



Pigs Lee Brook & River Corridor
Management Plan.
Walmersley Old Road, Bury
BDW Trading Ltd (Manchester Division)

Revision	Date	Prepared By	Revision Notes
0	19.04.21	SPG/VB	First Issue
1	29.07.21	SPG	Update to management responsibilities
2	07.09.21	SPG/VB	Headwall Screen inspection frequency increased to monthly. Further recommendations added for management of Pond. Further recommendations added for sediment management and naturalisation.

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Introduction

Site Description

The site is the former Bevis Green Works, Off Walmersley Old Road, Bury, BL9 6. The site is a Brownfield site with many former uses throughout its history. Through the site runs a tributary to Pigs Lee Brook, which is classed as main river. The river is impounded in a “lodge” before discharging to a culvert that runs underground through the site. There are existing properties adjacent the western and southern boundaries. To the northern parcel is a parcel of greenbelt land.

Development Proposals Outline

The proposal is to construct 268 No low rise residential properties. Part of the works is also to reduce the existing lodge in size, and to divert and open up the existing culverted water course. The planning layout can be seen in Appendix A

Planning Context

The site was granted reserved matters planning by Bury Metropolitan Borough Council on 06/02/2020. Decision Notice Number is 63533. Planning condition No 34 reads:

34 No development in phase 2, other than site clearance, demolition, or works relating to site investigation, remediation or ground works, shall commence unless or until a scheme for the provision and management of a high quality ecological network along Pigs Lee Brook has been submitted to, and approved in writing by, the Local Planning Authority. Thereafter, the development shall be carried out in accordance with the approved scheme.

The Pigs Lee Brook corridor shall be free from built development including access roads, lighting, domestic gardens and formal landscaping.

The scheme shall include:

- detailed plans, including updated long and cross-sections, based on existing and
- proposed site development levels, and FRA recommendations for residential
- scheme, showing the extent undeveloped riparian buffer zone
- details of new diverted Pigs Lee Brook channel informed by fluvial and geomorphological assessment.
- details of proposed land remodelling proposed adjoining new riparian corridor.
- details of proposed revetment options proposed along the new riparian corridor.
- details of proposed soft landscaping scheme including planting schedule; predominantly based of native species, including ground flora and aquatics.
- **details demonstrating how new river corridor will be sensitively managed over the longer term including adequate financial provision and named body responsible for management plus production of detailed management plan**
- details of any proposed new flow control structures, surface water outfalls, footpaths, fencing, lighting, etc.

The scheme shall be fully implemented and subsequently maintained, in accordance with a scheme for timing and phasing arrangements which shall be agreed in writing with the Local Planning Authority.

This document is to demonstrate how the new river corridor will be sensitively managed over the longer term including adequate financial provision and named body responsible for management plus production of detailed management plan

The plan outlines the management principles and objectives and gives a frequency for the maintenance of the river corridor.

For the avoidance of doubt this document refers to the river corridor and any engineered structures in which includes:

- Any part of the river within the legal title boundary.
- The attenuation basin area, and habitat pond
- All structures which includes:
 - Flow Control and aprons
 - The headwall and safety/security screens.
 - All manholes on the culverted watercourse
 - All pipes and culverts on the culverted watercourse
 - The drop shaft manhole MH6
- All river banks and river bed, including any erosion control measures.
- All landscaping within the managed area.
- All fencing within the managed area.

Objectives

The objectives for the Management Plan are:

- To ensure the successful maintenance and long-term performance of Pigs Lee Brook and the river corridor.
- To protect the environment and residents from flooding caused by defects and blockage.
- To identify defects and performance issues as soon as possible in order to minimise any damage and rectify at the earliest opportunity.
- Improve the Water Quality of all surface water entering and leaving the SUDS network
- Provide an attractive feature for the local landscape.
- To maintain as natural landscape and feature as is reasonably practicable.
- Provide information of the long-term management of the river corridor, new ponds and associated habitats in accordance with conservation objectives.
- Detail the conservation objectives for the river corridor, new ponds and associated habitats;
- Reference the Landscape Proposal that describes the specification of the habitats and features to be created at the river corridor;
- Improve ecological function and biodiversity;
- To ensure best health & safety practices, and meeting user's and client's needs for safety, at all times;
- Inform Waste management associated with contaminated silts and other waste materials resulting from maintenance;
- To allow the residents to understand the expectations of the required management, and to give them a point of contact if required;
- To allow the Environment Agency and Local Authority satisfaction that the area will be managed appropriately; and
- Ensure the proposed river corridor does not impact on any other elements of the development, e.g. Highway safety.

Design Principles

The watercourse is a tributary of Pigs Lee Brook.

The river has been modelled for 1:1000 year events including an allowance for climate change.

The Flood storage area has been designed to store additional incoming flow during extreme storm events. It also includes a permanent pond for ecology/habitat, and assist in reduction of silt build up to the wider flood storage area. Although the pond is not designed to take the whole river flow, it must be supplied with a permanent supply of water from the main flow.

The flow control structure is designed to restrict the flow rate allowed to pass through the flow control. The surface water attenuation basin is an area designed to flood during severe river flow events.

The river channel is designed to mimic natural geomorphology of the rivers, and includes pools, riffles, and bars. The steps and pools are designed to slow the flow along the steeper sections of the watercourse to minimise erosion.

