



# elliswilliams

Hough End Sports Village  
Landscape Management Plan  
& Maintenance Regime

Document Details

|                           |                                                |
|---------------------------|------------------------------------------------|
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## 1.0 Introduction

### General

- 1.1 Ellis Williams, on behalf MCC and ISG, have prepared this report in relation to proposed landscape works at Hough End Sports Village. The landscape management and maintenance proposals contained within this report cover all existing and proposed plantings on land relating to the proposed development and as identified within the planning red line boundary.
- 1.2 The following report has been prepared to assist in the planning application and provide clarity of information for costing and resource management.
- 1.3 This management plan will form the basis of an agreement/ contract with a site management company outlining their scope of works, frequency of visits and level of intervention throughout the year. Whilst this document outlines the number of required visits it should be seen as a working document that evolves and is reviewed at 5 yearly intervals to ensure the success of the woodland management on a long term basis.
- 1.4 This 5 yearly review should form the basis of an on going dialogue with the city council, assessing the previous 5 years management and updating this report for the subsequent 5 years where required. A formal issue of which should be sent through to the local authority and discussed with the relevant landscape and tree officers. It is via this method that any change in management would be communicated through to the local planning authority.
- 1.5 Existing Site

The site sits within a larger amenity green space known as Hough End Fields and is home to playing fields (football, Rugby and Gaelic football), mixed woodland, a small brook and stands of mature tree planting. The space provides sporting facilities for the surrounding community and is well used. The majority of the existing vegetation is concentrated to the northern and eastern boundaries of the site, comprising largely mature stands of oak, sycamore and birch with the occasional pine. Plantations of Hazel and Oak lie along the Princess Road edge and along the edge of the brook.
- 1.6 Tree Retention Strategy

The proposals have been developed to maintain as much existing vegetation as possible.
- 1.7 Drawings

The plans to which these management proposals relate are:  
HEV-EWA-02-XX-DR-L-49401 - Block Plan Site Masterplan  
HEV-EWA-03-XX-DR-L-49402 - Pitches Site Layout Masterplan  
HEV-EWA-02-XX-DR-L-79008 - Softworks Proposals  
HEV-EWA-02-XX-DR-L-79007 - Hardworks Proposals  
HEV-EWA-02-XX-DR-L-49021 - Tree Retention & Removal  
HEV-EWA-02-XX-DR-L-79009 - Possible Additional Planting (air quality) Plan
- 1.8 Proposed Management Team

It is anticipated that the landscape softworks contractor will be responsible for the maintenance of all planted and grassed areas during the implementation process and for a defects period of 24 months post practical completion. During the 12 months defects liability period the softworks contractor will give any required briefing to the future long-term maintenance contractor to ensure a continuation in maintenance

## 1.0 Introduction (cont'd)

quality and horticultural practices to enable a flawless transition and long-term health and vigour.

### Overall Objectives

- 1.9 To prescribe all necessary management and maintenance principles and management tasks to enable successful establishment and ensure the continued maturing of all landscape elements.
- 1.10 To ensure the continuing health of existing vegetation.
- 1.11 To ensure the successful integration of existing and proposed vegetation.
- 1.12 To maximise the nature conservation value of all plantings.
- 1.13 To ensure that the management and maintenance regime is appropriate to the site.
- 1.14 To provide a mechanism for the ongoing monitoring and reviewing of the management plan and the specific maintenance operations contained therein.
- 1.15 To ensure that maintenance tasks are sensitive to the annual cycle of activity of birds, bats and other fauna present on the site.

## 2.0 Vegetation Types & Design Objectives

### General

- 2.1 A number of separate, yet inter related, vegetation types exist and are proposed for the site. These are:
- Existing retained trees
  - Existing scrub (semi native)
  - Proposed tree planting
  - Proposed shrub planting
  - Proposed whip planting
  - Proposed wildflower grassland
  - Proposed amenity grass
  - Proposed wetland corridor/ swale containing marginal and aquatic planting
- 2.2 The above will require varying management in order to successfully achieve the design objectives. These are detailed in Section 3.

