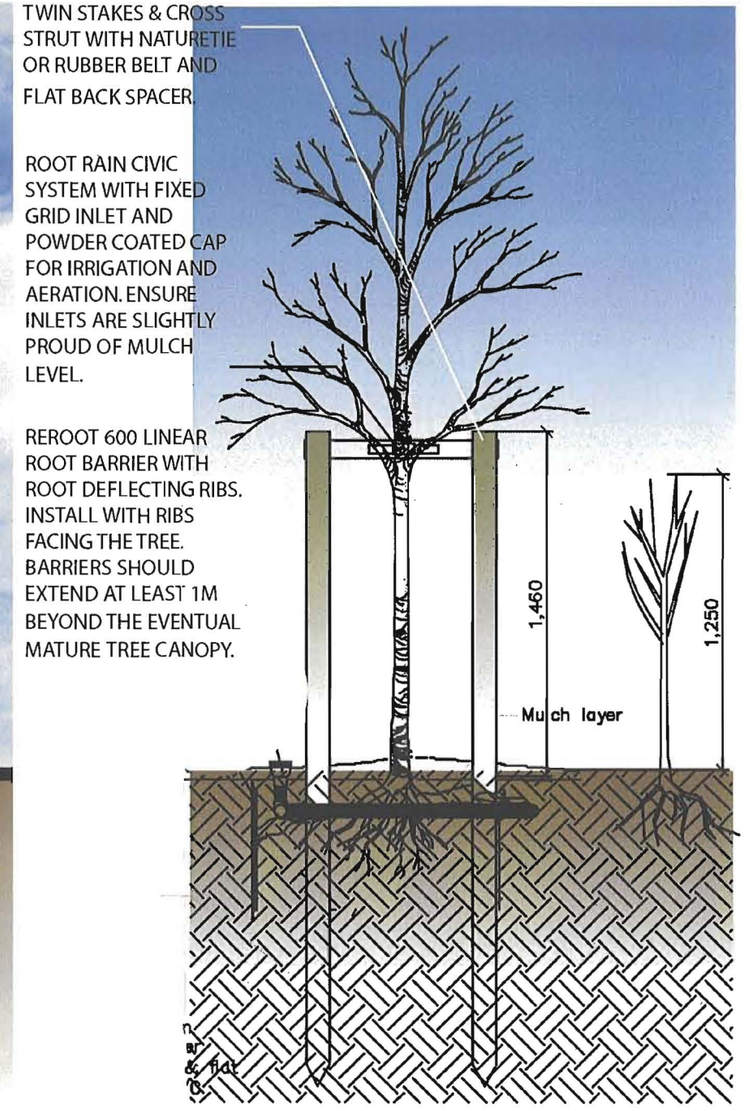
Shrubs

%	Nr	Species	Size (ht)	Density
35	5600	Crataegus monogynum	30-40cm	1.0/m2
35	5600	Viburnum tinus	30-40cm	1.0/m2
30	4800	Ribes sanguineum	30-40cm	1.0/m2

Light Standards

%	Nr	Species	Size (Girth)	Density
34	108	Corylus Avellana	10-12cm	5.0m ctrs
33	106	Quercus robur	10-12cm	5.0m ctrs
33	106	Sorbus Aucuparia	10-12cm	5.0m ctrs





Section A-A'
Proposed Boundary (5-10 years)

Detail 1
Tree & whip planting