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Arboricultural Assessment and Arboricultural Method Statement

Hodbarrow Nature Reserve, Millom

April 2025

Contents

1.0 Introduction

1.1 Survey Scope

1.1.1 The survey and report have been undertaken to consider the impact on the trees of the "Erection of visitor centre with café/shop, group room, staff/volunteer, Toilet facilities and car park; consolidation, repair and installation of interpretive sculpture to Towsey Hole Windmill; refurbishment of existing Tern Island hide; new bird hides, pathways, gateway features and street furniture; enhancement of wildlife habitats; associated landscaping and drainage infrastructure; and maintenance of byway with restricted vehicular access."

1.1.2 The report also includes consideration of the methodologies that may be required for tree protection and construction.

1.1.3 Any layout changes from that as they appear in the plans appended to this report may require an update of this report.

1.2 Site Details

1.2.1 A site visits was undertaken during March 2024.

1.2.2 Descriptions for each area are included in the sections following in 2.0.

1.2.4 Access to the site is via the existing site tracks.

1.3 Existing Protection of Trees

1.3.1 Trees can be protected by being located within a Conservation area or by virtue of a Tree Preservation Order. The Local Authority can advise as to whether either of these applies.

1.3.2 For a works to trees in a Conservation Area notice of 6 weeks of intent to carry out works needs to be made to the Local Authority. For trees protected by virtue of a Tree Preservation Order it is necessary to make an application to the Local Authority before any works can be undertaken.

1.3.3 It is an offence to undertake works on trees under protection without making the relevant applications.

1.4 Plans

1.4.1 The plans appended to the report show indicative areas of trees and root protection areas, the groups have been drawn based on information from the topographical survey, aerial images and photographs taken during the site visit.

1.4.2 Protective measures, areas where special tree friendly construction is required and areas of trees/shrubs to be removed are also shown indicatively on the proposed plans as without marking out on site where individual structures will be placed it is not possible to show these accurately.

2.0 Area Descriptions, Proposals and Recommendations

2.1 **Mainsgate Road Entrance**

2.1.1 Plans associated with this area are in appendix 1a.

2.1.2 The details in the below table are an overview of groups 1 and 2, description also follows. The groups are numbered in the images in order to match them to the appended plans.

Group Number	Species	Height (m)	Trunk Diameter (mm)	Root Protection Area Radius (m)	No. of Stems	Crown Clearance (m)	Age	Physiological Condition	Structural Condition	Life Expectancy (Years)	BS5837 Category
1	Hawthorn, Elder, Goat willow	<6.0	<300	<3.6	MS	0	Early mature - Mature	Fair	Fair	20+	B1
2	Hawthorn, Goat willow	<7.5	<500	<5.0	MS	0	Mature	Fair	Fair	20+	B1

2.1.3 Description - The entrance area is busy with both cars and people. The road is a patchwork of tarmac and rough surfacing and the footpath has a worn, compacted gravel surface. The trees and shrubs have a scrub type appearance. Group 1 is south of the access road, either side of the footpath. Many of the individuals have multiple stems. Deadwood is retained throughout the group and there are some stems in the water. The group stretches along to the seating area where there are litter bins and 2x memorial seats. Group 2 is on the corner north of the entrance adjacent to a pond/wet area covered in reed type plants. Many individuals are multiple stemmed from the base and deadwood is retained throughout the group.

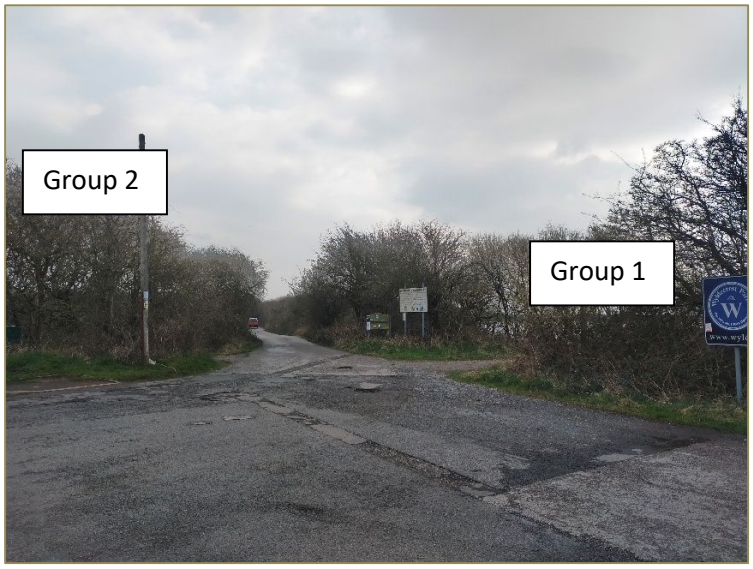


Figure 1. View of the existing entrance.

Figure 2. Footpath through group 1.

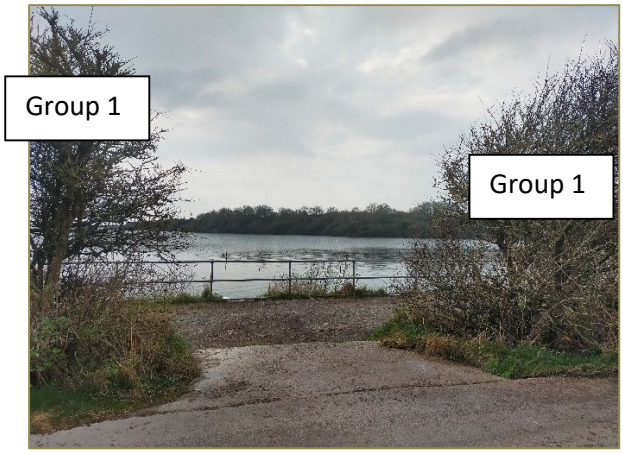


Figure 3. Access to seating area.

Figure 4. Litter bin and memorial seat.

2.1.4 Proposals for the entrance include the installation of feature artwork and signage boards. Footpaths are to be improved with self-binding gravel surfacing without edging. The Road surface is to be made good. The seating area there is to be benches, footpath resurfacing and a feature fence.

2.1.5 Where possible artwork and signage should be positioned to avoid conflict with trees and be situated outside of root protection areas. Where this is not possible the installation of the pieces must be considered. Section 4.2 outlines the methods for installation of signs and artwork.

2.1.6 If footpaths are to be resurfaced and no excavation takes place this should not affect the trees. However, if the paths are to be widened to the suggested 1.5m this will encroach into the root protection areas of the trees and will require tree friendly methods as explained in section 4.1.

2.1.7 Installation of services is necessary parallel to the main track that will lead to the Visitors Centre. This will result in some of group 1 needing to be cut back/removed. The area required will be 1.5m wide. Full discussion of the installation of the services in in section 4.4.

2.1.7 During any works adjacent to the trees it is essential that the retained trees are protected. This will be by protective barriers positioned outside of the root protection area of retained trees or a combination of protective barriers and ground protection measures to provide a working space in the root protection areas. Tree Protection is discussed in section 3.

2.2 **Hodbarrow Carpark**

2.2.1 Plans associated with this area are in appendix 1b.

Group Number	Species	Height (m)	Trunk Diameter (mm)	Root Protection Area Radius (m)	No. of Stems	Crown Clearance (m)	Age	Physiological Condition	Structural Condition	Life Expectancy (Years)	BS5837 Category
3	Goat willow, Hawthorn, Elder	<9.0	<400	<4.8	MS	0	Semi mature - Mature	Fair	Fair	20+	B1
4	Hawthorn, Goat willow, Elder	<9.0	<500	<5.0	MS	0	Mature	Fair	Fair	20+	B1

2.2.2 Description – The area is currently used as the carpark, surfacing is informal and there is no marking out of parking bays. Trees flank both sides of the area. Group 3 is predominantly goat willow that has been cut back so that it does not encroach too far into the parking area. Multiple stems and deadwood are present throughout the group. North east of the parking area is a large area of trees

with little access. This is group 4, overall there is a scrub type appearance as there is throughout the whole Nature Reserve. Many individuals are multiple stemmed. Ivy is present throughout the group and has begun to encroach into the crowns of some of the trees.

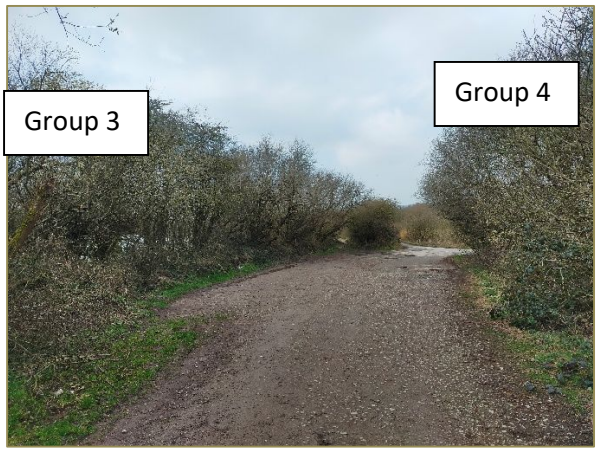


Figure 5. Existing Car Par area.