### Overall Objectives

- 2.3 The overall objective is to provide a safe, active and ecologically beneficial resource for the site, whilst maintaining its amenity function. Key to the long term success will be the management of the existing and proposed landscape elements. Ensuring proposed tree planting is fully integrated with the current woodland belts. The tree planting introductions will provide structure and bio diversity allowing enhanced ecological development within the site. The increased areas of sustainable vegetation cover and improvement in species numbers and diversity will substantially increase the sites environmental and ecological value.
- 2.4 This will be achieved through a number of ways:
- Planting new trees including a high percentage of native species to contribute towards increased bio-diversity and a range of ornamental species to demonstrate variety in form texture, colour and season adjacent to the road edge and arrival points.
  - Ensuring that new trees reinforce potential bat foraging routes and bird feeding/nesting areas.
  - Providing significant areas of native / wildlife planting to provide habitat and ecology areas for increased bio-diversity value.
  - Providing areas of wildflower grassland beneath existing tree planting to encourage wild species and provide additional foraging opportunities for bats and birds
  - Ensuring that the vegetation proposed is appropriate to the site and anticipated use.

### Tree Planting Strategy

- 2.5 Trees will generally be planted as semi mature specimens with protective guarding where necessary to ensure their long-term survival. Semi mature trees will be underground guyed with a perforated irrigation pipe to maximize the availability of water to the roots, extra heavy standards will be double or single staked where appropriate. For trees in soft areas a generous tree pit will be dug and backfilled with approved topsoil and compost as specified.

### Shrub Planting

- 2.6 Shrub planting will mostly be under and around trees and predominantly evergreen species selected for their robustness and ease of maintenance. Large single blocks of grasses, shrubs and hedging will be planted in formal arrangements to provide bold and robust structural forms in the landscape that are easy to maintain.

## 2.0 Vegetation Types & Design Objectives (cont'd)

It is anticipated that a plant species mix will be refined and added to as part of the design process. However, any proposed planting schedule will indicate all new species including native and ornamental varieties, with further diversity provided by wildflower and new amenity grassland seeding.

### 3.0 Landscape Management Plan

#### Management Plan Brief

3.1 The brief below described the framework:

- The management plan will cover a time period of 25 years
- The Management Plan must give consideration to environmentally sensitive design and management
- The conservation of existing resources will be a prime consideration
- The Management Plan will seek to provide a net increase in the nature conservation value of the site

#### Monitoring

3.2 The Management Plan's life span is for 15yrs, at 5 yearly intervals the works will be reviewed by a suitably qualified person, with a report produced detailing the success or otherwise of the preceding 5 years and advising the proposed works over the next 5 years. It is intended that the proposals within this report act as framework within which our client can respond to site developments and at the same time keep the local authority informed in an agreed manner.

3.3 Monitoring is of fundamental importance, since this is the means by which the success of the plan will be measured. It is therefore important to establish standardised survey and monitoring methods, which enable valid year on year comparisons to be made. There will be a need for flexibility during its implementation. The anagement Plan must be an evolving one, able to adapt to the specific needs of the landscape and nature conservation as these change.

3.4 At the outset of the plan a suitable maintenance team should be appointed to monitor and provide guidance on ongoing management and maintenance issues. This consultant should undertake an annual review of the site, providing written documentation as to the development of the scheme. This report should include a condition review of all new and existing plant material, success rates of newly planted material, a survey of flora and fauna, recommendations for future management regimes and immediate management requirements.

3.5 Whilst regular maintenance works will be undertaken throughout the year by the site team mechanisms for undertaking additional 'non-regular' work will also be put in place. This will be managed by the site management team allowing any specialist contractors access to the site to undertake additional works. An example of this may be some specific tree surgery works at height. In this eventuality the management team would identify the works required, arrange access for the specialist to attend site, survey the works and at an agreed time return to site to carry out the works. If necessary a secure working perimeter will be initiated for the duration of the works to ensure there is no unsupervised conflicts with site users.

#### Landscape Management Principles

3.6 Existing retained trees: The landscape management principles for all retained trees are as follows:

- Maximise the health and longevity of all retained existing vegetation.
- Introduce a programme of re-planting to replace any tree that fails over the next 15 years.
- To ensure the appropriate and adequate protection of all retained trees from the proposed works and any future development.
- Dead wood to be left on trees where they do not overhang footpaths, roads or parking areas or the arboricultural consultant advises it could create health & safety issues or be of detriment to the tree.
- To ensure the safety of the all retained vegetation and the implementation of any required arboricultural works found necessary.

