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## Preston and South Ribble Flood Risk Management Scheme Landscape and Habitat Establishment and Management Plan - Fishwick Bottoms

ENV00000009C-JAC-ZZ-ZZ-RP-EN-0003 | P06

Environment Agency

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## Preston and South Ribble Flood Risk Management Scheme

Project No: ENV0000009C  
Document Title: Landscape and Habitat Establishment and Management Plan - Fishwick Bottoms  
Document No.: ENV0000009C-JAC-ZZ-ZZ-RP-EN-0003  
Revision: P05  
Document Status: For Information  
Date: 19.May 2022  
Client Name: Environment Agency  
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### Document history and status

Revision	Date	Description	Author	Checked	Reviewed	Approved
P01	21.06.2021	For Information	AR / NW	KR	KR	MW
P02	08.09.2021	For Information	AR	MJ	MJ	JF
P03	22.09.2021	For Information	AR	MJ	MJ	JF
P04	20.01.2022	Planning comments	AR	JE	JE	JF
P05	28.02.2022	Planning comments - Landscape	AR	AM	AM	JF
P06	19.05.2022	Planning comments - Ecology	AR	AM	AM	JF

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Appendix A – Environmental Masterplan

## 1. Introduction

This Landscape and Habitat Establishment and Management Plan (LHEMP) has been produced for the Environment Agency to assist in the implementation of the landscape and ecology management of the Preston and South Ribble Flood Risk Management Scheme at Fishwick Bottoms. It should be read in conjunction with the landscape masterplan drawing for Fishwick Bottoms (drawing no. ENV0000009C-JAC-ZZ-ZZ-DR-L0010) included in Appendix A, or any subsequent revisions.

The purpose of the LHEMP is to discharge condition 13 of planning consent reference LCC/2021/0002 which states the following.

The plan shall include the following detail:

- a) The nature and depth of any soil making materials.
- b) The design, construction and planting of waterbodies.
- c) Locally native tree/shrub planting and seed specification.
- d) Detail of habitat establishment (including seasonal timing), management, monitoring, and review and reporting methods.
- e) Details of the type, number and location of bird and bat boxes.
- f) The ongoing maintenance and management of the landscaping and habitats at the site for a period of 15 years.

Thereafter, the approved landscaping and habitat establishment and management plan shall be implemented within the first available planting season (the period between 31 October in any one year and 31 March in the following year) following completion of the development.

## 2. Scheme overview

### 2.1 Site context

Preston is a city located in central Lancashire to the north of the River Ribble. South Ribble is a non-metropolitan district and borough of Lancashire located to the south of the River Ribble (refer to Figure 1). The two authorities have a combined population of approximately 235,000 (estimated population in Mid-2018). There are two main rivers within the authorities – the River Ribble which bisects the authorities and the River Darwen which joins the River Ribble at Walton-le-Dale, as well as numerous watercourses and drainage systems. There are extensive flood defences on both of these watercourses which provide part of the wider flood risk management for the Preston and South Ribble areas.

Areas 1 and 2 of the Preston and South Ribble FRMS (Proposed Scheme) are located along the north and south banks of the River Ribble to the south of Preston city centre at national grid reference (NGR) SD 53174 28203 (refer to Figure 1). The proposed Scheme will extend from Liverpool Road Bridge to the West Coast Main Line (WCML) on the north bank (Area 1) and from Penwortham Old Bridge to the WCML on the south bank (Area 2). The proposed works will primarily involve the replacement of existing flood defences and therefore the majority of the works will take place along the existing alignments.



Fishwick Bottom lies approximately 2km to the east of the proposed Scheme. The area has a generally flat topography adjacent to the River Ribble (AOD). To the north, Preston's urban edge is located on top of a wooded low rise at approximate 30m AOD. To the south of Watery Lane, the area is low-lying and comprises predominantly small, irregular shaped fields of improved pasture with occasional fields of arable farmland that extend along the north bank of the River Ribble. Fields are bound by fragmented and overgrown hedgerows and drainage ditches. To the north of Watery Lane, there's a BMX track, Fishwick Recreation Ground, a timber merchants, Fishwick Bottoms Local Nature Reserve and Throslock Wood Biological Heritage Site. The wooded slopes of Fishwick Bottoms Nature Reserve and Throslock Wood filter and obscure the urban edge of Preston from view.

### 2.2 Designated sites

#### Statutory designations

- The River Ribble is located within the Ribble Estuary Marine Conservation Zone.