Figure 6. South Western edge of group 4.

2.2.3 Proposals for this area are to extend and formalise the parking area in its existing location and extend into the opposite side where group 4 is. Potholes are to be filled. Signs are to be installed and a bike storage area to be created.

2.2.4 With regards to tree works, where the proposed parking extensions and bike storage extend into group 3 and 4 it will be necessary for trees to be pruned back or removed to create the required space. Root protection areas of retained trees are still likely to extend into these areas therefore surfacing will need to be laid in a tree friendly manner as described in section 4.1. Protective barriers will be required during the works also, these are shown indicatively on the Tree Protection Plan for the Hodbarrow Carpark.

2.2.5 Installation of services is necessary parallel to the main track that will lead to the Visitors Centre. This will result in some of group 4 needing to be cut back/removed. The area required will be 1.5m wide. Full discussion of the installation of the services in in section 4.4.

2.3 **Visitors Centre**

2.3.1 Plans associated with this area are in appendix 1c.

Group Number	Species	Height (m)	Trunk Diameter (mm)	Root Protection Area Radius (m)	No. of Stems	Crown Clearance (m)	Age	Physiological Condition	Structural Condition	Life Expectancy (Years)	BS5837 Category
5	Goat willow, Hawthorn, Elder, Gorse, Broom	<9.0	<400	<4.8	MS	0	Semi mature - Mature	Fair	Fair	20+	B1

2.3.2 Description – The whole of this area with exception of the group labelled as group 6 south of the proposed development area is considered as group 5. Group 6 is discussed in section 2.4 the Iron Line Entrance and Footpath. Group 5 consists of the large area of trees/scrub to the north of the development area and the sporadically spaced smaller sections and individuals that cover the rest of the development area. There are areas of undulating rough and sloping ground. Whilst the trees have limited arboricultural value it is recognised that their ecological value may be higher.

Figure 7 a, b, c. Views of group 5.

2.3.3 Proposals for this area are for a Visitors Centre and carpark area to be built along with a coach drop off area, there will also be art installations and information boards.

2.3.4 The whole area where the building and carpark are proposed will need to be cleared trees and scrub given the excavation works that will be required. Protective barriers as discussed in section 3.2 will be required as indicated on the proposed drawing for the Visitors Centre to ensure no damage or access to the retained tree areas.

2.3.5 Installation of services is necessary parallel to the main track that will lead to the Visitors Centre. This will result in some of group 6 needing to be cut back/removed. The area required will be 1.5m wide. Full discussion of the installation of the services in in section 4.4.

2.4 **Iron Line Entrance and Footpath**

2.4.1 Plans associated with this area are in appendix 1d.

Group Number	Species	Height (m)	Trunk Diameter (mm)	Root Protection Area Radius (m)	No. of Stems	Crown Clearance (m)	Age	Physiological Condition	Structural Condition	Life Expectancy (Years)	BS5837 Category
6	Goat willow, Hawthorn, Elder, Alder, Ash, Brambles	<9.0	<400	<4.8	MS	0	Young to Mature	Fair	Fair	20+	B1

2.4.2 Description – this area is the entrance to a footpath that leads to the other side of the site to where the proposed Visitors Centre is to be built. Currently the path is a dirt track only wide enough for 1 person to pass at a time. Group 6 covers the whole footpath extending beyond that shown on the plans all the way to the area proposed for the Visitors Centre. The younger ash and alder have the potential to flourish to form good individuals that will give variation in height to the group. There are some level changes along the footpath and a couple of small clearings. There is a disused building and a disused shaft adjacent to the footpath.

Figure 8 a, b, c, d. Views of group 6 flanking the Iron Line Footpath

2.4.3 Proposals for the Iron Line Entrance are to widen the surfaced area to make the entrance more visible, install signage and artwork. The footpath will be widened and surfaced also to make it more accessible.

2.4.4 Proposals for the footpath beyond the entrance are for it to be widened to 1.5m and formally surfaced, there will be additional signage and other artwork installed along the footpath. This pathway will be the main footpath from the Visitors Centre to the Nature Reserve.

2.4.5 Along the footpath there are areas where trees will need to be pruned back to provide the required width some trees may also need to be removed. As the images in figures 8 a-d show there should only be minimal tree removals required. The path way will need to be surfaced using tree friendly installation methods as discussed in section 4.1 as the root protection areas of trees are highly likely to cross the footpath. Ideally protective barriers will be erected along the edge of the proposed footpath as each section is worked on. In areas where this is not possible all operatives must be briefed so that there is no storage of materials or unnecessary "traffic" in the root protection areas of the trees.

2.4.6 Where possible artwork and signage should be positioned to avoid conflict with trees and be situated outside of root protection areas. Where this is not possible the installation of the pieces must be considered. Section 4.2 outlines the methods for installation of signs and artwork.

2.5 **Iron Line Railway Pass**

2.5.1 Plans associated with this area are in appendix 1e.

Group Number	Species	Height (m)	Trunk Diameter (mm)	Root Protection Area Radius (m)	No. of Stems	Crown Clearance (m)	Age	Physiological Condition	Structural Condition	Life Expectancy (Years)	BS5837 Category
7	Goat willow, Hawthorn, Poplar, Elder, Gorse, Broom	<10.0	<500	<6.0	MS	0	Semi mature - Mature	Fair	Fair	20+	B1

2.5.2 Description – Group 7 sits either side of the Iron Line Railway Pass there are some larger trees in this area compared to the rest of the wider site as spacings have allowed for greater crown spreads. A number of individuals have multiple stems. Deadwood and decay are present throughout the group. Some parts of the group are set back away from the track leaving a wider verge.

Figure 9. Larger trees within the group.

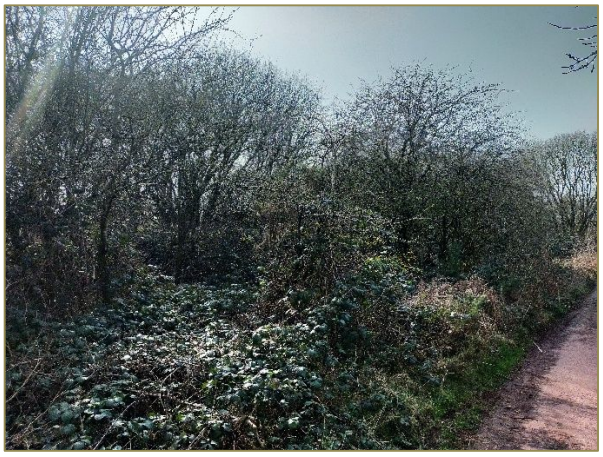


Figure 10. Brambles at the edge of the track with trees set further back.

2.5.3 Proposals for this area are to have viewing platforms with information boards installed.

2.5.5 It will be necessary for the trees/shrubs in conflict with the locations of the viewing areas to be removed. However as there are some areas of the verge that are already clear if possible it would be prudent to use these areas therefore negating the need for tree removals. Protective barriers will be required as indicated on the Proposed plan and discussed in section 3.2.

Figure 11. Example of wide verge on the Iron Line Railway Pass.

2.6 **Quarry Hides**

2.6.1 Plans associated with this area are in appendix 1f.

2.6.2 This area is a continuation of group 7 therefore the description is the same. Verges are not as wide in this section but there are some "gaps" within the group.

Figure 12 a, b. Group 7 in the Quarry Hides area.

2.6.3 Proposals for this area are for a deck seating (benches) with board walk leading to it and a bike storage area to be created.

2.6.4 It will be necessary for the trees/shrubs in conflict with the locations decking, board walk and bike storage area to be removed. However if possible it would be prudent to use clear areas between trees and use a pile type construction for the installation of the decking and board walk therefore negating the need for tree removals. Protective barriers will be required as indicated on the Proposed plan and discussed in section 3.2. Ground protection measures will be required to create a working space in the event that no trees are removed and work needs to take place in root protection areas. Ground protection measures are discussed in section 3.3.

2.7 **Whiterock Junction**

2.7.1 Plans associated with this area are in appendix 1g.

Group Number	Species	Height (m)	Trunk Diameter (mm)	Root Protection Area Radius (m)	No. of Stems	Crown Clearance (m)	Age	Physiological Condition	Structural Condition	Life Expectancy (Years)	BS5837 Category
8	Hawthorn, Goat willow, Gorse	<6.5	<400	<4.8	MS	0	Semi mature - Mature	Fair	Fair	20+	B1
9	Gorse, Goat willow	<7.5	<400	<4.8	MS	0	Semi mature - Mature	Fair	Fair	20+	B2
10	Details in section 2.8 Towsey Hole Windmill										

2.7.2 Description – This area has a wide open aspect with a vehicle track surfaced with compacted gravel. Group 8 is north of the junction and has a wide verge area at the point of the corner. There are multiple stems throughout the group. Group 9 is to the south west of the junction and covers the corner area extending along the seawall area. Again the verges are wide and there are lower level shrubs/trees in front of the more structural trees.

Figure 13 a, b. Wide compacted gravel track and grass verges in the Whiterock Junction area.