### 3.0 Landscape Management Plan (cont'd)

- 3.7 Existing retained scrub / understorey planting, along Princess Road, south of the new entrance: The landscape management principles for all retained scrub are as follows:
- Maximise the health and longevity of all retained existing vegetation.
  - Introduce a programme of management and re-planting
  - To ensure the appropriate and adequate protection of all retained scrub from the proposed works and any future development.
  - To ensure the safety of the all retained vegetation.
- 3.8 Proposed tree planting: 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 site tree structure.
  - To ensure the successful establishment and continuity of the overall design concept.
  - To establish a valued and appropriate educational resource.
  - To maximise conservation and wildlife value.
- 3.9 Shrub planting: The landscape management principles for proposed ornamental and herbaceous 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 mechanism for the replacement of any failing plant or one which has reached maturity to avoid bare spots which could become litter traps
- 3.10 Whip planting: The landscape management principles for all proposed shrub planting are as follows:
- To ensure satisfactory establishment and continuing health.
  - To maintain plants in a healthy and attractive condition.
  - To develop habitat zones, wildlife corridors and maximise nature conservation.
  - To ensure the successful establishment and continuity of the overall design concept.
  - To maintain the integrity of the species mix specified and remove any un-appropriate self seeded material
- 3.11 Wildflower understorey seeding: The landscape management principles for wildflower grasslands are as follows:
- To develop species and habitat diversity and maximise nature conservation.
  - To maintain a healthy and attractive sward.
  - To prevent the spread of woody vegetation from structure planting and ornamental shrub areas.
  - To control undesirable herbaceous species
  - To maintain the integrity of the species mix specified and remove any self seeded material
- 3.12 Amenity grass: The landscape management principles for amenity grass 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 and ornamental shrub areas

### 3.0 Landscape Management Plan (cont'd)

- To control undesirable herbaceous species
- To maintain the integrity of the grass mix specified and remove any non-native self seeded material

#### 3.13 Wetland corridor/swale system including marginal and aquatic planting:

- To develop the existing concept of a wetland corridor running North to South through the centre of the site. This corridor will act as a sustainable drainage system aiming to assist integration of the drainage scheme into the landscape scheme (ecologically and aesthetically), whilst creating a new habitat and additional ecological resource through their planting. The banks and margins of the wetland system / corridor shall be seeded with a marginal species mix with additional.
- To ensure the successful establishment of the sward/ plug plants
- 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 and ornamental shrub areas
- To control undesirable herbaceous species
- To maintain the integrity of the mix specified and remove any non-native self seeded material

#### 3.14

Species compensation and enhancement. The landscape management principles for species compensation and enhancement are:

- General - A schedule for bat and bird boxes will be agreed with MCC prior to the onset of development, final locations to be agreed on site. The landscape scheme will aim to create gradients of habitats that will encourage a diverse range of invertebrates, bird species and bats. For example, understorey habitat will be encouraged below canopy level and buffers will be created along new hedgerows, with native climbers. Bat boxes Boxes to be installed at least 3m above ground level (5m if practical) and should be orientated north, southeast and southwest.
- Brash piles - brash, log or grass arising resulting from vegetation management or removal could be utilised to create habitat piles, providing potential habitat and over-wintering sites for invertebrates, amphibians, reptiles and small mammals. Hibernacula should be approximately 1m<sup>3</sup> in size and preferably located within a relatively undisturbed location of the site.

4.0 Landscape Maintenance Tasks

Maintenance Tasks and the use of chemicals

- 4.1 Chemicals generally should be restricted in use. All chemicals, herbicides, pesticides and fertilisers, should be approved by English Nature and should be used, stored and disposed of in accordance with EN guidelines and COSHH Regulations 1988.

