



**Canal &
River Trust**

Making life better by water

Landscape Management Plan

Trevor Boat Base

21.02.2023

Issue for Planning

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Management Plan Aims and Objectives

Introduction

This report in relation to the landscaping works relating to Trevor Boat Base.

The landscape management and maintenance proposals contained within this report cover all proposed landscape works as identified within the following drawings:

- 1938 110 GA PROPOSED SITE PLAN
- 1938 118 GA PROPOSED LANDSCAPE PLAN
- 1938 119 SOFT LANDSCAPE PLANTING PLAN
- 1938 117 GA HARD SURFACE PLAN

The above drawings provide further details of the landscape proposals for the proposed scheme.

Management Plan Aims and Objectives

This report gives guidance on the longer-term maintenance and management measures required to keep the proposed public realm and landscape works for Trevor Basin Boat yard in good order to ensure that all landscape elements establish and mature successfully. The key objectives for maintenance and management include:

- To ensure an efficient and sustainable landscape management and maintenance regime and tasks to enable successful establishment and ensure the continued maturing of the planting elements.
- To provide high quality and safe external environment for all users
- To ensure the landscape matures in an appropriate manner to the original design intent.
- To ensure the successful establishment and continued growth of the trees and planting within the landscape proposal.
- To maximise the nature conservation value of all planting.

Vegetation Types and Design Objectives

General

A number of separate vegetation types are proposed for the site. These are:

- Specimen Tree planting
- Shrubs & Woodland understory planting
- Species-rich Neutral Grassland
- Hedgerow

The above will require varying management in order to successfully achieve the design objectives.

Design Objectives

The overall objective is to successfully integrate the development into the site by providing a series of planted areas that increase the sites biodiversity and complement the existing site vegetation.

New planting, specifically to the canal-side of the development should be maintained at low level to provide natural surveillance. Maintaining open views through and along the canal will ensure a good quality environment for all users.

Management Principles

Individual Trees:

The landscape management principles for proposed individual and structure tree planting are as follows:

- To ensure satisfactory establishment and continuing health
- To maintain the plants in a healthy condition and develop the sites tree structure.
- To ensure the successful establishment and continuity of the overall design concept
- To maximise conservation and wildlife value

The management of existing trees: An annual inspection should determine any general work that may need to be undertaken, such as pruning or removal of dead wood. Tree works should follow best practice procedures as set out in BS 3998:2010 Tree works - Recommendations.

Shrubs & Understory Woodland Planting:

The landscape management principles for proposed ornamental planting are as follows:

- To ensure satisfactory establishment and continuing health
- To maintain plants in a healthy and attractive condition
- To ensure the successful establishment and continuity of the overall design concept.
- To establish a diverse and varied environment
- To establish a mechanism for the replacement of any failing plant or one which has reached maturity.

Species-rich Neutral Grassland:

The landscape management principles for wildflower meadow areas are as follows:

- To ensure the successful establishment of the sward
- To maintain a healthy and attractive sward that is fit for purpose and anticipated use.
- To prevent the spread of woody vegetation from structure planting areas
- To control undesirable herbaceous species
- To maintain the integrity of the grass mix specified and remove any non-native self-seeded material.

Hedgerow:

The landscape management principles for proposed hedgerow planting are as follows:

- To reflect established hedgerow species found within the local area and designed as mixed hedgerows to encourage biodiversity.
- To ensure the successful establishment and continuity of the overall design concept.
- To protect vegetation from damage through use of suitable rabbit guard fencing, or shelters.

Hard works:

The proposed new surface materials will predominantly consist of in-situ concrete, gravel / Cellweb/Golpla and gravel. The management principles for hard works areas are as follows:

- To ensure regular inspections of all hard surfaced areas

- To ensure surfaces are maintained as they were originally constructed.
- To ensure satisfactory procedures for cleaning

General Management Operations

The scheme has been designed to reduce the long-term maintenance and management requirements as much as reasonably possible. The general maintenance measures outlined below represent current best practice. The works should be left in a clean, tidy condition at completion and after any maintenance operations.

Control of Litter/Vandalism

Removal of litter and debris, taking care not to damage plants when removing litter and not using a vacuum system for removal.