2.7.3 Proposals for this area include the installation of picnic tables, artwork, signage and benches along with the maintenance of the vehicle track.

2.7.4 Locations for the installation of the street furniture and signage appear on the proposed plans to be confined to the grass verges and hard standing areas. No tree protection should be required provided locations for installations remain as indicated on the plans.

2.8 **Towsey Hole Windmill**

2.8.1 Plans associated with this area are in appendix 1h.

Group Number	Species	Height (m)	Trunk Diameter (mm)	Root Protection Area Radius (m)	No. of Stems	Crown Clearance (m)	Age	Physiological Condition	Structural Condition	Life Expectancy (Years)	BS5837 Category
10	Hawthorn, Gorse	<5.0	<300	<3.6	MS	0	Semi Mature - Mature	Fair	Fair	20+	B1

2.8.2 Description – Group 10 includes all of the trees and shrub areas surrounding the windmill. As with the rest of the site there is a natural scrub appearance. Planting is well established and a number of unmade tracks traverse the area, vehicle movement along some tracks is evident. There are rock faces in the area also.

Figure 14 a, b. Unmade footpaths surrounding the Towsey Hole Windmill.

Figure 15. Group tree surrounding the windmill

Figure 16. Unmade track to the Towsey Hole Windmill and surrounding vegetation.

2.8.3 Proposals for the area are to improve the access tracks to and viewing area around the windmill which will include its repair and the installation of interpretive sculpture.

2.8.4 Some trees and shrubs immediately surrounding the windmill will need to be removed to facilitate the implementation of the proposals. Footpath alignment should avoid tree/shrub areas at a sufficient distance so that "usual" construction methods can be used negating the need for tree friendly installation methods. Protective barriers will need to be erected as indicated on the proposed plans as each area is worked on. Further detail on protective barriers are in section 3.2.

2.9 **Hodbarrow Beacon**

2.9.1 Plans associated with this area are in appendix 1i.

Group Number	Species	Height (m)	Trunk Diameter (mm)	Root Protection Area Radius (m)	No. of Stems	Crown Clearance (m)	Age	Physiological Condition	Structural Condition	Life Expectancy (Years)	BS5837 Category
11	Hawthorn, Elder	<4.5	<350	<4.2	MS	0	Semi mature – Mature	Fair	Fair	20+	B1

2.9.2 Description – Group 11 is on the sloping ground surrounding the Hodbarrow Beacon. There are tracks up the steep slopes that are obviously used as access. The small trees and shrubs have multiple stems and their appearance fits with the rest of the site. The image below give an excellent view of the area.

Figure 17. Trees and shrubs surrounding the Hodbarrow Beacon (image supplied by a third party)

2.9.3 Proposals for the area are to improve the footpaths to the beacon.

2.9.4 It is assumed that the existing tracks will be used where possible and just resurfaced. Where new footpath is to be created and it is likely that root protection areas of the surrounding trees extend to it will be necessary to use a tree friendly installation for the surface as discussed in section 4.1. Ideally and usually protective barriers will be erected along the edge of the proposed footpath as each section is workedon however, it is accepted that for this area this may not be possible all operatives must be briefed so that there is no storage of materials or unnecessary "traffic" in the root protection areas of the trees.

2.10 **Annie Lowther Hide**

2.10.1 Plans associated with this area are in appendix 1j.

Group Number	Species	Height (m)	Trunk Diameter (mm)	Root Protection Area Radius (m)	No. of Stems	Crown Clearance (m)	Age	Physiological Condition	Structural Condition	Life Expectancy (Years)	BS5837 Category
12	Hawthorn, Elder, Gorse, Goat willow.	<8.0	<500	<6.5	MS	o	Semi mature - Mature	Fair	Fair	20+	B1

2.10.2 Description – Group 12 located between one of the main footpaths through the site where there are open spaces and the water edge has individuals of varying heights and many have multiple stems with spreading forms. There are some gaps within the group and sporadically spaced trees towards the edges of the group. The following images are drone images supplies by a third party.

Figure 18 a & b. Trees and shrubs surrounding area proposed for the Annie Lowther Hide (images supplied by a third party)

2.10.3 Proposals for this area are to construct a hide and pathway link to it.

2.10.4 Trees and shrubs will need to be removed to facilitate the construction of the hide and associates decking, this is shown indicatively on the proposed drawings. Protective Barriers will need to be erected to protect the retained trees during the works. The pathway link to the hide should be located around the tree areas and outside of the root protection areas to avoid unnecessary tree removal. Protective barriers are detailed in section 3.2.

2.11 **Sea Wall**

2.11.1 Plans associated with this area are in appendix 1k.

2.11.2 Group 9 as described in section 2.7 continues into this area of the site.

2.11.3 Proposals are to install more benches and information boards.

2.11.4 Positions for benches indicated on pans are on the opposite site of the track to where the tree/shrub group is located therefore there is no requirement for tree protection or special construction methods.

2.12 **Haverigg Lighthouse & Tern Island Hide**

2.12.1 Plans associated with this area are in appendix 1l.

2.12.2 There are small clusters of planting in this area that have also been included as group 9 as they follow the sea wall and consist of the same species as previously mentioned.

2.12.3 Proposals are to refurbish the existing hide and pathway to it.

2.12.4 There are no trees or shrubs that will be affected by these works therefore there is no requirement for tree protection or special construction methods.

2.13 Additional Installations and Planned Works

2.13.1 There installations and improvements such as gateway features and street furniture, drainage infrastructure and maintenance of the byway to also take place site wide. Some of these will take place where there are tree and shrub groups and therefore consideration of them and construction methods will need to be taken into account. Section 3 of this report discusses the required tree protection mentioned throughout section 2 and for the site wide installations and improvements. Section 4 discusses tree friendly construction methods and the service run to be installed along the main access to the proposed Visitors Centre.

2.2 Root Protection Areas

2.2.1 The root protection area for each group is shown indicatively on each of the plans. For each group the root protection area has been calculated in accordance with the British Standard (BS5837:2012) based on the estimated root protection area for each group and is shown in the tables of group details. They are indicative only and do not take into account site specific condition such as topography and underground land forms, built structures and underground services.

2.2.2 There should be no level changes made or excavation within the root protection area of the retained trees.

2.3 Summary of Trees to be Removed

2.3.1 The proposed plans in appendix 2 indicated that throughout the site there are areas of trees that will need to be removed to facilitate the proposed works. At this time they are to be considered indicative due to the nature and layout of the site and once works are marked out on site the exact tree removals can be identified.

2.3.2 Which or how many trees are to be removed will not affect the tree protection or tree friendly methods prescribed.

2.4 Summary of Additional Tree Works Required

2.4.1 As with the tree removals, pruning works/cutting back of trees has been advised for various areas of the proposals, they are currently indicative and can be confirmed when works are marked out on site.

2.4.2 Any tree works carried out are to be in line with BS 3998 (2010) – Recommendations for Tree Work and the appropriate applications in place where required.

3.0 Tree Protection Measures During Development

3.1 General Information

3.1.1 Protective barrier positions are shown on the Tree Protection Plan by the thick cyan line. Positions are indicative and can be confirmed once work areas are identified on site. If working space is required within the root protection area of any of the groups ground protection measures will be required in these areas. Protective barriers and ground protection measures are explained in the following two sections.

3.2 Protective Barriers

3.2.1 Protective barriers will need to be erected between working areas and retained trees outside of their root protection areas, the positions are shown indicatively on the Tree Protection Plans by the thick cyan line in order to ensure minimal impact on retained trees adjacent to the working area. Barrier position protects both underground and aerial portions of the tree where possible.

3.2.2 There is to be no works or storage of materials (temporary or permanent) behind the barrier position within the root protection areas of any of the trees. The barriers will need to be in place before any excavation/development work takes place on site. All excavation/building must be outside of the root protection area.

3.2.3 BS 5837:2012 suggests that the default specification for protective barriers is as follows: Vertical and horizontal scaffold frame work that can be well braced (poles driven into the ground) to resist impact and have welded mesh panels securely fitted to. However where underground constraints inhibit the use of driven poles other options could be considered, such as a free-standing scaffold support framework with pins to secure their position. It is essential that the barriers cannot be 'pushed/nudged' by machinery or persons during works decreasing the protection area.