Naturalisation of the river corridor and banks is to be encouraged.

The Headwall Screen is designed to prevent larger debris entering the culvert in order to prevent blockage and damage to the culvert, yet allow smaller debris to pass through, as well as ease maintenance. The Headwall Screen is also designed to prevent access by children or any unauthorised person.

The Drop Shaft is designed and modelled to allow the river flow to drop safely and avoid issues of erosion, symphonic action, and cavitation due to falling water.

Performance Risks

Inadequate or improper maintenance of the river corridor or any of its features will cause a reduction in the rivers ability to convey flow, which could increase the risk of flooding, cause damage to property, endanger the life of people, local wildlife and ecology.

Management Arrangements

The watercourse and its surround areas will be handed over to a site wide management company. The management company will be appointed by Barratt Manchester. The management company will be funded by an annual fee payable by each plot. Refer to drawing 456/P/MP01 for the area covered by the management company.

Until such a time as the managed areas are adopted by the management company, the areas will remain the responsibility of Barratt Manchester.

It is anticipated that the managed areas will be handed over towards the end of the development which is anticipated to be 2026, subject to sales rates, and unforeseen circumstances.

Management Responsibilities

The river corridor is to be inspected at regular programmed intervals in accordance with this management plan.

All reports of defects and remedials to be repaired/reinstated as quick as practicable in accordance with the response times stated in this management plan.

Some naturalisation of the river corridor is to be encouraged, so as to avoid an overly engineered corridor. Naturalisation helps to re-establish natural river channels, creating wetlands thus improves biodiversity, increases flood storage capacity, tackles climate change, reduces pollution, and provides a better quality of life for people using open spaces.

All work must be carried out by appropriately skilled and experienced operatives for the specific type of work.

All works to be carried out in a professional and respectful manner, whilst minimising disruption and inconvenience to residents, and the general public, and protecting the environment, and minimising flood risk. All work must ensure the free flow of water.

Only works required to maintain the watercourse/pond in accordance with this management plan is permitted. Any works outside of the scope of this management plan and within 8m of the top of banks are likely to require an Environment Permit and advice should be sought from the Environment Agency.

All works that have the potential to impact local habitat, should be carried out in a timely manner in consideration of the local habitats such as avoiding amphibian breeding seasons or Bird Breeding season. If in doubt, advice should be sought from ecology specialists.

All materials and workmanship is to be of a high standard and in accordance with relevant good practice.

All materials and workmanship to be in accordance with the approved drawings, approved as part of the scheme, unless instructed otherwise, and in writing by the adopting authority.

All remedial works are to return the river corridor to their original condition as far as practicable to do so, though some naturalisation of the channel is to be encouraged.

All invasive species to be controlled. The means of control may be dependent upon the location, and must consider the risk of pollution and the impact of water quality.

Work is only to be carried out whilst weather conditions are suitable, unless work is to be carried out under emergency scenario.

No works are to be carried out which could lead to pollution of the water and therefore reduce the natural water quality within a watercourse.

Only machinery and tools suitable for site conditions and the work to be carried out are to be used. Hand tools should be used around trees and in confined areas.

All rubbish, branches, leaves, grass and general arisings removed from the site are to be checked for wildlife and deposited in an appropriate skip.

Surfacing, Rubble, Soil, stones, silts, waste vegetation, and other waste debris to be removed from site, using skips where appropriate, and the area left in a clean and tidy condition after maintenance operations are complete.

Where problems arise in the river corridor, it may necessary to make channel adjustments to maintain the Hydraulics, stability, ecology, and biodiversity of the river corridor. In this respect advice should be sought from suitably qualified geomorphologist, ecologist, Engineers or other suitably qualified professionals.

Any alterations or adaptations to the river corridor may necessitate an alteration to this river corridor management plan, therefore this document should be reviewed, and updated where required.

Inspections

Inspections are undertaken to identify defects that are causing a reduction in performance or risk of flooding, or risk to the environment, or risk to health & safety. This includes defects that require urgent

attention as well as those where the reduced level of severity is such that a longer response time is acceptable, or no repair is needed.

Inspections will also be carried out as necessary, where reports of defects are reported to Barratt Manchester, or the appointed management company.

All features are to be inspected in accordance with the below schedules.

Inspection of the culverted section of watercourse or manholes should be carried out by CCTV or specialist contractors, experienced and trained at working in confined spaces.

Response Times

All non-urgent defects will be repaired within 10 weeks of being reported.

Where high risk safety defect or urgent defect is reported, inspection will take place within 24 hours.

All high risk safety defect or urgent defects will be made safe within 48 hours, or sooner if practicable. Any works to “Make Safe” may be of a temporary nature in order to protect the public, and allow sufficient time to procure the permanent remedial works. This may include temporary “fencing off” of the hazard until permanent remedials can be completed.

The Management Company, Bury MBC, and Environment Agency may operate to alternative response times.

Defect Reporting

Prior to adoption of the managed areas, these areas are to be the responsibility of Barratt Manchester.

All defects are to be reported to Barratt Manchester Customer Care Line using the following details:

BDW Trading Ltd – Barratt Manchester Division.
4 Brindley Road
Manchester
M16 9HQ

Tel: 0161 872 0161

The customer care line’s normal working hours are Monday to Friday 9am to 5.30pm, excluding bank holidays. For reports of defects outside normal working hours, a 24 hours out of hours call centre is in operation.