Maintenance Operations

- 4.2 Set out in the following tables are the maintenance operations that should be carried out over the next 15 years in order to achieve the design objectives. They have been set out in a format that can be easily followed by all parties, ensuring that the Management Plan exists and a working document and not an archived report. The management prescriptions are flexible such that each section can be changed and updated on an annual basis, allowing targets to be set, progress monitored and accurate reporting made.

| Maintenance Group Number | Prescription                                                                                                                                                                                                                                                                                                                                                                                                                                  | Year (s)                               | Season    | Frequency (per year)                           |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|-----------|------------------------------------------------|
| 1                        | EXISTING TREES<br>Removal of any dead, dying or dangerous trees/limbs. All works are to be carried out in accordance with relevant British Standards and Arboricultural Best Practice. Where ever possible any felled timber should be stacked in situ to provide additional habitat creation. Any trees that are identified for felling due to their condition should be reviewed by an ecologist prior to felling for potential bat roosts. | 1 - 15                                 | Nov-March | Annual inspection and following severe weather |
|                          | Removal of any dead, dying or dangerous trees/limbs. All works are to be carried out in accordance with relevant British Standards and Arboricultural Best Practice.                                                                                                                                                                                                                                                                          | 1 - 15                                 | Nov-March | Annual inspection and following severe weather |
|                          | Control pests and diseases as necessary and remove any non-native self-seeded material.                                                                                                                                                                                                                                                                                                                                                       | 1 - 15                                 | Autumn    | As required                                    |
|                          | Implement a thinning regime as required ensuring the continued health and growth of the existing plant material. Extent of thinning to be determined at the time. Selectively coppice shrub species where required.                                                                                                                                                                                                                           | TBA                                    | Autumn    | 5 yearly intervals                             |
|                          | Continue thinning regime. Extent to be determined at the time. The protective fence line to retained trees / woodland should only be removed upon completion of works involving machinery. If non-regular works need to take place these will be arranged as required by the site management team.                                                                                                                                            | 3 - 5 yearly interval<br><br>as requ'd | Autumn    | 1                                              |

In the longer term, as the native planting matures, thinning of native species will become necessary, probably initially 5-10 years after planting. The amount of initial thinning and the timing of subsequent thinnings will be

#### 4.0 Landscape Maintenance Tasks (cont'd)

dependent on the extent of growth at the time and will need to be determined by the maintenance manager at the time.

| Maintenance Group Number | Prescription                                                                                                                                                                                                        | Year (s) | Season    | Frequency (per year)                           |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-----------|------------------------------------------------|
| 2                        | EXISTING SCRUB<br>Removal of any dead, dying plants. Wherever possible any woody stock removed should be stacked in situ to provide additional habitat creation.                                                    | 1 - 15   | Nov-March | Annual inspection and following severe weather |
|                          | Implement a thinning regime as required ensuring the continued health and growth of the existing plant material. Extent of thinning to be determined at the time. Selectively coppice shrub species where required. | 1 - 15   | Nov-March | As required                                    |
|                          | Continue thinning regime. Extent to be determined at the time.                                                                                                                                                      | 1 - 15   | Autumn    | As required                                    |
|                          | If non-regular works need to take place these will be arranged as required by the site management team.                                                                                                             | TBA      | As requ'd |                                                |

| Maintenance Group Number | Prescription                                                                                                                                                            | Year (s) | Season            | Frequency (per year)                 |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------------|--------------------------------------|
| 3                        | TREE PLANTING<br>Maintenance during defects liability period or 5 years after planting whichever is the greater. Operations to include:                                 |          |                   |                                      |
|                          | Maintain a 1m weed free ring around the base of each newly planted tree by hand weeding operations and appropriate herbicide application                                | 1 - 5    | As requ'd         | As required                          |
|                          | Check stakes and ties for looseness, breaks or decay and adjust, re-fix or replace defective items. Remove stakes and ties when trees are fully rooted and established. | 1 - 5    | As requ'd         | Each maintenance visit/<br>12 visits |
|                          | Application of granular fertiliser (15:15:15).                                                                                                                          | 1 - 5    | Spring            | 1                                    |
|                          | Water as necessary to ensure establishment and continuing health                                                                                                        | 1 - 5    | As requ'd         | As required                          |
|                          | Ensure trees remain firmly bedded after disturbance and re-firm as necessary                                                                                            | 1 - 5    | As requ'd         | As required                          |
|                          | Remove all dead, dying, damaged and crossed wood                                                                                                                        | 1 - 5    | Spring/<br>Autumn | As required                          |