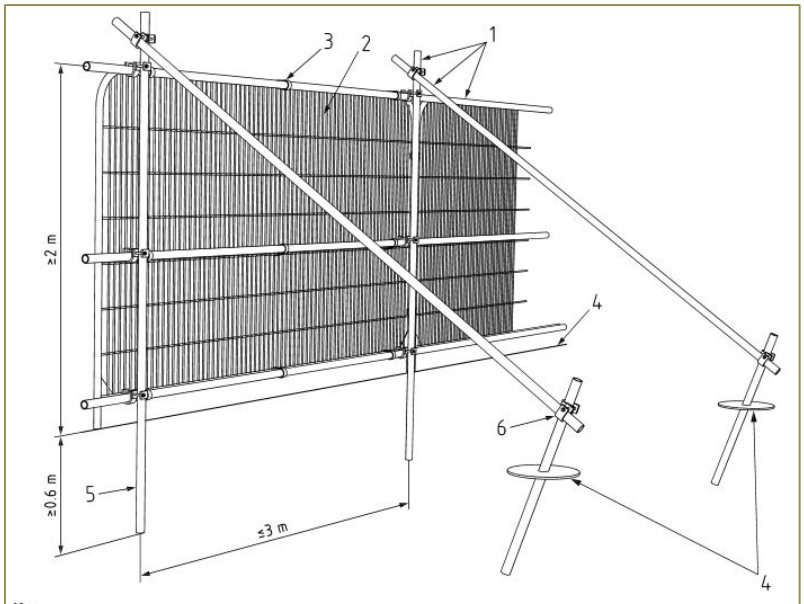


Figure 19. BS 5837:2012 Barrier Specification

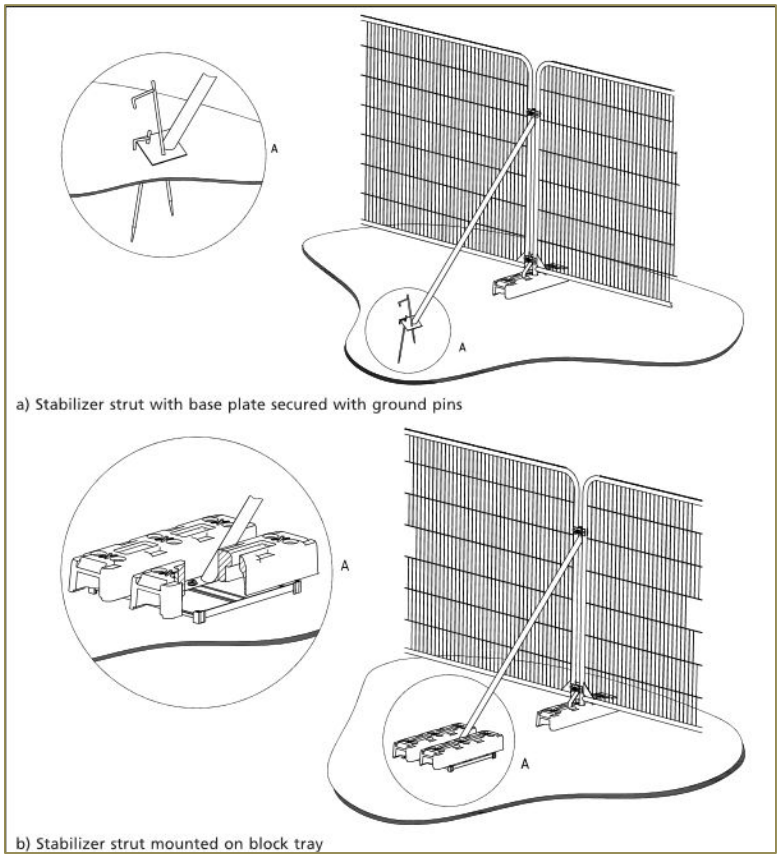


Figure 20. BS 5837:2012 Barrier Specification where driven poles cannot be used

3.2.3 If there are areas where the above level of protection is not necessary alternatives may be suggested and agreed by the local planning authority. In areas where driven or tracked machinery is to be used fencing as specified above or welded mesh panels (Heras type fencing) supported on rubber or concrete feet that are joined with anti-tamper couplers will be required (and type agreed by the local planning authority). In areas where only pedestrian operated machinery or hand tools are to be used fencing such as chestnut paling secured to the ground so it cannot be moved or pushed over may be considered sufficient (again to be agreed by the local planning authority).

3.2.4 All fencing should also have signs attached to it to make clear that the area beyond it should not be entered, "Construction Exclusion Zone – No Access". In addition to this all persons entering site should be given an induction briefing on safe working with regards to the trees.

3.2.5 There should be no storage of materials within the exclusion zones or within the root protection areas of any other trees.

3.3 **Ground Protection Measures**

3.3.1 Ground protection will be required to provide a working space if access is required in the root protection areas of trees in front of protective barriers.

3.3.2 The level of ground protection required will depend upon the weight of the load that will be travelling over it. BS 5837: 2012 provides the following recommendations:

- Where the movement will be pedestrian only there are two options. One it to use a single thickness of scaffold boards supported on a scaffold frame therefore creating a raised walkway.

The second option is to place a single thickness of scaffold boards on a compression resistant layer (e.g. 100mm woodchips), laid on a geotextile membrane.

- Where movement will be a pedestrian operated plant up to a gross weight of 2 tonnes proprietary inter-linked ground protection boards could be placed on top of a compression resistant layer (e.g. 150mm woodchips), laid on a geotextile membrane.

- Where a wheeled or tracked machine/construction traffic greater than a gross weight of 2 tonnes an alternative system of an engineered specification will be required to accommodate the likely load.

4.0 Construction Methods

4.1 **Surfacing within Root Protection Areas**

4.1.1 Where pathways, track roads or hard surfacing are to be extended, rerouted, resurfaced or new ones laid and they encroach on root protection areas it will be necessary for them to be laid using tree friendly methods.

4.1.2 Manufacturers guidelines/instructions and specification will be required for the areas of installation when chosen.

4.1.3 Surface installation will be conducted in accordance with the guidance provided in BS5837: 2012 and as per the guidance provided by the supplier of the engineered solution.

4.1.4 Factors taken into consideration are as follows;

- The tolerance of the tree species.
- The design should not require excavation other than the removal of a turf layer or other surface vegetation using hand tools.
- Surfacing that is to be used by construction traffic should be suitable for purpose.
- Localised compaction should be avoided.
- The new permanent hard surface should not exceed 20% of the existing unsurfaced ground within the root protection area.
- Where there is the risk of waterlogging appropriate drainage must be included.
- Oxygen and water must be able to diffuse into the soil beneath the engineered surface.
- An appropriate sub-base must be used for a finished hard surface and can include three-dimensional cellular confinement systems or piles, pads and elevated beams to support bridging over roots (the use of two-dimensional load suspension systems is not recommended when the surface will be used by vehicles.
- The surface should be able to withstand deformation by tree roots and set away from the trunk.

4.1.5 The Iron Line footpath from the Iron Line Entrance to the Visitors Centre will need to be constructed in this way.

4.2 **Construction within Root Protection Areas**

4.2.1 Where any construction is required within root protection areas traditional strip foundations are not possible.

4.2.2 There are various signs and information boards to be installed throughout the site. Where possible these should be place outside of the root protection areas of trees so as not to cause any damage to retained trees during their construction. If it is not possible to place them outside of root protection areas and they are to be mounted on posts (like fencing) then all post holes are dug by

hand, positioned to avoid all major roots and the holes lined so there is no contamination between the tree roots and building materials. If the signs are to be mounted on solid ground bearing bases it is even more prudent to locate these outside of the root protection areas and do not conflict with trees.

4.2.3 Various Artworks are to be installed throughout the site. As with the information boards and signs it would be prudent that these should be located outside of the root protection areas of trees. Where this is not possible there will be a several factors to consider before finalising their installation method. The size and weight of the piece and the type of base that the piece of the artwork is to be installed on have to be considered. Artworks on "legs" with no solid base could be installed in a similar wat to that of the signs and information boards. Larger artworks on solid bases may require a small above ground raft or mini screw pile system. These can only be confirmed as the artwork and their placements are confirmed.

4.2.4 When working in the root protection area of trees it will be necessary to use ground protection measures as described in section 3.3 to provide a working space.

4.3 New walls and Fencing

4.3.1 Where walls and fences are to be constructed as new boundaries or features and cross the root protection areas of trees it will be necessary for this to be done in a tree friendly way.

4.3.2 Walls will not be able to have traditional strip foundation and will require a pile and beam system instead and fences will need to be constructed so that all fence post are positioned to avoid major roots and post holes dug with care by hand with holes lined so there is no 'run off' of building materials to tree roots. These methods also apply to the installation of gate posts.

4.2.3 When working in the root protection area of trees it will be necessary to use ground protection measures as described in section 3.3 to provide a working space.

4.4 Installation of Services & Service Run from Mainsgate Entrance to the Visitors Centre.

4.4.1 Where new services are required and pipe work is to be laid underground it will be necessary where possible to install them outside of the root protection areas of the trees. If it is not possible to avoid the root protection areas a trenchless method of installation must be used.

4.4.2 Trenchless methods such as thrust boring are the alternatives to digging a trench. ***Advice from the contractor to carry out the work should be taken and the method chosen approved within the planning application.***

4.4.3 For any parts of the drainage system construction where trenchless methods cannot be used these should be placed outside of root protection areas or tree removals may be required should the excavations be thought to encroach too far on the trees.