Out of Hours Contact Details
Tel 0345 601 6084

After adoption by the Management Company, the following contact details should be used.

Trustmgt RFS Ltd
Unit 7
Portal Business Park
Eaton Lane,
Tarporley
Cheshire
CW6 9DL

Company Registration No 10234450

Tel : 01829 708 457

enquiries@trustmgt.co.uk

Other Useful Numbers

Emergency Services

999 or 112 (Emergency)

101 (Non Emergency)

Bury Council

0161 253 5000

Environment Agency - General Enquiries 03708 506 506

Environment Agency - Floodline 0845 988 1188

United Utilities 0345 672 3723

Spillage - Emergency Action

Most spillages on development sites are of compounds that do not pose a serious risk to the environment if they enter the drainage in a slow and controlled manner with time available for natural breakdown in a treatment system. Therefore, small spillages of organic substances should be removed where possible using soak mats as recommended by the Environment Agency, with residual spillage allowed to bio-remediate in the drainage system.

In the event of a serious spillage, either by volume or of unknown or toxic compounds, then isolate the spillage with soil, turf or fabric and block outlet pipes from chamber(s) downstream of the spillage with a bung. A bung for blocking pipes may be made by wrapping soil or turf in a plastic sheet or closely woven fabric.

Contact the Environment Agency immediately.

River Corridor Structure Management Plan.

Flow Control

The flow control should be inspected monthly or after a major storm event, and silt/ debris removed as necessary.

Any sediment, rocks or boulders removed from upstream of the flow control should be re-used and replaced where appropriate either upstream or elsewhere on the river corridor.

Any waste removed from a flow control to be removed from site and disposed in accordance with their own duty of care.

Where a flow control requires repair/replacement, they should be repaired/replaced with a flow control of the same specification as shown on the design drawings.

Element	Schedule	Maintenance Requirement	Frequency
Flow Control	Regular	▪ Inspect for accumulation of silt ▪ Inspect inlets, outlets and overflows for blockages ▪ Inspect for debris and litter ▪ Test functionality of any bypass or penstocks	Every month, or after a major severe storm event.
	Occasional	▪ Remove debris and litter ▪ Remove silt	As required

Headwall, Culvert, Manholes, Dropshaft.

It is not envisaged that silt build up within the culverted section will require a rigorous maintenance regime as long as silt and debris is removed from upstream inlet on a regular basis. Notwithstanding this, a suitable maintenance regime for the systems will comprise of routine inspection (every six to 12 months) and silt removal (as necessary).

The depth of silt that will trigger requirement for silt removal is to be 5% of the diameter of the pipe or height of the culvert.

Where excessive or regular silt build up in pipes or culverts is identified, this is likely to be caused by inadequate flow due to defects in the pipes/inlets/outlets. Where it is suspected, a CCTV survey should be carried out of the affected area, and possibly the system at large. Any defect should be repaired/replaced to its original designed condition.

Additional inspections may be necessary following major storm/flood events where silt deposits are likely to be extensive.

Man entry of the Drop shaft structure will be required to inspect all elements of the manhole. Man entry should only be carried out by experienced qualified specialists with a valid certificate for working in confined spaces.

Inspection of all structural elements and safety features of the drop shaft manhole should be carried out annually, or after major severe storm events.

Element	Schedule	Maintenance Requirement	Frequency
Headwall Trash Screen	Regular	Inspect for accumulation of silt, debris and litter	Monthly, or after a major severe storm event.
	Occasional	Remove silt, debris and litter	As required
	Remedial	Repair any damage.	As required
Pipes, Box Culverts, and Headwall	Regular	- Inspect for accumulation of silt - Inspect for debris and litter - Inspect inlets and outlets for blockages - Inspect Manholes on culverted section (from Surface) - Inspect MH covers for damage - Inspect Safety Screens - Inspect Safety Rails	Every six months, or after a major severe storm event.
	Occasional	- Remove debris and litter - Remove silt - CCTV Pipe work	As required
	Remedial	Repair any damage, broken or cracked pipes, open joints, Blocked with Tree roots.	As required
Manholes & Dropshaft.	Regular	- Inspect for accumulation of silt - Inspect for debris and litter - Inspect inlets and outlets for blockages - Inspect MH covers for damage - Inspect Platforms - Inspect Safety Rails/Chains - Inspect Access Ladders - Inspect Harness Points	Annually, or after a major severe storm event.
	Occasional	- Remove debris and litter - Remove silt	As required
	Remedial	Repair any damage	As required

River Channel Bed and Banks Features

It is not envisaged that silt build up within the river corridor will require a rigorous maintenance regime. Notwithstanding this, a suitable maintenance regime for the bed & banks will comprise of routine inspection (every six to 12 months) and silt removal (as necessary).

All in channel features should be inspected regularly to ensure they remain in good condition. All steps and pools to maintained to ensure effective control of river flow and thus prevent excessive erosion. Any obstructions to flow to be removed. Any loose or missing boulders from the step features to be replaced or reinstated, or made secure.