## Non-statutory designations

There are four Biological Heritage Sites located within the study area;

- Fishwick Bottoms
- Throslock Wood
- Melling's Wood and Dark Wood
- River Ribble from London Road Bridge Preston, in West, to County Boundary, in East.

## 2.3 Habitats

The area comprises improved pasture and riparian vegetation associated with the river. The Ribble and Alt Estuary Special Protection Area (SPA), and Ribble and Alt Estuary Ramsar are situated approximately 8.5km downstream from the scheme. The Ribble Estuary Marine Conservation Zone (MCZ) is designated for smelt (*Osmerus eperlanus*)

### 2.3.1 Species

Trees and scrub vegetation have the potential to support breeding birds between March and August inclusive.

## 2.4 Scheme description

All trees removed to enable the construction of the defences will be replaced on a 5:1 ratio. Due to limited space for tree planting adjacent to the replacement flood defences a nearby location has been identified at Fishwick Bottoms through discussions with Preston City Council where trees will be planted at a 5:1 ratio.

The Scheme involves planting a 30m wide strip of riparian woodland along the top of the right bank of the River Ribble, from approximately 600m to the east of the football pitch upstream to Mete House, a length of approximately 1.2km. A total of approximately 9970 trees will be planted which will be more than the 5:1 replanting ratio for the scheme (approximately 775 trees removed to allow for Areas 1 and 2 of the scheme). The woodland will have stockproof fencing along the landward edge to prevent access for livestock.

The following section provides a description of the landscape design and habitat management philosophy to inform the establishment maintenance requirements and long-term management of the site.

### 3. Landscape design and habitat management philosophy

The following section provides a description of the landscape design, habitat creation and management philosophy to inform the establishment maintenance requirements and long-term management of the site.

#### 3.1 Landscape Design

The planting design complements the existing vegetation, to provide long term riparian woodland cover which reflects the existing vegetation and habitat types along the river corridor within the vicinity of Fishwick Bottoms. The planting mitigates vegetation losses required to accommodate the scheme and contribute to biodiversity net gain.

#### 3.2 Biodiversity Net Gain

Biodiversity Net Gain (BNG) is an approach that leaves the natural environment in a better state than before the development. It uses a metric approach that allow losses and gains in biodiversity to be measured in an objective and repeatable manner. The results of the assessment for this scheme are provided in the BNG report ENV0000009C-JAC-ZZ-ZZ-RP-BD-0002 which was included in the planning application.

All areas of habitat creation and reinstatement contribute towards BNG. The key area for ecological benefit at this site is new woodland creation along the top of the right bank of the River Ribble.

The target value of each habitat, as detailed in the BNG report, depends on the condition the habitat achieves. Habitat condition is a score based on the quality of the habitat, judged against the perceived ecological optimum state for that particular habitat. The process of assessing habitat condition considers how many of the key physical characteristics and typical species of a particular habitat type are present in a habitat patch (Crosher *et al.* 2019). Many of these features will gradually develop over time and some habitats such as woodland may take decades to achieve an optimum state. Indicators of success have been set for the initial 5 year period. A review of this document should be carried out every 5 years to confirm each habitat is on the right trajectory to achieve the target condition set in the BNG report.

#### 3.3 Landscape and Habitat Areas

The landscape proposals for Fishwick Bottoms are shown on the 'Landscape Masterplan' drawing Figure 1.12 - 'Environmental Masterplan' Sheet 9 (drawings: ENV0000009C-JAC-ZZ-ZZ-DR-L-0010), refer to Appendix A.

##### Fishwick Bottoms

A 30m wide strip of riparian woodland is proposed along the top right bank of the River Ribble, running from approximately 600m to the east of the football pitch upstream to Mete House, approximately 1.2km. The woodland will have stockproof fencing along the landward edge to prevent access for livestock. An alternative water source will be provided for livestock. Access along the Ribble Way along the right bank of the River Ribble will be maintained.

The river bank is heavily impacted by cattle poaching. Revegetating the bank would incorporate cover and shelter to benefit riparian mammals and freshwater fish. The species mix for revegetation complements existing plant species present, to provide long term, low maintenance riparian woodland tree cover which reflects the existing vegetation and habitat types of the area. The proposed planting will mitigate for vegetation losses because of the scheme and will also contribute to biodiversity net gain.