4.4.4 There is a major service run to be installed from the Mainsgate entrance to the proposed new Visitors Centre. This requires a space of 1.5m and trenching is unavoidable. There are a number of locations along the road where trees come to the edge of the road or root protection areas spread this far. When the required width is marked out for the trench conflicting trees can be identified for removal. A protective barrier as per the specification n section 3.2 will need to be erected between the retained trees and the trench location prior to the trench being dug. It is likely however then during the digging of the trench that tree roots will still be encountered, therefore, these root s must be treated in the appropriate way. When roots have been exposed the guidance from the British Standard BS5837-2012

Trees in relation to design, demolition and construction – Recommendations is as follows. Any exposed roots should be wrapped or covered to avoid desiccation and protect them from environmental changes. The wrapping should be removed before new surface fill is installed; this should be as soon as possible. Roots requiring pruning (less than 25mm and not in clumps unless there has been consultation with a suitably qualified arborist) can be done with an appropriate sharp tool. The roots must be surrounded by topsoil, loose sand (not builders sand due to high salt content) or another appropriate loose granular fill. When the time occurs to install the new permanent surfacing (either pathway or soft landscaping) the temporary fill should be removed and good quality uncontaminated soil or other suitable material used. There must be no contamination from the building materials to the exposed wounds on any of the trees/roots.

4.4.5 When working in the root protection areas of trees it will be necessary to use ground protection to create a working area.

5.0 Future Site Management

5.1 **On Completion of Development**

5.1.1 Following completion of the development and all materials including tree protection have been removed from the site a 'walk over' survey of the site should be undertaken. This survey will be to ascertain whether there has been damage to any trees and so remedial works can be undertaken where necessary although it is unlikely provided that the tree protection measures are adhered to.

6.0 Conclusion

6.1 Provided that protective measures as described in this report are adhered to and any tree works undertaken are done in accordance with BS3998 (2010) – Recommendations for Tree Work, the tree cover on this site should remain in order.

Appendix 1

Table of Works in Relation to Trees

Table of Works in Relation to Trees

This Table of works applies to each area of works, this includes those that have plans appended to this report and areas not covered by the plans but that have been detailed an explained within the main sections of this report.

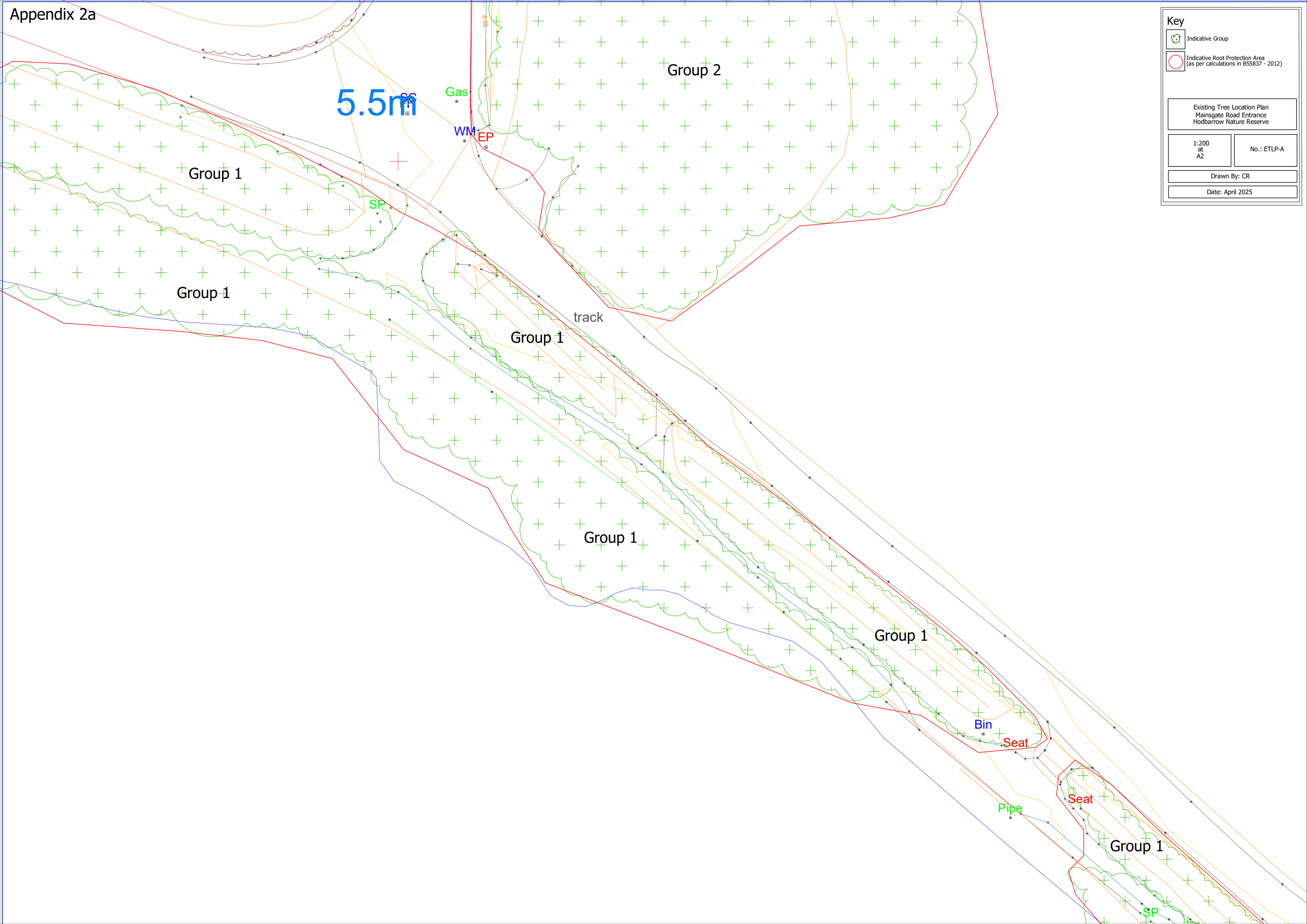
Stage	Action	Details	Pre Work Checks	Notes
1	Installation of Tree Protective Measures	Protective barriers to be erected as indicated by the thick cyan line on the Tree Protection Plan associated to the working area or as described within the report.		To be completed before any development works begin on site.
2	IF REQUIRED Installation of Ground Protection Measures	Ground Protection Measures to be installed as per the specification in section 3.3 of this report if required.	Establish if further working space is required and there is permission to use the area as working space.	To be completed before any development works begin on site.
3	No dig tree friendly surfacing	Establish if no dig tree friendly methods of surfacing are required in the area to be worked in prior to commencement of works. Specification to be provided by manufacturers of method to be used.	All materials and guidance has been obtained.	Method of installation will need to be approved by the LPA.
5	Alternative Construction Methods	Establish if alternative construction methods are required in the area to be worked in prior to commencement of works. Follow guidance supplied by other parties including structural engineer where required.	All materials and guidance has been obtained.	Alternative construction methods will need to be approved by the LPA.
FOLLOWING COMPLETION OF THE DEVELOPMENT WITHIN EACH AREA				
6	Protective Measures and all equipment removed from Site	All Protective barriers/materials and equipment removed from site	Ensure all works with regards to the development are complete.	
7	Walk over survey	Undertake 'walkover' survey (by suitably qualified person) to ensure all tree cover is in order		

Appendix 2

Plans

Appendix	Detail
2a	Plans for Mainsgate Road Entrance Existing Tree Location Plan (ETLP – A) & Tree Protection Plan (TPP – A)
2b	Plans for Hodbarrow Carpark Existing Tree Location Plan (ETLP – B) & Tree Protection Plan (TPP – B)
2c	Plans for Visitors Centre Existing Tree Location Plan (ETLP – C) & Tree Protection Plan (TPP – C)
2d	Plans for Iron Line Entrance Existing Tree Location Plan (ETLP – D) & Tree Protection Plan (TPP – D)
2e	Plans for Iron Line Railway Pass Existing Tree Location Plan (ETLP – E) & Tree Protection Plan (TPP – E)
2f	Plans for Quarry Hides Existing Tree Location Plan (ETLP – F) & Tree Protection Plan (TPP – F)
2g	Plans for Whiterock Junction Existing Tree Location Plan (ETLP – G) & Tree Protection Plan (TPP – G)
2h	Plans for Towsey Hole Windmill Existing Tree Location Plan (ETLP – H) & Tree Protection Plan (TPP – H)
2i	Plans for Hodbarrow Beacon Existing Tree Location Plan (ETLP – I) & Tree Protection Plan (TPP – I)
2j	Plans for Annie Lowther Hide Existing Tree Location Plan (ETLP – J) & Tree Protection Plan (TPP – J)
2k	Plans for Sea Wall Existing Tree Location Plan (ETLP – K) & Tree Protection Plan (TPP – K)
2l	Plans for Haverigg Lighthouse & Tern Island Hide Existing Tree Location Plan (ETLP – L) & Tree Protection Plan (TPP – L)

Appendix 2a



Key

Indicative Group

Indicative Root Protection Area (as per calculations in BS5837 - 2012)

Existing Tree Location Plan
Mainsgate Road Entrance
Hodbarrow Nature Reserve

1:200 at A2	No.: ETLP-A

Drawn By: CR

Date: April 2025

Appendix 2a

Group 2

Group 1

Group 1

Group 1

Group 1

Group 1

Group 1

Group 1

SE

SE

S4.0

S4.0

S1.0

S4.0

S5.0

S1.0

Services installation discussed in section 4.4 of the Arboricultural Assessment and Method Statement.