Any accumulation of loose rocks or boulders (except in the case of bar and riffles features), should be recovered to repair/reinstate the channel. It is important to provide sediment continuity to ensure the channel remains as close to natural as possible, and avoid excessive erosion and deposition, in accordance with the designs. Should areas of the channel become sparse of stones, and gravels, or excessive build up of stones and gravels, it is recommended that stones and gravels are recovered and re-distributed through the river corridor. Should remedial works require the import of rocks, stones, and gravels, a coarse grading of locally native rocks, stones, and gravels should be used, in accordance with the design.

All banks to be inspected to ensure they remain stable, and in good condition. Some naturalisation of the watercourse is to be expected and can be tolerated, subject to them remaining stable, and not having a detrimental impact on the surrounding structures and not significantly restricting flow.

Any erosion control measures to be repaired and reinstated where required. The use of plastics should be avoided in the channel profile, in favour of biodegradable or natural alternatives.

Bars and riffles may move over time. Some movement is acceptable, and is a form of naturalisation, therefore intervention is not usually required, unless it has a detrimental effect on the ability to pass flow.

Steps and pools are designed to slow the flow. Therefore they are required to remain in-situ and be stable. Any erosion to the steps and pools is a potential flood risk or could cause excessive erosion further downstream and should be repaired in accordance with this management plan.

Where problems arise in the river corridor, it may be necessary to make channel adjustments to maintain the stability, ecology, and biodiversity of the river corridor. In this respect advice should be sought from qualified geomorphologist, or ecologist, or other suitably qualified professionals.

Any alterations or adaptations to the river corridor may necessitate an alteration to this river corridor management plan, therefore this document should be reviewed, and updated where required.

All landscaping and vegetation to be inspected and managed in accordance with this river corridor management plan.

Element	Schedule	Maintenance Requirement	Frequency
River Channel Bed & Banks	Regular	- Inspect for accumulation of silt, gravel, rocks, boulders - Inspect erosion control features Steps, pools, riffle, bars - Inspect for debris and litter - Inspect inlets and outlets for blockages - Inspect Safety Screens - Inspect River banks - Inspect Fencing	Every six months, or after a major severe storm event.
	Occasional	- Remove debris and litter - Remove silt - Remove/replace gravels, rocks and boulders. - Rake safety screens	As required
	Remedial	Repair any damage	As required

Landscape and Ecological Management Plan

Purpose and Aims

The purpose of this part of the River Corridor Management Plan is to provide a comprehensive, practical document that can be referred to and consulted by the Local Planning Authority, the developer, local residents and any management company and their appointed contractors tasked to undertake the works detailed within the Plan.

This Plan has been prepared with the following aims:

- a. Detail the conservation objectives for the river corridor and associated habitats;
- b. Reference the Landscape Proposal that describes the specification of the habitats and features to be created at the river corridor; and
- c. Provide information of the long-term management of the river corridor, new ponds and associated habitats in accordance with conservation objectives.

Assumptions

It is assumed that all landscape planting at the site has been carried out in accordance with the *Outline Landscape Masterplan* Drawing c-1339-01 Revision F prepared by PDP Associates (hereafter referred to as the 'Landscape Proposal').

It is assumed in this document that all landscape planting / seeding has been carried out in accordance with the relevant British Standard (BS3882:2015) and supplier recommendations.

Scope of Plan

As annotated on the Landscape Proposal, this Plan covers the following habitats:

- a. Existing woodland, trees and shrubs (at the eastern bank);
- b. Species-rich grassland (seeded to Emorsgate EG8 or similar);
- c. River corridor and banks;
- d. Marginal planting around areas of permanent water including the new ponds to comprise Marsh Marigold (*Caltha palustris*), Yellow Iris (*Iris pseudacorus*), Water Mint (*Mentha aquatica*) and Branched Bur-reed (*Sparganium erectum*); and
- e. Native buffer planting composed from Field Maple (*Acer campestre*), Alder (*Alnus glutinosa*), Silver Birch (*Betula pendula*), Hazel (*Corylus avellana*), Blackthorn (*Prunus spinosa*), Pedunculate Oak (*Quercus robur*), Goat Willow (*Salix caprea*), Crack Willow (*Salix fragilis*), Rowan (*Sorbus aucuparia*) and Guelder Rose (*Viburnum opulus*).

Health and Safety and Best Practice for Protection of Habitats and Wildlife

Site Operatives

Where necessary, operations on site are to be carried out by suitably qualified operatives with appropriate safety clothing. Contractors, where relevant, are to adhere to the latest guidance on safe

working practice, including information from the recognised industry body, the local authority and the government Health and Safety Executive.

Any appointed maintenance contractor is to carry out all operations with regard to the safety and welfare of the general public, the protection of private and public property, and the conservation of domestic and native flora and fauna, as well as maintenance of Statutory Services.

Site Operation and Operators / Contractors

The following precautions must be taken into consideration when carrying out the activities detailed within this Plan:

- a. Personnel working on site should make themselves aware of the location of any underground and above ground services and cables;
- b. Consideration must be given to vehicular and pedestrian use by local residents: roads and paths should be kept clear at all times, and potentially dangerous tools or machinery must not be left unattended; and
- c. Works to existing trees must be undertaken following current best practice guidelines, with suitable risk management practices undertaken for all operations, including the use of chainsaws/machinery, climbing, and felling branches.

Methods for reducing the potential site risks are well established and are common practice of competent contractors. The contractor is expected to identify the hazards associated with any maintenance operations proposed, together with an assessment of the risks involved and methods for reducing risks. The risk assessment should be recorded and retained for reference in the future, if necessary.