#### 4.0 Landscape Maintenance Tasks (cont'd)

| Maintenance Group Number | Prescription                                                                                                                                                                                                                                          | Year (s) | Season                                                   | Frequency (per year) |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------------------------------------------------------|----------------------|
| 3                        | TREE PLANTING (Cont'd)                                                                                                                                                                                                                                |          |                                                          |                      |
|                          | Control all pests and diseases as necessary                                                                                                                                                                                                           | 1 - 5    | Autumn/<br>Winter<br>providing<br>condiitons<br>suitable | As required          |
|                          | Replace any dead or dying trees planted in year 1.                                                                                                                                                                                                    | 1 - 5    | As requ'd                                                | 1                    |
|                          | Replace any dead/ under performing trees planted. Where planting continually fails to establish, undertake investigations to ascertain any underlying cause.                                                                                          | 6 - 15   | Autumn                                                   | 1                    |
|                          | Carry out an annual inspection of all trees and carry out remedial work as necessary                                                                                                                                                                  | 6 - 15   | Autumn                                                   | 1                    |
|                          | Control all pests and diseases as necessary                                                                                                                                                                                                           | 6 - 15   | As requ'd                                                | As required          |
|                          | Maintain a clear stem height of 2m to all trees within public areas and those located within close proximity of fenced boundaries. If they are multi stemmed varieties careful thinning of lower branches can take place to allow visibility through. | 1 - 15   | As requ'd                                                | As required          |

| Maintenance Group Number | Prescription                                                                                                             | Year (s) | Season    | Frequency (per year) |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------|----------|-----------|----------------------|
| 4                        | ORNAMENTAL AND HERBACEOUS PLANTING                                                                                       |          |           |                      |
|                          | Maintenance during first 7 years after planting.Operations to include:                                                   |          |           |                      |
|                          | Maintain all areas in a weed free condition through hand weeding operations. Herbicide applications on instruction only. | 1 - 7    | As requ'd | As required          |
|                          | Application of granular fertiliser (15:15:15).                                                                           | 1 - 7    | Spring    | 1                    |
|                          | Water as necessary to ensure establishment and continuing health                                                         | 1 - 7    | As requ'd | As required          |
|                          | Ensure plants remain firmly bedded after disturbance and re-firm as necessary                                            | 1 - 7    | As requ'd | As required          |

#### 4.0 Landscape Maintenance Tasks (cont'd)

| Maintenance Group Number | Prescription                                                                                                                                          | Year (s) | Season       | Frequency (per year) |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|----------|--------------|----------------------|
| 4                        | ORNAMENTAL AND HERBACEOUS PLANTING (Cont'd)                                                                                                           |          |              |                      |
|                          | Control all pests and diseases as necessary                                                                                                           | 1 - 7    | As requ'd    | As required          |
|                          | Replace any dead or dying plants implemented in year 1.                                                                                               | 1 - 7    | Autumn       | 1                    |
|                          | Prune early flowering shrubs after flowering                                                                                                          | 1 - 7    | early Sum.   | 1                    |
|                          | Prune late flowering shrubs before new growth                                                                                                         | 1 - 7    | early Spring | 1                    |
|                          | Prune evergreen shrubs                                                                                                                                | 1 - 7    | mid Spring   | 1                    |
|                          | Prune herbaceous perennials as required to maintain form and supply supports as needed                                                                | 1 - 7    | early Sum.   | 1                    |
|                          | Post 7 years maintain as above. Commence re- planting schedule as required                                                                            | 8 - 15   | As requ'd    | As required          |
|                          | Replace any dead/ under performing plants. Where planting continually fails to establish, undertake investigations to ascertain any underlying cause. | 8 - 15   | Autumn       | As required          |
|                          | Control all pests and diseases as necessary                                                                                                           | 8 - 15   | As requ'd    | As required          |

| Maintenance Group Number | Prescription                                                                                                                             | Year (s) | Season            | Frequency (per year) |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------------|----------------------|
| 5                        | WOODLAND HAZEL AND OAK PLANTATION                                                                                                        |          |                   |                      |
|                          | Maintenance during defects liability period or 5 years after planting whichever is the greater. Operations to include:                   | 1 - 5    | As requ'd         | As required          |
|                          | Maintain in a weed free condition using a combination of herbicide application and hand weeding. Herbicide application only by agreement | 1 - 5    | Spring/<br>Autumn | 2                    |
|                          | Application of granular fertiliser (15:15:15).                                                                                           | 1 - 5    | As requ'd         | As required          |
|                          | Water as necessary to ensure establishment and continuing health                                                                         | 1 - 5    | As requ'd         | As required          |