For installation of signs and artwork please see section 4.2 of the Arboricultural Assessment and Method Statement.

Key

- Indicative Group
- Indicative Root Protection Area (as per calculations in BS5837 - 2012)
- Alternative Tree Friendly installation of surfacing required (magenta hatching)
- Protective Barrier (thick cyan line)

Existing Tree Location Plan
Mainsgate Road Entrance
Hodbarrow Nature Reserve

1:200 at A2

No.: TPP-A

Drawn By: CR

Date: April 2025

Appendix 2b

track

Post

Post

6.00

Group 4

6.1m

Group 3

6.00

dense woodland
(no access)

track

Key

Indicative Group

Indicative Root Protection Area
(as per calculations in BS5837 - 2012)

Existing Tree Location Plan
Hodbarrow Carpark
Hodbarrow Nature Reserve

1:200
at
A3

No.: ETLP-B

Drawn By: CR

Date: April 2025

Appendix 2b

Services installation discussed in section 4.4 of the Arboricultural Assessment and Method Statement.

For installation of signs and artwork please see section 4.2 of the Arboricultural Assessment and Method Statement.

Group 4

Group 3

S5.0

S4.0

S1.0

S2.0

S2.0

S2.0

6.00

Key

- Indicative Group
- Indicative Root Protection Area (as per calculations in BS5837 - 2012)
- Alternative Tree Friendly installation of surfacing required (magenta hatching)
- Protective Barrier (thick cyan line)

Existing Tree Location Plan
Hodbarrow Carpark
Hodbarrow Nature Reserve

1:200 at A3

No.: TPP-B

Drawn By: CR

Date: April 2025

Appendix 2c

Key

Indicative Group

Indicative Root Protection Area (as per calculations in BS5837 - 2012)

Existing Tree Location Plan
Visitors Centre
Hodbarrow Nature Reserve

1:200 at A1

No.: ETLP-C

Drawn By: CR

Date: April 2025

dense woodland (no access)

dense woodland (no access)

Group 5

monitoring well

Group 5

BH

Group 5

dense woodland (no access)

dense woodland (no access)

track

Group 5

Group 5

Group 5

monitoring well

Group 5

Group 5

Group 5

BH

track

Group 6

track

Appendix 2c

Group 5
Group 5
Group 5
Group 5
Group 5
Group 5
Group 5
Group 5
Group 5
Group 5
Group 6
Services installation discussed in section 4.4 of the Arboricultural Assessment and Method Statement.
LIFT
LOBBY/DISPLAY
WC
CHANGE
PLANT
STORE
EDUCATION
STAFF/VOLUNTEER
WARDEN
PLANT
Key
Indicative Group
Indicative Root Protection Area (as per calculations in BS5837 - 2012)
Protective Barrier (thick cyan line)
Existing Tree Location Plan
Visitors Centre
Hodbarrow Nature Reserve
1:200 at A1
No.: TPP-C
Drawn By: CR
Date: April 2025

Appendix 2d

dense woodland
(no access)

Group 6

EP

Stay

track

Group 3

track

Group 6

7.00

8.00

9.00

6.00

5.00

Key

Indicative Group

Indicative Root Protection Area
(as per calculations in BS5837 - 2012)

Existing Tree Location Plan
Iron Line Entrance and Footpath
Hodbarrow Nature Reserve

1:200 at A3	No.: ETLP-D

Drawn By: CR

Date: April 2025

Appendix 2d

Group 6

Group 6

Group 3

S2.0

S7.1

S1.0

S2.0

7.500

7.010

6.880

6.870

6.840

6.880

For installation of signs, artwork and benches please see section 4.2 of the Arboricultural Assessment and Method Statement.

Key

- Indicative Group
- Indicative Root Protection Area (as per calculations in BS5837 - 2012)
- Alternative Tree Friendly installation of surfacing required (magenta hatching)
- Protective Barrier (thick cyan line)

Existing Tree Location Plan
Iron Line Entrance and Footpath
Hodbarrow Nature Reserve

1:200 at A3	No.: TPP-D

Drawn By: CR

Date: April 2025

Appendix 2e

8.00

Group 7

7.00

track

Group 7

Key

Indicative Group

Indicative Root Protection Area
(as per calculations in BS5837 - 2012)

Existing Tree Location Plan
Iron Line Railway Pass
Hodbarrow Nature Reserve

1:200
at
A3

No.: ETLP-E

Drawn By: CR

Date: April 2025

Appendix 2e

Group 7

Group 7

Key

- Indicative Group
- Indicative Root Protection Area (as per calculations in BS5837 - 2012)
- Alternative Tree Friendly installation of surfacing required (magenta hatching)
- Protective Barrier (thick cyan line)

Existing Tree Location Plan
Iron Line Railway Pass
Hodbarrow Nature Reserve

1:200 at A3	No.: TPP-E

Drawn By: CR

Date: April 2025

Appendix 2f

Group 7

Group 7

PST1

7.00

6.00

Key

Indicative Group

Indicative Root Protection Area
(as per calculations in BS5837 - 2012)

Existing Tree Location Plan
Quarry Hides
Hodbarrow Nature Reserve

1:200
at
A3

No.: ETLP-F

Drawn By: CR

Date: April 2025

Appendix 2f

Group 7

Group 7

S2.0

S3.0

S1.0

S1.0

S2.0

ABC

7.00

Key

Indicative Group

Indicative Root Protection Area
(as per calculations in BS5837 - 2012)

Alternative Tree Friendly installation of surfacing required (magenta hatching)

Protective Barrier (thick cyan line)

Existing Tree Location Plan
Quarry Hides
Hodbarrow Nature Reserve

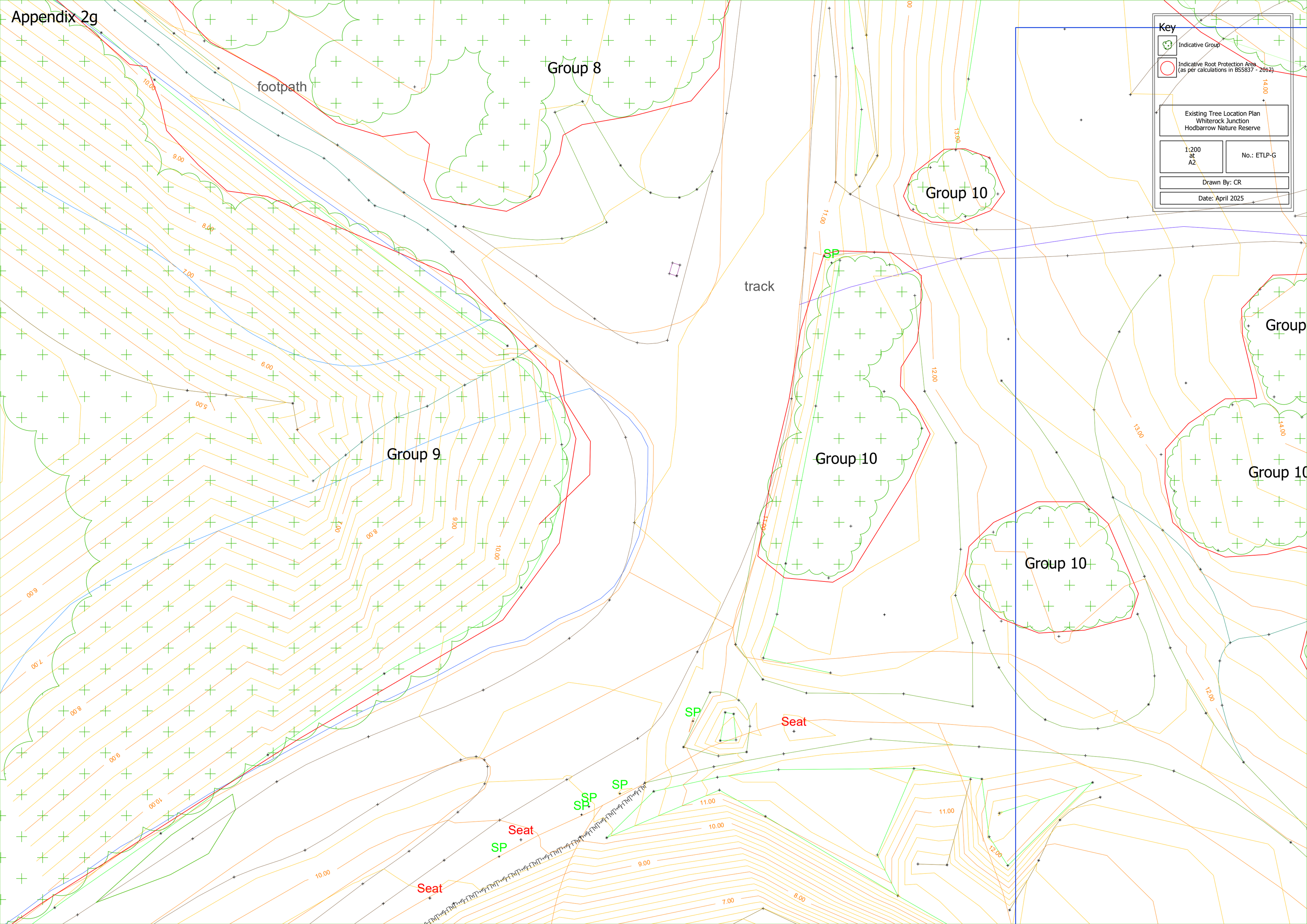
1:200
at
A3

No.: TPP-F

Drawn By: CR

Date: April 2025

Appendix 2g


Group 8
footpath
track
Group 9
Group 10
Group 10
Group 10
Group 10
SP
SP
SP
SP
SP
Seat
Seat
Seat
Key
Indicative Group
Indicative Root Protection Area (as per calculations in BS5837 - 2012)
Existing Tree Location Plan
Whiterock Junction
Hodbarrow Nature Reserve
1:200 at A2
No.: ETLP-G
Drawn By: CR
Date: April 2025