Disposal of Materials from Site

All rubbish, branches, leaves, grass and general arisings removed from the site are to be checked for wildlife and deposited at an appropriately licensed tip.

Best Practice Measures to Be Applied During Habitat Management Works

The Appointed Contractor will be made aware of the following requirements and adopt them within the working practices of the management works:

- a. A safe system for the correct storage of materials / chemicals should be implemented to ensure that materials are stored in a suitable manner as to avoid potential impacts on vegetation and / or wildlife;
- b. A system to ensure waste is removed at the earliest opportunity to avoid contamination of ground and possible disturbance to wildlife and soil quality. Contractors should also avoid leaving construction waste within the site;
- c. Methods to adequately protect all features of ecological value from damage during site preparation activities;

- d. Site operations and plant machinery should take into account wide and tall loads to prevent them coming into contact with off-site trees and with trees adjacent to and overhanging the site boundaries;
- e. Trees within and adjacent to the site should be protected from direct impact and from severance or asphyxiation of the roots in accordance with *BS5837: 2012 Trees in Relation to Design, Demolition and Construction – Recommendations* (BSI, 2012); and
- f. The appropriate timing of works to ensure appropriate consideration of nesting and breeding and hibernation seasons.

Protected Species and Wildlife Legislation

All personnel working on site must be aware of the presence of wildlife and possibility of protected species and other wildlife at the site namely nesting birds and badger in the wider area and the amphibian breeding season.

Works that will directly affect ponds and areas of open water must only be carried out outside the amphibian breeding season (i.e. avoid late February to late September inclusive).

The Ecologist must be contacted for advice, as needed.

Bio-Security

To minimise the risk of introduction of invasive species to the site *and* the spread of invasive species around the site, all machinery / plant to be brought to the site must be clean.

Wheels / tracks of machinery / plant must have been pressure washed before use at the site.

No excessive remnant soil or plant material from other sites must be present on the machinery / plant or in the tyre treads as this may increase the risk of spread of non-native and invasive plant species e.g. Japanese Knotweed, Indian Balsam (*Impatiens glandulifera*) and Giant Hogweed (*Heracleum mantegazzianum*).

Management Prescriptions

Litter and Fly-tipped Waste Removal

All litter will be removed from site and disposed of in an authorised manner. Any fly tipping will be removed immediately to prevent an accumulation of debris.

Care must be taken when removing litter to check for wildlife, which may be sheltering within or under items. Any wildlife found should be returned to suitable cover. Litter removal will be implemented on a quarterly basis as a minimum (or prior to specific management operations such as grass cutting / strimming).

Existing Trees and Shrubs

Habitat

The existing established woodland on the eastern bank of the watercourse will be retained. The woodland habitats are described as:

“Semi-mature to mature Pedunculate Oak (Quercus robur) dominates the canopy of the woodland in the north east of the site with locally frequent Goat Willow, Grey Willow and Sycamore.

The shrub layer is open but constant species comprise frequent Hawthorn (Crataegus monogyna), Holly (Ilex aquifolium) and Rhododendron (Rhododendron ponticum) with very locally frequent Guelder Rose (Viburnum opulus) and Beech (Fagus sylvatica).

The herb layer is sparse but supports constant Bramble and locally frequent Creeping Soft-grass (Holcus mollis). Stands of Bracken (Pteridium aquilinum) are abundant at the woodland margins. Woodland herbs are restricted to Broad Buckler-fern (Dryopteris dilatata), Male-fern (D. filix-mas), Hart’s Tongue (Phyllitis scolopendrium) and Wood Avens (Geum urbanum) with a single plant of Common Polypody (Polypodium vulgare). The 2011 ecological survey (Baker Shepherd Gillespie, February 2011) reported the presence of Bluebell (Hyacinthoides non-scripta),...Tufted Hair-grass (Deschampsia cespitosa) is locally frequent and Wavy Hair-grass (Deschampsia flexuosa) is very locally frequent.

Both standing and fallen dead wood is present but there is no evidence that the woodland has received any management in recent years.

The woodlands has affinities with the W10 Quercus robur – Pteridium aquilinum – Rubus fruticosus NVC community.”

Objective

To promote the long-term sustainability of the woodland habitat and its function as green infrastructure through ecological diversity enhancement, protection and conservation.

Management

Undertake visual inspection of trees, particularly trees located in high priority areas such as adjoining highways and footpaths for general defects and associated high priority health and safety issues.

Undertake all identified works resulting from this inspection so as to alleviate or abate potential health and safety issues and also undertake selective thinning & planting works in line with good woodland management practices.

Selective thinning will be used to favour the development of healthy, wind-firm trees and permit the growth of a more diverse ground flora.

Rhododendron shrubs will be removed compartment by compartment.

Retain all tree debris (not Rhododendron) on site, habitat stack log piles and recycle mulch into woodland.

Species-rich Grassland

Habitat

The margin on each side of the water course will be seeded to species-rich grassland (wetland mix) such as the 'EG8 Meadow Grass Mixture for Wet Soils' supplied by Emorsgate (<https://wildseed.co.uk/mixtures/view/41/meadow-grass-mixture-for-wet-soils>).