Mulch

Occasional top up of mulch if required to remove visible topsoil and reduce weed growth (typical depth 50mm).

Weeding

In the interests of wildlife, hand weeding (including mechanical methods) should take precedence and herbicides should not be used unless essential to ensure the complete removal of noxious weeds or other very significant weed growth. Herbicide application is only to be carried out by a suitably trained person, in periods of low winds, and with careful directional application to ensure no spray/drift onto tree/shrub species. Only suitable herbicide products under current regulations will be used. All precautions recommended by the manufacturer must be observed and containers removed from site immediately after they have been emptied or are no longer required. Weed and plant control will be required for injurious weeds such as Broad-leafed dock, Curled dock, Common ragwort, Creeping thistle and Spear thistle and invasive plant species such as Himalayan Balsam, Giant hogweed and Japanese knotweed.

Pest and Disease Control - The Use of Chemicals

All plant material shall be inspected for the presence of any pests or disease occurring on the site and appropriate action shall be taken to remedy the disease and eradicate pests. All materials used in connection with these works shall be of an approved type and be applied and used in accordance with the conditions for the use of herbicides.

****Within a 5m offset from the edge of the canal bank, weeds and undesirable species should be pulled, or dug out by hand in the canal-side planting areas. This is to reduce the risk of pesticide/herbicide leaching entering the watercourse and affecting desirable species.**

Watering

It is only anticipated that watering to ensure continuing thriving of all planting in the first two years from planting. After this, unless there is an exceptionally dry, hot period, it is assumed that this will not be required. At each visit, maintenance operatives would be expected to assess the health and vigour of the plants to ensure no plants appear to be suffering through lack of water.

Cleaning Generally: (the following notes are for guidance only)

Chemical cleaning of concrete surfaces to remove stains including: Graffiti/ grease/ fats/ nicotine/ inks/ dyes/ waxes & carbon to be done with a proprietary cleaning product.

All cleaning work using proprietary products to be carried out to manufacturers recommendations.

Street Furniture

Stainless Steel/Galvanised or Powder Coated finishes, Balustrades, handrails etc.

The steel should be washed down with proprietary cleaner and washed down with clean water, This should be done annually to retain the finish and prevent the build-up of corrosive salts.

Remember that most surface corrosion on stainless steel is due to contamination from site operations.

SPECIFIC CLEANING TASKS:

- **Dirt and Detritus**

To remove general dirt and detritus regular brushing is recommended. If detritus reduces the intensity of the colour of the material, then this can be re-established by scrubbing with a mild detergent e.g. washing up liquid, and hot water. Ensure all the detergent has been thoroughly washed from the surface on completion of the cleaning and the resulting run-off is carefully channelled to either drainage points or containers where it can be safely disposed of.

- **Moss, lichens, and algae**

Moss, lichen, and algae can be prevalent on hard surfacing where the area is heavily shaded, under trees or is not laid to an adequate fall. If such growths do occur and are considered undesirable, then the area should be treated with a proprietary weed or moss killer used in accordance with the manufacturers' instructions. Such products take some days to be effective and are most effective when applied during a spell of dry weather. The washes work best if any thick growths are scraped off first and the wash is well brushed in. Some treatments leave a residue to discourage the re-growth of the moss and algae, but this will only be of limited value if the surrounding conditions leave the paving damp and in shade.

- Oil Stains

Oil can penetrate readily into hard surfacing materials, but it should not stain if any spillages are removed promptly with an absorbent material e.g., paper towels, cloth or absorbing granules. Do not attempt to wipe the stain as this will drive the oil into the surface and spread it over a wider area.

If the stain persists, then an emulsifying degreaser should be employed. Brush the cleaner onto the affected area, leave for a period of time according to the manufacturer's instructions and then wash the emulsified oil away with plenty of clean water.

Alternatively, the surface can be scrubbed with a detergent and hot water taking care to ensure that the strength of the detergent is not detrimental to the appearance of the paving. However, for persistent oil staining, steam cleaning may have to be considered.