4.0 Landscape Maintenance Tasks (cont'd)

| Maintenance Group Number | Prescription                                                                                                                                                                      | Year (s) | Season                             | Frequency (per year) |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|------------------------------------|----------------------|
| 5                        | WOODLAND HAZEL AND OAK PLANTATION (con'td)                                                                                                                                        |          |                                    |                      |
|                          | Ensure plants remain firmly bedded after disturbance and re-firm as necessary                                                                                                     | 1 - 5    | As requ'd                          | As required          |
|                          | Remove all dead, dying, damaged and crossed wood                                                                                                                                  | 1 - 5    | Spring/<br>Autumn                  | 2                    |
|                          | Control all pests and diseases as necessary                                                                                                                                       | 1 - 5    | As requ'd                          | As required          |
|                          | Between 3-5 years progressively remove all stakes and guards                                                                                                                      | 3 - 5    | Autumn                             | As required          |
|                          | Replace any dead or dying specimens planted in year 1. Replace in accordance with original specification unless instructed otherwise.                                             | 1 - 5    | Autumn                             | 1                    |
|                          | Remove any non-native, self seeded material                                                                                                                                       | 1 - 5    | Autumn                             | 1                    |
|                          | Replace any dead/ under performing whips. Where planting continually fails to establish, undertake investigations to ascertain any underlying cause.                              | 6 - 15   | As requ'd                          | 1                    |
|                          | Control pests and diseases as necessary and remove any non-native self-seeded material.                                                                                           | 6 - 15   | Autumn                             | As required          |
|                          | In year 5 commence thinning regime of any whip planting implemented in year 1. Extent of thinning to be determined at the time. Selectively coppice Hazel species where required. | 5        | Autumn<br>(refer to<br>footnote 1) | 1                    |
|                          | Continue thinning regime. Extent to be determined at the time.                                                                                                                    | 11 - 15  |                                    | 1                    |

- 1
- In the longer term, as the native planting matures, selective removal of some trees may need to take place.
- 2
- Coppicing of hazel species will become necessary, probably initially 10-15 years after planting. The amount of initial coppicing and the timing of subsequent thinnings will be dependent on the extent of growth at the time and will need to be determined by the maintenance manager at the time.

4.0 Landscape Maintenance Tasks (cont'd)

| Maintenance Group Number | Prescription                                                                                                            | Year (s) | Season                   | Frequency (per year) |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------|----------|--------------------------|----------------------|
| 6                        | WILDFLOWER GRASSLAND                                                                                                    |          |                          |                      |
|                          | Maintenance during defects liability period or 5 years after planting whichever is the greater. Operations to include:  |          |                          |                      |
|                          | YEAR 1                                                                                                                  |          |                          |                      |
|                          | Spring sowing:                                                                                                          |          |                          |                      |
|                          | Remove dead stalks after flowering and remove                                                                           | 1        | late Autumn              | 1                    |
|                          | Spray the area with a herbicide to remove any weed or grass growth.                                                     | 1        | late Autumn & early Spr. | 2                    |
|                          | Cultivate the ground to an even tilth to receive new seed (100-150mm depth)                                             | 1        | early Spring             | 1                    |
|                          | Leave to stand for 2 weeks and re-apply herbicide                                                                       |          | early Spring             | 1                    |
|                          | YEARS 2 – 5                                                                                                             |          |                          |                      |
|                          | Sow new annual wild flower seed in accordance with the suppliers sowing rates.                                          | 2 - 5    | March/April              | 1                    |
|                          | Remove dead stalks after flowering                                                                                      | 2 - 5    | late Autumn              | 1                    |
|                          | Spray the area with a herbicide to remove and weed or grass growth                                                      | 2 - 5    | late Autumn & early Spr. | 2                    |
|                          | Cultivate the ground to an even tilth to receive new seed (100-150mm depth)                                             | 2 - 5    | early Spring             | 1                    |
|                          | Leave to stand for 2 weeks and re-apply herbicide                                                                       | 2 - 5    | early Spring             | 1                    |
|                          | Post 5 years maintain as years 2 – 5. Cut and remove once annually                                                      | 6 - 15   |                          |                      |
|                          | Control undesirable herbaceous and woody material via a combination of hand weeding and selective herbicide application | 6 - 15   | year round               | As required          |