This mix contains grass species of Common Bent (*Agrostis capillaris*), Meadow Foxtail (*Alopecurus pratensis*) and Sweet Vernal-grass (*Anthoxanthum odoratum*) including larval plants for a variety of common butterfly and moth species.

Objective

Conserve the species diversity of the grassland by preventing the area succeeding to scrub vegetation, and provide a diverse dense, tussocky sward favourable for use by foraging and sheltering invertebrates and their predators (such as bird and bat species).

The grassland will be monitored annually in June/July and the spread of scrub vegetation, any invasive plant species, and the condition of the grassland generally should be noted.

Management

First Year

Seeded areas will require cutting in the first year to a height of 100mm to encourage grasses to produce shoots and to control annual weeds.

Second Year

Second year: Cut and clear early October, removing any arisings from site (to keep nutrient levels of area low).

Third year onwards

Third year onwards: Cut and clear twice a year, late May and late September or mid July and late September, removing all arisings from site.

A flail mower / strimmer or other machine with adjustable cut height must be utilised. Grass cutting must be undertaken in a progressive manner, working from one side of the area to the other, or from the centre of the grassland out to the perimeters to allow fauna to escape.

Grass cutting will be timed to allow the various grass species to flower and to avoid sensitive periods for fauna such as amphibians and invertebrates. The late cutting date must allow for seed to be dropped and should therefore be timed during a period with suitable ground conditions in late summer / early autumn.

No fertilisers will be used in the grassland. In the event that invasive plant species or harmful species are identified, the treatment plan will be prepared with spot treatment of herbicide, as appropriate, by hand will be the preferred method.

Control of Scrub Encroachment

The cutting regime should be appropriate to control encroachment by self-seeded shrubs and Bramble (*Rubus fruticosus* agg.). Cutting will be carried out every two years with the use of a brush cutter/chainsaw as required. All arisings will be removed.

Marginal Planting at Area of Open Water

Habitat

Marginal planting around areas of permanent water to comprise Marsh Marigold (*Caltha palustris*), Yellow Iris (*Iris pseudacorus*), Water Mint (*Mentha aquatica*) and Branched Bur-reed (*Sparganium erectum*).

Objective

Maintain and conserve the original plant species and prevent the area succeeding to scrub vegetation.

Management

Annual monitoring and selective removal of self-seeded trees and shrubs, as needed.

Willows (for example) to be cut down to stump level and all arisings removed.

Permanent Pond Areas

Habitat

The areas of open water will provide opportunities for breeding amphibians and other wildlife such as waterfowl and invertebrates.

Objective

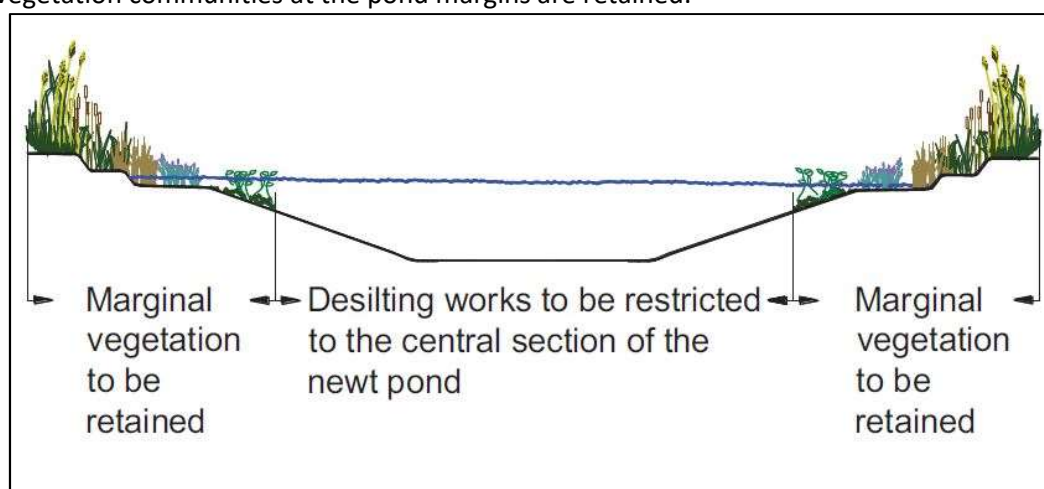
Maintain and conserve the original / intended volume, capacity and area of open water.

Management

Annual monitoring and recording of water depths and area.

Throughout the life of a pond an accumulation of plant matter and silt will gradually build up at the bed of the pond, reducing the overall pond depth. If monitoring suggests that water levels within the deepest area of the pond are likely to fall below 0.50 metre at any point during the amphibian breeding season (March to August), de-silting will be considered.

As presented at below, only the central section of the pond(s) will be dredged, and the important marginal vegetation communities at the pond margins are retained.



Insert: Pond de-silting diagram (The Environment Partnership, 2016)

Desilting will be undertaken by a long-armed excavator / appropriate plant, as needed. Entry and access to the pond will be limited to one point or section of bank and will take into account the presence of protected species around the pond margins. The top third to half of silt will be stored temporarily and replaced along the surface of the newly excavated pond to allow the invertebrate assemblage to repopulate the pond at a higher rate.

Where this operation may damage the adjacent grassland, a membrane will be used to protect the sward.

Desilting will be undertaken in the period November to January.