### 3.4 Soil

The proposed woodland will be planted into the existing soil on site. It is not envisaged any additional topsoil or subsoil will be required. Any soil generated during the planting operations will be spread evenly on site to match existing levels.

No planting compost is specified for the native woodland planting.

### 3.5 Design, construction and planting of waterbodies

No design, construction and planting of waterbodies will be carried out as part of the woodland planting proposals at Fishwick Bottoms.

## 4. Roles and Responsibilities

The planning condition states that maintenance and management should continue for a minimum period of 15 years. The Rivers Trust will be responsible for creating the habitats and the establishment maintenance responsibilities, which includes replacing any defects and taking remedial action if the habitats have not established.

### 4.1 Management

Once planted, the Rivers Trust will be responsible for the establishment maintenance and management of the woodland planting for a period of 15 years.

#### 4.1.1 Injurious weeds and Invasive Non-Native Species.

The Rivers Trust will have a responsibility to manage and control injurious weeds and INNS.

### 4.2 Monitoring

The Rivers Trust will utilise staff with appropriate knowledge and experience to monitor the scheme as set out in this document. Where specialist input is required, this has been specified in the document.

The Rivers Trust will monitor the success of the woodland planting for a period of 15 years.

Regular inspections will be carried out during the 15 year establishment maintenance and management period.

Audits will be carried out by a suitably qualified person at the end of the first year. After this time, audits will be conducted every four years in years 3, 7, 11, and 15.

Remedial action will be required if the habitats have failed or are unlikely to achieve the target condition set in the BNG report.

#### 4.2.1 Landscape Contractor

The Rivers Trust will reinstate, create and manage habitats, as prescribed in this document.

#### 4.2.2 Landscape Architect / Suitably Qualified Person

A chartered landscape architect will be commissioned to undertake supervision of the woodland planting works. Once planted, monitoring of the woodland planting will be undertaken by the Rivers Trust as per section 4.2.

A suitably qualified person shall keep the Employer informed of the progress of management operations. This shall include a summary of plant checks /inspection undertaken in September of each year including a record of plant failures for replacement requirements and an appraisal of whether any alterations should be made to the following year's management regime.

## 5. Landscape and habitat objectives and clauses

This section sets out the principles of the landscape, habitat creation and management proposals that have been incorporated into the environmental masterplan, in order to maximise benefits to biodiversity. The key biodiversity benefits described under each management principle are based on the species and/or habitats that have been identified as present within the Site or are associated with the local area and included in the baseline study. Each task is to ensure habitats are established and the conservation objectives are met. A prescriptive method for how this will be achieved is provided, including the timings and consideration of potential constraints for each task. Refer to ENV0000009C-JAC-ZZ-ZZ-SP-L-0001 for full details of the landscape specification for the landscape and habitat establishment and management proposals.

### 5.1 Native Broadleaved Woodland

Areas of riparian woodland adjacent to the River Ribble at Fishwick Bottoms are proposed to contribute to biodiversity. Wych Elm is a mitigation requirement for White Hair Streak butterfly. Seedling (60-80cm, 150cc minimum, cell grown 1+0) are specified to provide the proposed woodland with the best opportunity of establishment. Plants to be of local provenance and planted at 2.5m centres including woodland scrub and edge species such as hawthorn, hazel, willow and elder.

Woodland Mix A: *Quercus robur* (Oak) 20%, *Ulmus glabra* (Wych Elm) 10%, *Crateagus monogyna* (Hawthorn) 35%, *Corylus avellana* (Hazel) 35%,

Woodland Mix B: *Alnus glutinosa* (Alder) 10%, *Betula pendula* (Silver Birch) 10%, *Betula pubescens* (Downy Birch) 10%, *Salix caprea* (Goat Willow) 20%, *Salix cinerea* (Grey Willow) 20%, *Salix fragilis* (Crack willow) 20%, *Sambucus nigra* (Elder) 10%.