Note The ongoing wild flower mixes used on this site are to be supplied by British Seed Houses or equal and approved. The maintenance regimes may vary depending on the seed blends used. Refer to supplier maintenance information prior to carrying out any mowing operations.

#### 4.0 Landscape Maintenance Tasks (cont'd)

| Maintenance Group Number | Prescription                                                                                                                                 | Year (s) | Season      | Frequency (per year) |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------|----------------------|
| 7                        | AMENITY GRASS AREAS                                                                                                                          |          |             |                      |
|                          | Maintenance during defects liability period or 5 years after planting whichever is the greater. Operations to include:                       |          |             |                      |
|                          | YEAR 1 – Close mown areas                                                                                                                    |          |             |                      |
|                          | Autumn seeding:<br>First cut: Cut to 50 – 70mm                                                                                               | 1        | March/April | 1                    |
|                          | Spring seeding:<br>First cut: Cut to 50 – 70mm                                                                                               | 1        | Spring      | 1                    |
|                          | Cut fortnightly during spring and summer seasons – remove arisings. Cut to a height of 30 - 50mm                                             | 1 - 5    | March- Aug  | 13                   |
|                          | Cut twice a month during Autumn – remove arisings. Cut to a height of 30 – 50mm                                                              | 1 - 5    | Sept - Nov  | 6                    |
|                          | Apply spring fertiliser                                                                                                                      | 2 - 5    | Spring      | 1                    |
|                          | Apply autumn fertiliser                                                                                                                      | 2- 5     | Autumn      | 1                    |
|                          | YEAR 1 – Longer areas Autumn seeding:<br>First cut: Cut to 5 - 7cm                                                                           | 6 - 15   | As requ'd   | 1                    |
|                          | Spring seeding:<br>First cut: Cut to 5 – 7cm                                                                                                 | 1        | March/April | 1                    |
|                          | Cut monthly during spring, summer and autumn seasons or when growth reaches 200mm to 250mm – remove arisings. Cut to to a height of 50-70mm. | 1 - 5    | March - Oct | 8                    |
|                          | Last cut of the year. Cut to a height of 30- 50mm and remove arisings                                                                        | 1 - 5    | November    | 1                    |
|                          | Apply spring fertiliser                                                                                                                      |          | Spring      | 1                    |
|                          | vi) Apply autumn fertiliser                                                                                                                  |          | Autumn      | 1                    |
|                          | Post 5 years maintain as years 1 – 5                                                                                                         |          | as above    | as above             |
|                          | Control undesirable herbaceous and woody material via hand weeding. Herbicides must not be used unless with prior approval                   |          | as required | as required          |

4.0 Landscape Maintenance Tasks (cont'd)

| Maintenance Group Number | Prescription                                                                                                                                                       | Year (s) | Season                     | Frequency (per year) |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------------------------|----------------------|
| 8                        | SWALE SYSTEM                                                                                                                                                       |          |                            |                      |
|                          | Inspect for invasive species. Should any be identified contractor to aggress removal/ treatment methodology with project landscape architect/ ecologist.           | 1 - 15   | Spring<br>Summer<br>Autumn | 3                    |
|                          | Inspect plug planting and seeded areas to ensure successful plant establishment and development. Advise Landscape architect should development not be as required. | 1 - 3    | Spring<br>Summer<br>Autumn | 3<br><br>1           |
|                          | Litter pick water bodies on each visit                                                                                                                             | 1 - 15   | All year                   | Monthly (min.)       |

5.0     Hardworks Maintenance Tasks

Hardworks Maintenance Operations

- 5.1     Surfacing need to be maintained such that they provide a safe passage for all users. It is also essential that areas, which have been subject to major investment, are protected and sustained through an effective maintenance regime. The success of any project will depend strongly on the attention given to maintenance.