- Bitumen Stains

Fresh bitumen should be allowed to cool down before removing it with a paint scraper or similar. If it is particularly resistant, the use of ice to make the bitumen brittle may be required prior to scraping it from the paving. Any residue should be removed with an abrasive powder and finally the whole area rinsed with clean water. Certain proprietary cleaning agents are available to remove bitumen, but these should be tested on an inconspicuous area of paving first.

- Graffiti & Paint Stains

Both paint and graffiti are difficult to remove from most hard surfacing materials. Fresh wet paint should be soaked up with an absorbent material without wiping the paint, as this will spread the stain. It should then be treated with a suitable solvent such as white spirit and then the area washed with a de-greasing agent taking care in the disposal of the run-off material.

Dried paint should be scraped off as far as possible and then an appropriate paint remover applied. Paint manufacturers may often be able to give more detailed advice on the removal of paint and graffiti. Therefore, they should be consulted directly for specific recommendations.

- Epoxy & Polyester Stains

Areas of solidified epoxy or polyester resin can be removed by carefully burning off the area with a blowtorch. Care must be taken not to inhale any fumes given off. If, after burning, a black stain remains, this can be removed by scrubbing with detergent and hot water. For larger areas grit blasting may have to be considered, however the effect of such treatment on the micro texture of the surface should be carefully considered. Again, it is advised that a small area be tested before any large-scale operations are undertaken.

Management to Planting Areas

The establishment and future success of the planting is largely dependent on the standard and frequency of the maintenance and management it receives. A successful maintenance plan comprises two components; establishment for the first 5 years, followed by on-going maintenance. Following the establishment period, it is recommended to continue the relevant operations outlined below.

Trees

- Maintenance of a weed free area around the base of each tree
- Formatively prune if necessary to achieve natural shape and healthy growth.
- Remove any vandalised, unhealthy or dead specimens as soon as possible and replacement with trees of the same size to those adjacent, during the next available planting season.
- Inspection, adjustment and maintenance of anchors and ties.
- Removal of any items that have been attached to trees.
- Re-firming of trees after strong winds, frost heave or other disturbances.
- Pruning to remove dead, dying or diseased wood.

Maintenance Operation	Freq.	Season	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Weed control and removal	4x annually	As required	•	•	•	✓	•	✓	•	✓	•	✓	•	•
Pruning operations and trimming of ornamental shrub species	Annually	Spring	•	•	✓	•	•	•	•	•	•	•	•	•
Replace damaged, vandalised or unhealthy stock	Annually	Autumn /Winter	✓	✓	✓	•	•	•	•	•	•	•	•	•
Water during prolonged dry spells and as necessary to ensure establishment		Summer Autumn-Spring	•	•	•	✓	✓	✓	✓	✓	✓	•	•	•
Top up mulch	Annually	Spring	•	•	✓	•	•	•	•	•	•	•	•	•

Shrubs

- Prune to encourage healthy and bushy growth and desirable ornamental features, e.g. flowers, fruit, autumn colour, stem colour.
- Remove suckers by cutting back level with the source stem or root.
- Remove weak, dead, and diseased branches.

Maintenance Operation	Freq.	Season	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Weed control and removal	4x annually	As required	*	*	*	✓	*	✓	*	✓	*	✓	*	*
Pruning operations and trimming of ornamental shrub species	Annually	Spring	*	*	✓	*	*	*	*	*	*	*	*	*
Replace damaged, vandalised or unhealthy stock	Annually	Autumn /Winter	✓	✓	✓	*	*	*	*	*	*	*	*	*
Water during prolonged dry spells and as necessary to ensure establishment		Summer Autumn-Spring	*	*	*	✓	✓	✓	✓	✓	✓	*	*	*
Top up mulch	Annually	Spring	*	*	✓	*	*	*	*	*	*	*	*	*

Species-rich Neutral Grassland:

First Year Management

- Most of the sown meadow species are perennial and are slow to establish.
- Soon after sowing there will be a flush of annual weeds, arising from the soil seed bank. These weeds can look unsightly, but they will offer shelter to the sown seedlings
- Cut, remove, and compost. Early August. This will reveal the young meadow, which can then be kept short by grazing or mowing through to the end of March of the following year.
- Dig out any residual perennial weeds such as docks.