Native Tree and Shrub Planting

Habitat

Native buffer planting composed from Field Maple (*Acer campestre*), Alder (*Alnus glutinosa*), Silver Birch (*Betula pendula*), Hazel (*Corylus avellana*), Blackthorn (*Prunus spinosa*), Pedunculate Oak (*Quercus robur*), Goat Willow (*Salix caprea*), Crack Willow (*Salix fragilis*), Rowan (*Sorbus aucuparia*) and Guelder Rose (*Viburnum opulus*).

Objective

Promote the establishment of the new tree planting so that they mature into valuable specimens which will provide valuable wildlife habitats, increase species and structural habitat diversity, enhance habitat connectivity and continue to contribute to the visual amenity of the local area for many years to come.

Management

Inspect the trees and shrubs annually when they are in full leaf to ensure that they are thriving and record defects requiring remedial works.

The Contractor shall check stakes and ties at each grass cutting visit, and adjusted/replaced as necessary.

Maintain a 600mm diameter grass and weed-free area at the base of each tree by hand-weeding or careful use of glyphosate / herbicide approved for use near water.

If the trees show signs of poor growth or reduced vigour an application of the appropriate fertiliser will be carried out. If the trees do not respond to a treatment of fertiliser, further investigations will be carried out, including the ground conditions for signs of compaction, contamination and poor quality topsoil. Remediate any problems uncovered with the soil. Should the remediation works not resolve the problem a replacement tree may need to be planted.

During establishment trees will require regular watering particularly during prolonged dry period; mulch will also assist in retaining moisture within the soil. Ensure that sufficient water is applied to maintain healthy growth. It is expected that watering of standard trees will be necessary during the first 2 years of the plan period as a minimum.

Tree shelters and stakes will be inspected three times a year (Autumn, Winter and Spring) as part of the general maintenance visits and adjusted accordingly. Damaged ties or stakes will be replaced. When the trees are established and can support themselves the ties will be carefully removed and the stakes cut down to ground level. This operation is likely to be required after 3 to 5 years dependant on establishment rates, stability and growing conditions.

During years 1-5, any dead, dying, diseased or lost tree shall be replaced on a like-for-like basis (as per planning condition)

After year 5, any dead, dying, diseased or lost tree shall be replaced with a standard tree of the same species.

Pruning of young trees should not generally be required during the first 5 years unless they have dead or diseased branches or are impeding paths or fences. In such cases the branch will be pruned back (using a sharp clean knife) to an outward facing bud whilst maintaining the natural shape of the specimen.

All trees which have been removed or which are found to be dying, severely diseased or damaged will be replaced by trees of similar size and species to those originally planted. These should be replaced as soon as seasonal weather conditions allow.

Invasive Plant Species

Objective

To monitor the status of invasive plant species at the site, and to implement remedial actions if invasive plant species listed on Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended) are detected.

Monitoring

The presence and spread of invasive plant species should be monitored annually in April. A handheld GPS unit and/or map will be used to map the locations of any invasive plant species within the site, and the results kept electronically to inform further management decisions.

Weed Control and Use of Herbicides

Use of herbicides near the watercourse must be avoided.

If the detection of invasive plant species warrants the use of EA approved herbicides, the contractor shall comply in all respects with the current requirements of the *Control of Pesticides Regulations 1986, revised 1997*, drawn up under the *Food and Environment Protection Act 1985*.

The contractor shall determine appropriate concentration of active ingredients and rates of application in accordance with manufacturer's recommendations and the contractor's own experience. The contractor shall provide and make available for inspection containers for measuring quantities of herbicides. Spray equipment shall be fitted with a guard to prevent drift onto neighbouring plants, a pressure regulated device, and approved nozzles. Equipment shall be free of leaks and shall be cleaned thoroughly before and after use.

Every precaution shall be taken to avoid herbicide contact with desired species. Any plants or grass areas damaged during spraying operations shall be replaced.

Review of Plan

This Plan is a reviewable document which can be updated and revised as required. The Plan and the management regime will be informed by the on-going works at the site.

This Plan will be reviewed to ensure the objectives and prescriptions are in accordance with current wildlife legislation and conservation objectives.

Work Schedule

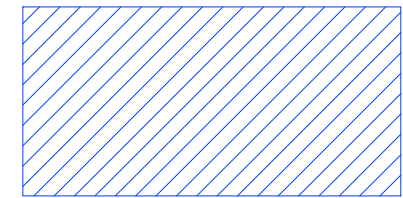
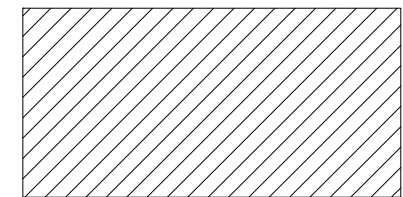
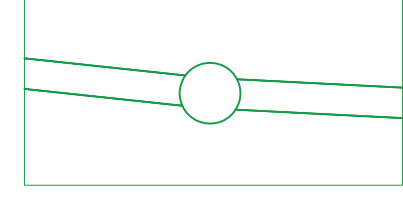
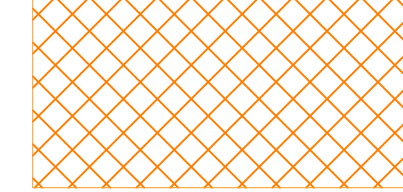
Barratt Homes and then The Management Company (TMC), to be appointed by Barratt Homes, will be responsible for all actions.