Objectives	Establishment of woodland planting incorporating a range of native species to: increase diversity of habitat, to provide food for wildlife and enhance visual amenity, and to replace trees removed to allow for the FRM scheme.
Task	Maintenance and monitoring of newly planted trees (15 year establishment maintenance and management period).
Location	Fishwick Bottoms
Method	<p>The EA will appoint a Contractor to carry out the following tasks: -</p> <p>Specification summary</p> <ol style="list-style-type: none"> <li>1) SITE CLEARANCE, SUBSOIL IMPROVEMENT, TOPSOIL, SITE PREPARATION OF PLANTING PITS AND PLANT MATERIALS: to be as detailed in sections A34, Q28. Q31 of the landscape specification (appendix A).</li> <li>2) SUPPLY PLANTS: To BS:4043, BS3936 and the National Plant Specification, plant handling/storage, transport and planting to HTA 'Handling and Establishing Landscape Plants' and CPSE 'Handling and establishing landscape plants'. Surplus material to be removed off site.</li> <li>3) PLANTING: Willow pegs and screef/mound specification and location to be as agreed with the Rivers Trust, pegs to be pushed into the ground so top of the peg is level with the ground or 25mm above. All plants to be pit planted, planting pit to be of a sufficient size to accommodate roots when fully spread or rootball and 75mm deeper than root system. Pit bottom to be broken up to a depth of 150mm., Backfill material to be 50: 50 mix of topsoil and peat free compost to PAS 100 to depth of planting pit. All containers to be removed prior to planting. All planting plots to be set out evenly avoiding straight lines in densities and species mixes as shown on the drawings and schedules.</li> </ol>

- 4) STOCK-PROOF FENCING AND GATES: To be as detailed on Figure 1.12 Landscape Masterplan drawing for Fishwick Bottoms, drawing no. ENV0000009C-JAC-ZZ-ZZ-DR-L-0010 and landscape specification section Q40, clause 143, 533, 540A, 550 to 930.

Maintenance summary

- 5) STRAIGHTEN PLANTS: Straighten plants and refirm around roots, re-firm soil around any loose plants, without compacting and ensure that all plants are upright after each visit. Ensure any recently replaced planting is re-visited to refirm and straighten as necessary.
- 6) WEED CONTROL: Use a suitable herbicide to maintain a weed-free zone 0,5m radius around the base of each plant. One of the applications per year to be winter applied residual herbicide to provide residual cover for early spring growth. Herbicide to be applied by a certified user in accordance with the manufacturer's instructions. Keep tree bases clear of weeds, by hand weeding to ensure there is no weed growth within the ring spray area (where herbicide ring spraying misses weeds growing close to each tree/shrub). Remove all weeds, including roots, by hand using hoes, trowels or forks, taking care to remove not more than a minimum quantity of soil, causing minimum disturbance to trees and leaving the area in a neat, clean condition (Section A34 and Q35 of the landscape specification)
- 7) WEED CONTROL: SPOT TREATMENT OF PERSISTENT WEEDS; Use a suitable herbicide and appropriate method of application to maintain the site predominantly free of noxious and notifiable weeds or other undesirable species. Treatments should ensure that general grass cover and vegetation established is retained and adjacent grass cover and planting are not detrimentally affected by any such herbicide application (Section A34 of landscape specification)
- 8) Keep tree and shrub bases clear of weeds, by hand weeding to ensure there is no weed growth within the ring spray area (where herbicide ring spraying misses weeds growing close to each tree/shrub). Remove all weeds, including roots, by hand using hoes, trowels or forks, taking care to remove not more than a minimum quantity of soil, causing minimum disturbance to trees and leaving the area in a neat, clean condition.
- 9) REPLACE LOSSES: To be undertaken annually during the establishment maintenance period. In early September of each year following completion of the initial planting, Inform CA of any plants which are dead or dying and obtain instructions for replacement. Replacements to be planted in the next planting season immediately following inspection. Where there are losses representing a threat to the establishment of woodland or more than 15% at year 5 losses will be replaced. Replacements to be the same species and of a comparable size with the surrounding plants (where practical to do so) or default to original specification (if site constraints reduce viability of planting larger nursery stock).
- 10) WATER TO FIELD CAPACITY: Water as necessary to field capacity to ensure the continued thriving of all planting.
- 11) THINNING/COPPICING: Timing to be agreed following a review by the landowner. Thinning and coppicing operations to be undertaken as deemed appropriate for woodland establishment, reviewed 5 yearly cycles by suitably qualified personnel. Thinning and coppicing only to be undertaken to promote healthy vegetation cover, structural/age diversity and to retain preferred species content of the original planting. Arisings from thinning or coppicing operations should be removed from site, or to be used to create habitat piles, the location and extent to be agreed with the CA.