Appendix 2g

Group 8

Group 9

Group 10

Group 10

Group 10

Group 10

S1.0

S1.0

S7.1

S2.0

S3.0

SE

Key

Indicative Group

Indicative Root Protection Area (as per calculations in BS5837 - 2012)

Alternative Tree Friendly installation of surfacing required (magenta hatching)

Protective Barrier (thick cyan line)

Existing Tree Location Plan
Whiterock Junction
Hodbarrow Nature Reserve

1:200 at A2

No.: TPP-G

Drawn By: CR

Date: April 2025

Appendix 2h

Path (um)

SP

Group 10

Group 10

Group 10

Group 10

oup 10

Group 10

Group 10

Group 10

Group 10

Group 10

footpath

Windmill

windmill

TRIG PILLAR

SP

Towsey

Key

Indicative Group

Indicative Root Protection Area
(as per calculations in BS5837 - 2012)

Existing Tree Location Plan
Towsey Hole Windmill
Hodbarrow Nature Reserve

1:200
at
A2

No.: ETLP-H

Drawn By: CR

Date: April 2025

Appendix 2h

Group 10

Group 10

Group 10

Group 10

Group 10

Group 10

Group 10

Group 10

Group 10

Group 10

Group 10

Realign footpath to outside of the root protection area to avoid tree removals

S1.0

S1.0

S6.0

S3.0

SE

13.500

14.000

14.500

15.000

15.500

16.000

16.500

17.000

17.500

18.000

18.500

19.000

19.400

19.500

20.000

12.500

12.000

11.500

13.000

Key

Indicative Group

Indicative Root Protection Area (as per calculations in BS5837 - 2012)

Alternative Tree Friendly installation of surfacing required (magenta hatching)

Protective Barrier (thick cyan line)

Existing Tree Location Plan
Towsey Hole Windmill
Hodbarrow Nature Reserve

1:200 at A2

No.: TPP-H

Drawn By: CR

Date: April 2025

Appendix 2i

Hodbarrow Lighthouse (disused)

Group 11

old lighthouse

FL

Group 11

footpath

Group 11

footpath

Key

Indicative Group

Indicative Root Protection Area (as per calculations in BS5837 - 2012)

Existing Tree Location Plan
Hodbarrow Beacon
Hodbarrow Nature Reserve

1:200 at A3

No.: ETLP-I

Drawn By: CR

Date: April 2025

Appendix 2i

Group 11

Group 11

IBH

S1.0

Key

- Indicative Group
- Indicative Root Protection Area (as per calculations in BS5837 - 2012)
- Alternative Tree Friendly installation of surfacing required (magenta hatching)
- Protective Barrier (thick cyan line)

Existing Tree Location Plan
Hodbarrow Beacon
Hodbarrow Nature Reserve

Group

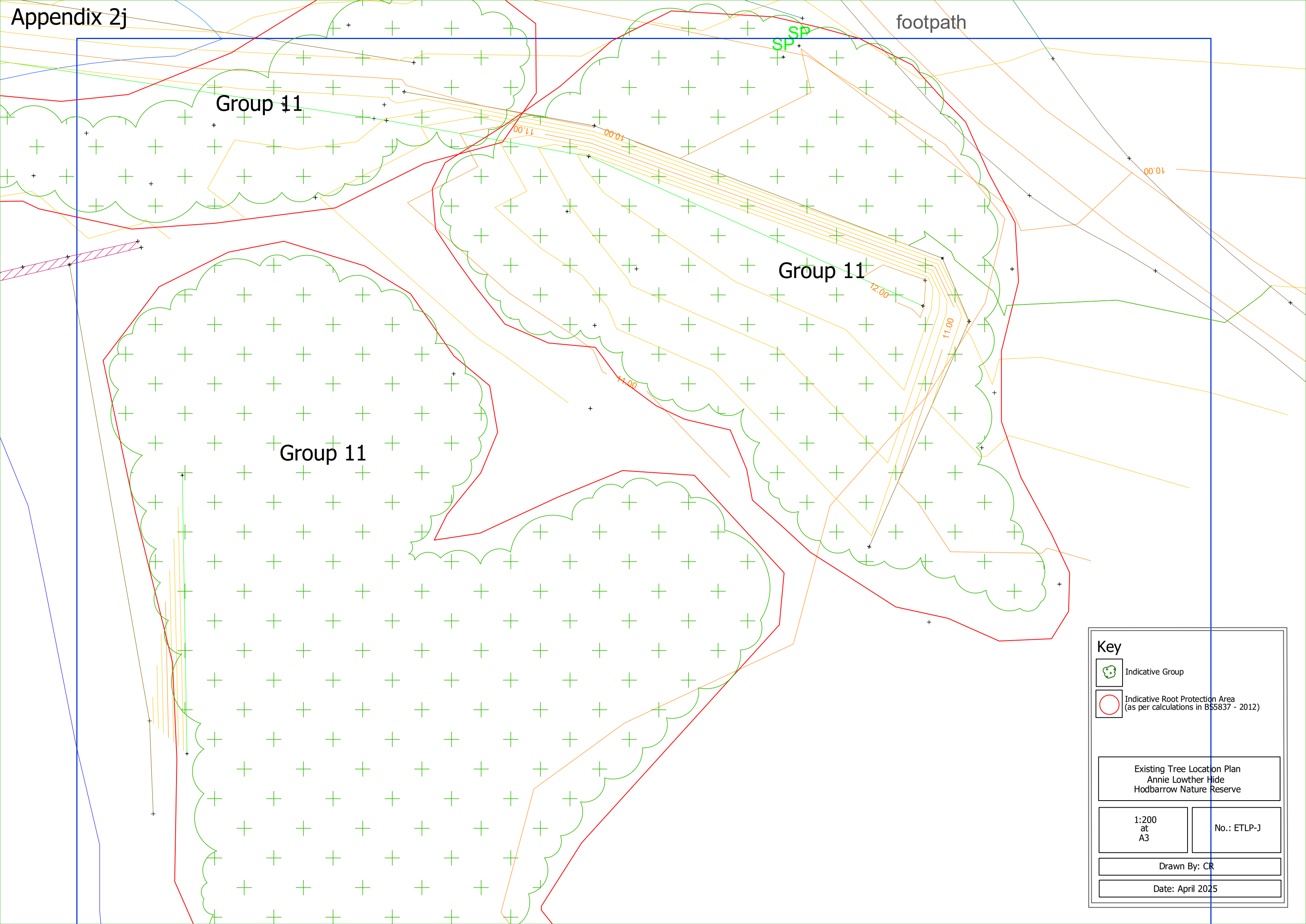
1:200 at A3

No.: TPP-I

Drawn By: CR

Date: April 2025

Appendix 2j


footpath
SP
SP
Group 11
Group 11
Group 11
11.00
10.00
12.00
11.00
11.00
10.00
Key
Indicative Group
Indicative Root Protection Area
(as per calculations in BS5837 - 2012)
Existing Tree Location Plan
Annie Lowther Hide
Hodbarrow Nature Reserve
1:200
at
A3
No.: ETLP-J
Drawn By: CR
Date: April 2025

Appendix 2j

Group 11

Group 11

Group 11

S8.0

S1.0

S1.0

10.000

10.500

11.000

Ensure footpath is aligned outside of the tree groups and root protection areas

Key

- Indicative Group
- Indicative Root Protection Area (as per calculations in BS5837 - 2012)
- Alternative Tree Friendly installation of surfacing required (magenta hatching)
- Protective Barrier (thick cyan line)