Management Once Established

- In the second and subsequent years - best results are usually obtained by traditional meadow management
- August hay cut in combination with autumn and possibly spring mowing or grazing.
- After flowering in August take a 'hay cut': cut back with a scythe, petrol strimmer or tractor mower to c 50mm. Leave the 'hay' to dry and shed seed for 1-7 days then remove from site.
- Mow through to late autumn/winter to c 50mm and again in spring if needed.

Maintenance Operation	Freq.	Season	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mow area to maintain to a height between 40-50cm in height	4x annually	Summer Autumn-Spring	.	.	.	.	.	.	✓	✓	✓	✓	.	.
Remove any non-native, self-seeded material	All year	As required	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Water during prolonged dry spells and as necessary to ensure establishment		Summer Autumn-Spring	.	.	.	✓	✓	✓	✓	✓	✓	.	.	.

Hedgerow:

- Following hedgerow establishment (between year 5 and 10) hedgerows should be cut on a three-year rotational basis with only one third of the hedgerows being cut in any one year unless monitoring identifies excessive growth and the requirement for a more frequent regime.
- Ideally hedgerows should be allowed to develop into tall, thick hedgerows for nature conservation value. Trimming of hedgerows should be done on a three-year rotational basis with only one third of the hedgerows being cut in any one year to a height of 1.5m, unless monitoring identifies excessive growth and the requirement for a more frequent regime.
- Standard trees within the hedgerow will be left uncut and managed in a similar way to other standard trees within the site.
- Following pruning operations all significant arisings, such as large branches should be removed from the site or alternatively, and occasionally, they can be piled in small, designated areas to encourage the creation of hibernacula habitat.

Management to Hard Works Areas

- Hard surfacing (self-binding gravel) needs to be maintained to ensure it is in a good condition providing safe routes for all.

- It is important that hard surfaces are regularly inspected so that defects can be identified and rectified. Effort is required to ensure surfaces are maintained as they were originally constructed. Details below describe how paved areas should be maintained.

Common defects

- Paved areas deteriorate in a variety of ways, depending upon the type of construction and cause of distress. When deterioration presents a safety hazard then maintenance becomes essential. Timely maintenance, in some instances can prevent deterioration progressing to a state where reconstruction is required.

Broken or damaged elements

- Apart from being unsightly, cracking and spalling can become a hazard if it creates a trip. Spalling occurs during transport and laying but can less commonly be a fault in the material. It can result during manufacture, impact loading, abrasion, and weathering. Inappropriate size or depth of element results in fracture under loading.

Treatment options

- Maintenance treatment will depend on the type of defect and what has caused the deterioration. For some surfacing's, topping up of material may be all that is required, but poor surface profile may require a site investigation to provide information on the condition surface. Suitable strategies can then be formulated based upon informed engineering judgment.

Lifting and relaying

- Relaying elements of flexible construction should be carried out in the same way as new construction. Additional guidance for flags is given in BS 6677. Removing a damaged single element prior to relaying can be difficult, particularly if it is small element, as breaking it out may disturb adjacent modules. It may be necessary to consider relaying all elements, which abut the damaged area, or to relay a full line of elements back to an edge restraint. If the surface has poor profile, elements will need to be lifted over the whole of the affected area. In all cases a complete renewal of the bedding material should always take place. An experienced paver is required to execute a good reinstatement.

Maintenance Operation	Year (s)	Season	Frequency (per year)
Cast In-Situ Concrete a) Maintenance during defects liability period or 5 years after planting whichever is the greater. Operations to include: - Paths to be swept removing any leaves & detritus - Regularly inspect all hard-surfaced areas. - If small amounts of weeds become established treat with weed killer annually. - Undertake remedial works, as necessary.	1 – 5 1 – 5 1 – 5 1 – 5	As required. As required. As required. As required	As required. As required. As required. As required
Gravel Golpla Paving a) Maintenance during defects liability period or 5 years <u>after completion</u> , whichever is the greater. Operations to include: - Paths to be swept removing any leaves & detritus. - If small amounts of weeds become established treat with weed killer annually.	1 – 5 1 – 5	As required. As required.	As required. As required.