Activity and Timings	<p>Cells planted November until the end of March while the plants are dormant.</p> <p>Straighten plants and refirm around roots – 3 per year (first 5 years only). February, June, October</p> <p>Weed control 3 per year. April, July and October</p> <p>Replace losses (Annually). November until the end of March while the plants are dormant</p> <p>Water to field capacity to ensure growth. As required.</p>
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	Thinning/coppicing – once planting is fully established and has been reviewed, years 10 and 15.
Monitoring and personnel	<p>Walk through inspection of new woodland areas. During the establishment maintenance period a suitably qualified Landscape Architect will inspect the trees as part of the September (annual) plant replacement count with the Contractor to confirm the management prescription have been followed.</p> <p>Check condition for satisfactory plant growth, identify the probable cause of unsatisfactory plant growth, the overall development of the mix with species success rates, (identify successful to less successful species) height of mix, structure of mix in terms of general position of species, and degree to which objectives are fulfilled. Weeds, stakes/ties, tree/shrub shelters and guards to be checked.</p> <p>A suitably qualified ecologist will monitor the site every five years between years 5 and 15 to confirm the management has been carried out and the indicators of success have been achieved. Monitoring to be carried out in June/July.</p>
Indicators of Success	<p>Established woodland showing signs of successful establishment and maturation</p> <p>All trees have enough space for canopy spread and natural growth forms.</p> <p>Signs of ground flora developing to enhance biodiversity and landscape integration.</p> <p>BNG success criteria measured in year 15 against target condition.</p>
BNG Target	<p>Woodland – Broadleaved other.</p> <p>Good (32 years +). Poor condition achieved by year 20, moderate condition achieved by year 30.</p> <p>Good condition = Meets at least 10 of the criteria as defined in Crosher <i>et al.</i> 2019, with only minor variation. No more than 1 of the indicators of poor condition are present and stands of native trees that do not obviously originate from planting.</p>

## 6. Injurious weed and Invasive Non-Native Species control

### 6.1 Injurious and Problem Weed Control

The land will be managed to make sure none of the five injurious weeds proliferate on-site and ensure they do not spread under the Weeds Act, (1959). These weeds are:

- Common ragwort (*Senecio jacobaea*);
- Spear thistle (*Cirsium vulgare*);
- Creeping thistle (*Cirsium arvense*);
- Broad-leaved dock (*Rumex obtusifolius*); and
- Curled dock (*Rumex crispus*).

Weed control will be carried out twice annually in all planting and seeding areas to eradicate or control injurious weeds. One or more of the following measures to be used:

- grass cutting (as per management tasks above);

If grass cutting is not sufficient then the following methods may be applied:

- hand-weeding or digging out (ragwort only); and
- spot-spraying with an appropriate, approved herbicide.

Attention is required during the initial 5 years establishment period, where there will be spot checking two times a year and immediate remedial action taken as required. The LHEMP review will determine after year five, whether the frequency of inspections can be reduced.

### 6.2 Invasive Non-Native Species Control

All Invasive Non-Native Species (INNS) within the Proposed Works will be removed and eradicated prior to construction (see Invasive Species Management Plan). Giant Hogwood, Himalayan Balsam and Japanese Knotweed have been identified along Fishwick Bottoms. New planting areas should not contain any INNS.

Where INNS have been removed, these areas will need to be monitored to ensure the plants do not re-grow in these locations. It is the Contractors responsibility to ensure INNS do not re-grow in these locations.

Attention is required during the initial 5 years establishment period, where there will be spot checking two times a year and immediate remedial action taken as required. This will be carried out in conjunction with the injurious weed inspection, specified above. The LHEMP review will determine after year five, whether the frequency of inspections can be reduced.

## 7. Review

The information gained through annual monitoring shall be used to inform the management operations required in the subsequent year of management. Agreements made in relation to changes or continuation of management regimes shall be recorded, and the LHEMP documents updated annually.

In addition, a formal review of the LHEMP shall be undertaken every five years to assess whether the objectives and aims for vegetation management are being met and the management operations altered accordingly. Agreements made in relation to changes or continuation of management regimes shall be recorded during the annual update of the LHEMP documents.