Existing Tree Location Plan
Annie Lowther Hide
Hodbarrow Nature Reserve

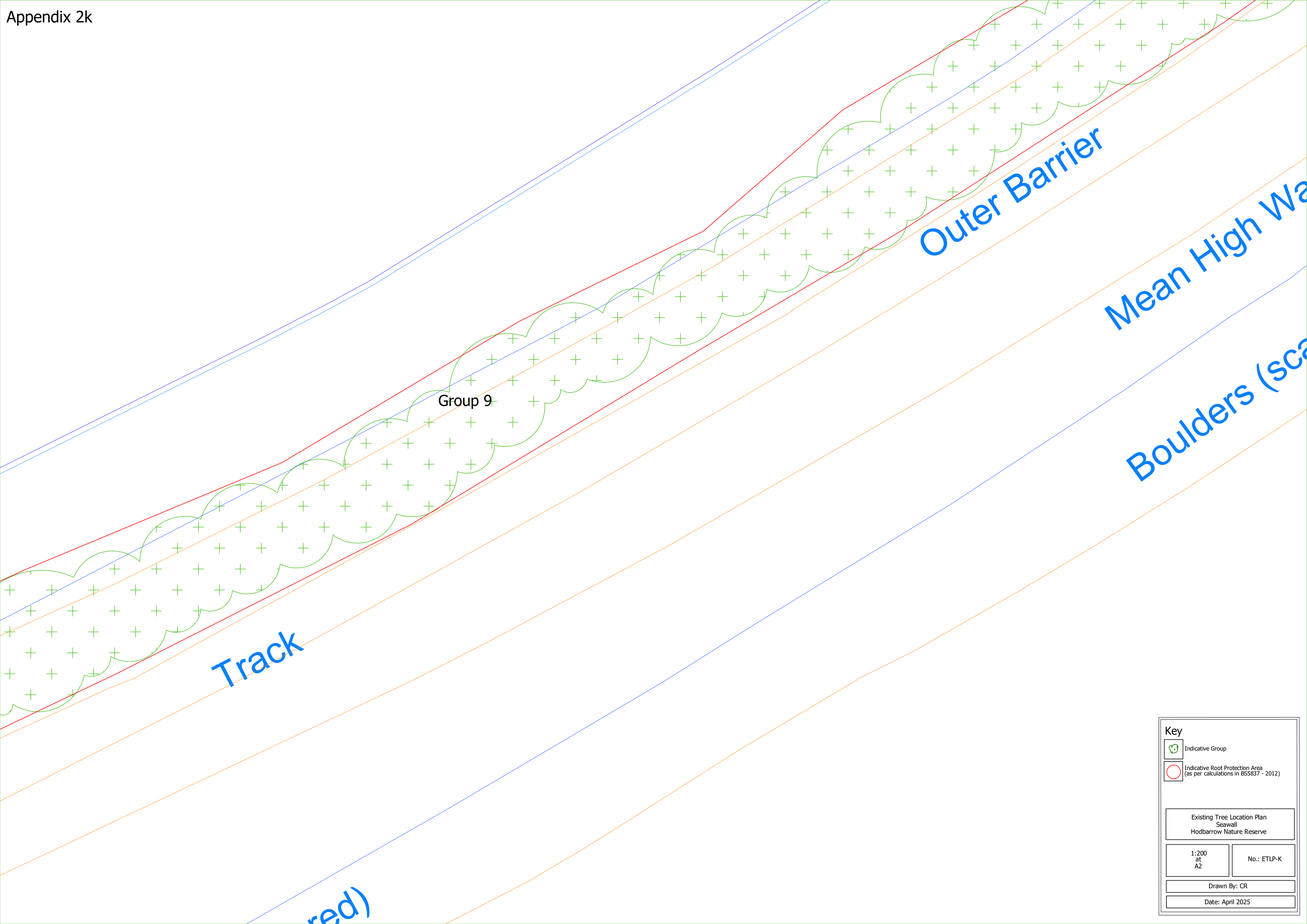
1:200 at A3

No.: TPP-J

Drawn By: CR

Date: April 2025

Appendix 2k



Key

Indicative Group

Indicative Root Protection Area
(as per calculations in BS5837 - 2012)

Existing Tree Location Plan
Seawall
Hodbarrow Nature Reserve

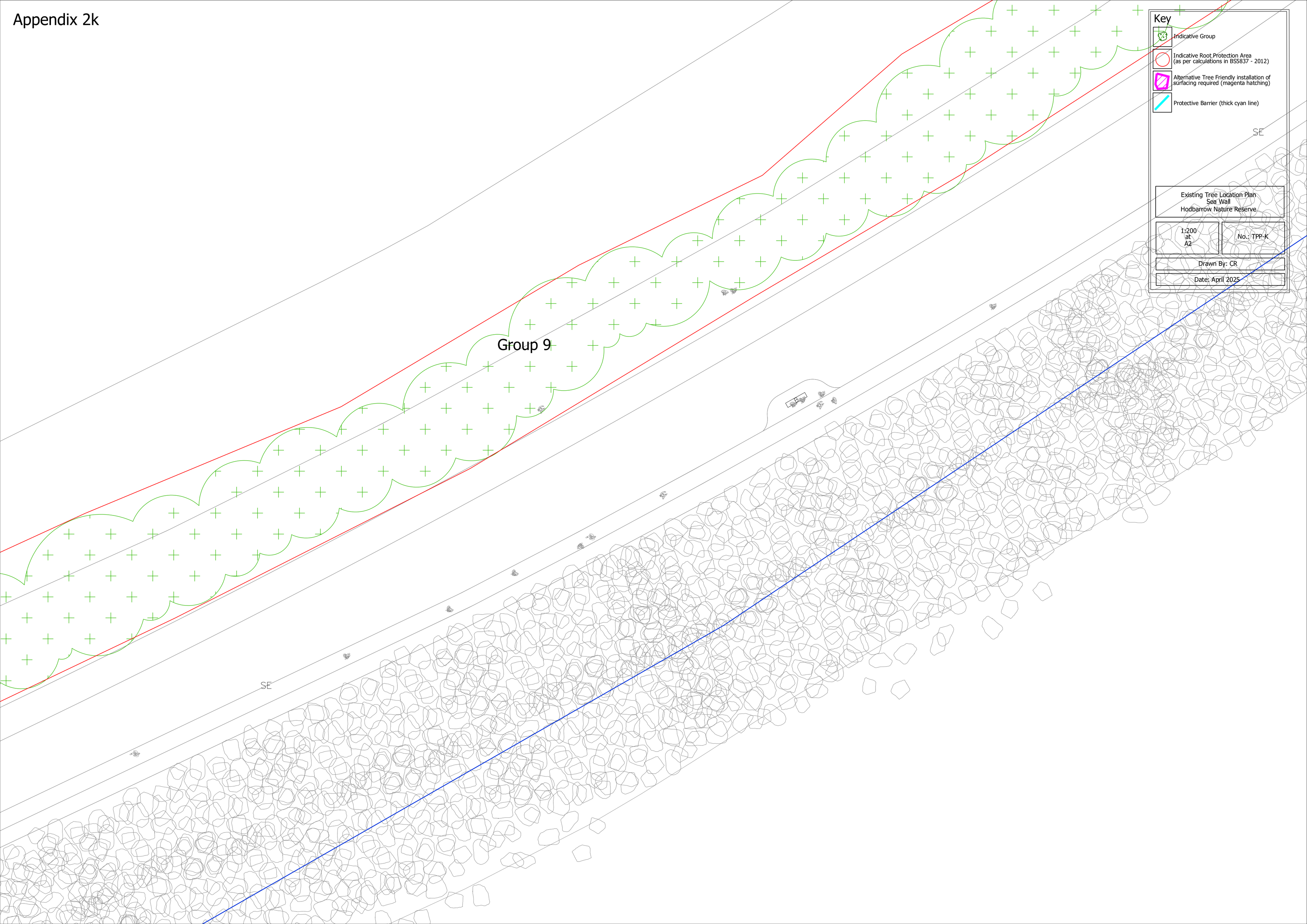
1:200
at
A2

No.: ETLP-K

Drawn By: CR

Date: April 2025

Appendix 2k


Key
Indicative Group
Indicative Root Protection Area
(as per calculations in BS5837 - 2012)
Alternative Tree Friendly installation of
surfacing required (magenta hatching)
Protective Barrier (thick cyan line)
SE
Existing Tree Location Plan
Sea Wall
Hodbarrow Nature Reserve
1:200
at
A2
No.: TPP-K
Drawn By: CR
Date: April 2025
Group 9
SE

Appendix 2l

Key

Indicative Group

Indicative Root Protection Area (as per calculations in BS5837 - 2012)

Existing Tree Location Plan
Haverigg Lighthouse & Tern Island Hide
Hodbarrow Nature Reserve

1:200 at A1

No.: ETLP-L

Drawn By: CR

Date: April 2025

Hide

Bird hide

SP

SP

11.00

10.00

10.00

11.00

footpath

footpath

footpath

Group 9

Group 9

access road

access road

Seat

concrete

Seat

Hodbarrow
Haverigg
lighthouse

Lighthouse

concrete

SP

10.00

9.00

9.00

8.00

8.00

8.00

8.00

5.00

concrete blocks

Appendix 2l


Key
Indicative Group
Indicative Root Protection Area
(as per calculations in BS5837 - 2012)
Alternative Tree Friendly installation of surfacing required (magenta hatching)
Protective Barrier (thick cyan line)
Existing Tree Location Plan
Haverigg Lighthouse & Tern Island Hide
Hodbarrow Nature Reserve
1:200
at
A1
No.: TPP-L
Drawn By: CR
Date: April 2025
IBE
S1.0
Group 9
Group 9
IBE
S2.0
SE
IBH
SE
S7.0
SE
SE
SE