HABITAT AND PRESCRIPTION	MONTH												TOTAL	YEARS	RESPONSIBILITY	COMMENTS / NOTES / PREREQUISITES
	J	F	M	A	M	J	J	A	S	O	N	D				
Litter and Fly-tipped Waste Removal																
Litter and fly-tipped waste to be removed from site	1			1			1			1			4	1-5	TMC	Care taken to check debris for wildlife before discard.
Existing Woodland, Trees and Shrubs																
Annual inspection of trees and shrubs		1											1	1-5	TMC / appointed specialist	Arrange remedial actions, as needed.
Selective thinning										1			1	2, 4	TMC / appointed specialist	Avoid bird nesting season and main berry producing period. Arisings (not Rhododendron) to be stacked in habitat piles or chipped for mulch.
Compartmentalised control of Rhododendron										1			1	2, 4	TMC / appointed specialist/ ecologist	Area to be compartmentalised, as needed. Works to be guided by ecologist.
Wildflower Grassland																
Monitoring of condition						1							1	1-5	TMC / Ecologist	Arrange remedial actions, as needed
Remove litter prior to cutting / strimming									1				2	3-5	TMC	Litter to be removed and appropriately disposed of/recycled.
First and second year: Cut to a height of 100mm										1			1	1-2	TMC	Remove all arisings.
Third year onwards: Strim / flail to a height of 15cm (no lower) and remove all arisings						1			1				1	3-5	TMC	Remove all arisings.
Control noxious, broad-leaved weeds and invasive species													As required	1-5	TMC	Using appropriate methods. Herbicides must be approved for use near a watercourse.

HABITAT AND PRESCRIPTION	MONTH												TOTAL	YEARS	RESPONSIBILITY	COMMENTS / NOTES / PREREQUISITES
	J	F	M	A	M	J	J	A	S	O	N	D				
Control encroaching self-seeded shrubs and Bramble scrub									1				1	2, 4	TMC	Outside bird breeding season Brush cutter / chainsaws to be used. Removal of all arisings.
Marginal Planting at Open Water																
Monitoring of condition						1							1	1-5	TMC / Ecologist	Arrange remedial actions, as needed
Control encroaching self-seeded shrubs and Bramble scrub									1				1	2, 4	TMC	Outside bird breeding season Brush cutter / chainsaws to be used. Removal of all arisings.
Permanent Pond Areas																
Monitoring of condition						1							1	1-5	TMC / Ecologist	Arrange remedial actions, as needed
De-silting operations												1	1	2, 4	TMC	November to January only to avoid amphibian breeding season. Care to be taken to account for presence of other protected species in the working area.
Native Tree and Shrub Planting																
Annual inspection to check trees are in full leaf					1								1	1-5	TMC / Arborist	Record defects requiring remedial works.
Treatment of pests and diseases and/or removal of diseased trees													1	1-5	TMC	As required and advised by arborist. All felling to be carried out in accordance with BS3998. Felling outside bird breeding season.
Replacement tree/shrub planting											1		1	-	TMC	As required
Weed control and tidying			1	1	1	1	1	1	1	1			8	1-5	TMC	At least 8 operations - using manual removal and if necessary, non-residual herbicides approved for use near water.
Application of slow release fertiliser				1									1	1-5	TMC	Once in late spring
Watering							1	1	1				3	-	TMC	Watering to be carried out if there has been a period of dry weather for 2 weeks or more between June and September.

HABITAT AND PRESCRIPTION	MONTH												TOTAL	YEARS	RESPONSIBILITY	COMMENTS / NOTES / PREREQUISITES
	J	F	M	A	M	J	J	A	S	O	N	D				
If required, the young trees may also receive some formative pruning to remove dead, diseased and crossing branches.										1			1	1-5	TMC	As required. Appropriate time for each species, but avoiding bird breeding season
Tree shelter, rabbit guard and stake inspection				1			1			1			3	1-5	TMC	Repair and adjustment, as needed.
Invasive Plant Species																
Monitoring for presence and record, if present.						1							1	1-5	TMC / Ecologist	Arrange remedial actions, as needed
Review of Plan																
Plan to be reviewed and updated / revised as required.												1	1	5	TMC / Ecologist	-

Buyers are warned that this is a working drawing and is not intended to be treated as a definitive material. It is subject to any particular property or development, any of the specified matters mentioned in any other rules under the above act. The contents of this drawing may be subject to change at any time, and alterations and variations can occur during the progress of the works without notice of the drawing. Consequently the layout, form, content and dimensions of the finished construction may differ materially from those shown. Nor do the contents of this drawing constitute a contract, part of any contract or warranty.

-  Sitewide Management
-  Service Verge
-  Diverted water culvert to be included within MANCO
-  Easement

C	Amended management to show diverted culvert & update easements	Jan 2021	GP
S	Amended management Plan Due To Engineers Comments	July 2020	GB
A	Added "Permanent pool"	Nov 2020	GB

Rev	Description	Date	Drawn	Check'd
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**BARRATT
HOMES**
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Job: Tetrosyl, Walkers Wood

Title:
Management Plan

Design By	Date	Drawing Number	Rev
PJA	Jan 2020	456/PMP01	C
Drawn By	Scale 1:100		
GB	1:100		

Scale Bar