Table 1: Landscape and Ecology Management Operations Schedule

item	Description	Month												Total Visits	Years	Comments / Notes
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec			
	General															
G.1	Spot treatment of persistent weeds													3	1-15	
G.2	Injurious weed and invasive non-native weed control														1-5	
W.0	Woodland															
W.2	Straighten trees and refirm around root													3	1-5	Years 1 to 5 only
W.3	Hand weeding													2	1-5	Years 1 to 5 only
W.6	Replace losses													1	1-5	Years 1 to 5 only
W.7	Water to field capacity (as required)													-	1-5	As required to ensure healthy growth
W.8	Grass cutting in planting plots													3	1-5	All arising to be removed offsite
W.10	Thinning / coppicing													1	10, 15	1no visit per years 10 and 15 (5 year cycles long term)
W.11	Stockproof fencing and gates – inspect and repair															
W.12	Monitor woodland (Establishment)														1-5	Landscape Architect years 1 to 5 only
W.13	Monitor woodland (Management)														5, 10, 15	Ecologist years 5, 10 and 15 only

NOTES:

1. Where no duration is specified it is suggested that these operations will be carried out for the full 15 year period and for the longer term management of the site (extended in 5 year cycles from year 10 onwards for thinning and coppicing cycles for example). Some operations such as vegetation control, and site cleanliness will be subject to resource availability and revenue costs in the long term and may vary depending on the future operational requirements of the use of the site. Future variations should be recorded in the LHEMP to register changes in management operations.
2. The number of visits indicated for the management operations schedule is to be taken as a minimum, the contractor is to ensure enough additional visits or combine operations to ensure compliance with the clauses in section 5.
3. Changes in management operations arising from change in construction approach or resulting from changes as vegetation establishes in particular areas of the site should be recorded in the LHEMP in order to inform ongoing and future management operations and requirements.
4. Changes on site should be monitored and recorded in order that the LHEMP can be adapted to respond to changes in habitat establishment or development.

## Appendix A – Environmental Masterplan

Landscape Masterplan drawing for Fishwick Bottoms, drawing no. ENV0000009C-JAC-ZZ-ZZ-DR-L-0010

Fishwick Bottoms Plant Schedule									
Woodland Mix A									
Planted in species groups of 3 or 5 at 2.5m centres									
Species	Common name	Form	Age	Height	Root condition	Habit	%	Plot	
Quercus robur	Oak	Seedling	1+0	60-80cm	Cell grown	Bushy	20	576	
Ulmus glabra	Wych Elm	Seedling	1+0	60-80cm	Cell grown	Bushy	10	288	
Corylus avellana	Hazel	Seedling	1+0	60-80cm	Cell grown	Bushy	35	1008	
Crataegus monogyna	Hawthorn	Seedling	1+0	60-80cm	Cell grown	Bushy	35	1008	
							Total	2880	
Woodland Mix B									
Planted in species groups of 3 or 5 at 2.5m centres									
Species	Common name	Form	Age	Height	Root condition	Habit	%	Plot	
Alnus glutinosa	Alder	Seedling	1+0	60-80cm	Cell grown	Bushy	10	288	
Betula pendula	Silver Birch	Seedling	1+0	60-80cm	Cell grown	Bushy	10	288	
Betula pubescens	Downy Birch	Seedling	1+0	60-80cm	Cell grown	Bushy	10	288	
Salix caprea	Goat Willow	Seedling	1+0	60-80cm	Cell grown	Bushy	20	576	
Salix cinerea	Grey Willow	Seedling	1+0	60-80cm	Cell grown	Bushy	20	576	
Salix fragilis	Crack Willow	Seedling	1+0	60-80cm	Cell grown	Bushy	20	576	
Sambucus nigra	Elder	Seedling	1+0	60-80cm	Cell grown	Bushy	10	288	
							Total	2880	
Willow Mix									
Planted in species groups of 3 or 5 at 2.5m centres									
Species	Common name	Form	Age	Height	Root condition	Habit	%	Plot	
Salix caprea	Goat Willow	Seedling	1+0	60-80cm	Cell grown	Bushy	20	1524	
Salix cinerea	Grey Willow	Seedling	1+0	60-80cm	Cell grown	Bushy	20	1524	
Salix fragilis	Crack Willow	Seedling	1+0	60-80cm	Cell grown	Bushy	20	1524	
Crataegus monogyna	Hawthorn	Seedling	1+0	60-80cm	Cell grown	Bushy	10	762	
Corylus avellana	Hazel	Seedling	1+0	60-80cm	Cell grown	Bushy	10	762	
Ilex aquifolium	Holly	Seedling	1+0	60-80cm	Cell grown	Bushy	10	762	
Prunus spinosa	Blackthorn	Seedling	1+0	60-80cm	Cell grown	Bushy	10	762	
							Total	7620	