Aftercare

- 5.2     It is important that paved surfaces are regularly inspected so that defects can be identified and rectified. Typically, early life maintenance, or aftercare of new works will be the responsibility of the Contractor. The maintenance and defects liability period will be 12 months. Contractors should visit the site at regular intervals to inspect all paved areas regularly during the maintenance period, and to undertake any remedial works. At the end of the maintenance period, the contractor will be required to undertake remedial works to the satisfaction of the Client. Effort is required to ensure surfaces are maintained as they were originally constructed. The need for replacement of high quality materials is required for all hardwork projects at some time. Delivery periods for many materials could be up to 3 months if not more. Details below describe how paved areas should be maintained.

Maintenance of Paved Areas

- 5.3     Materials Included
- Pre-cast concrete flag and sett paving.
  - Tarmac pathways and roads
- 5.4     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. The majority of failures tend to be confined to the surface layers of paved roads, i.e. they concern the bedding and jointing that surrounds the paving elements.
- 5.5     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.
- 5.6     Treatment Options.
- Maintenance treatment will depend on the type of defect and what has caused the deterioration. For some surfacings, topping up of jointing may be all that is required, but poor surface profile may require a site investigation to provide information on the condition of the pavement at depth. Suitable strategies can then be formulated based upon informed engineering judgment.

The Table on the page to follow summarises some common defects, resulting problems and treatments.

## 5.0 Hardworks Maintenance Tasks (cont'd)

| <i>Defect</i>                  |                                | <i>Problem</i>                   | <i>Treatments</i>                                                 |                                                           |
|--------------------------------|--------------------------------|----------------------------------|-------------------------------------------------------------------|-----------------------------------------------------------|
| <i>Flexible</i>                | <i>Rigid</i>                   |                                  | <i>Temporary</i>                                                  | <i>Long-term</i>                                          |
| Loss of jointing material      | -                              | Loss of stability                | Replace jointing material                                         | -                                                         |
|                                | Debonding of jointing material | Initiation of failure mechanism  | Monitor/investigate                                               | Replace jointing or reconstruct if poor design            |
| Broken or damaged elements     | Broken or damaged elements     | Unightly, water ingress          | -                                                                 | Replace or reconstruct                                    |
| Missing elements               | Missing elements               | Trip, water ingress              | Fill holes                                                        | Replace element                                           |
| Rocking elements               | Rocking elements               | Hazard to users                  | Relay                                                             | -                                                         |
| Spalling of arises or surfaces | Spalling of arises or surfaces | Unightly, trips                  | -                                                                 | Replace                                                   |
| Widening of joints             | -                              | Loss of stability, water ingress | Fill wide gaps if hazard                                          | Relay elements and strengthen edge restraint if necessary |
| Depressions and bumps          |                                | Hazard for users                 | Fill or ramp. Contact undertaker if cause is failed reinstatement | Relay                                                     |
| Rutting                        |                                | Hazard for users                 | Monitor, warn users                                               | Relay                                                     |
| Slippery surface               |                                | Hazard for users                 | Warn users or restore texture                                     | Clean, restore texture or renew surfacing                 |
| Surface contamination          |                                | Hazard for users and unsightly   | Clean or neutralise                                               | Replace surfacing if necessary                            |
| Vegetation                     |                                | Surface slippery                 | Warn users, clean                                                 | Consider increasing frequency of maintenance              |
| Water                          |                                | Surface water                    | Salt if freezing                                                  | Relay surfacing to correct gradients and crossfall        |
|                                |                                | Blocked drain                    | Clear blockage                                                    | -                                                         |

## 5.0 Hardworks Maintenance Tasks (cont'd)

### 5.7 Lifting & 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.

### 5.8 Joint repairs.

Where elements are part of a rigid construction and degradation of the cement mortar joint has occurred, it will be necessary to refill the joint. If necessary the joint should be raked out, which is time-consuming and costly. It may be more appropriate to use a small hand-held grinder with an attachment to remove the dust and debris, in a controlled manner, into some form of hopper. Once the joints have been cleaned out they can be refilled with a mortar appropriate to the trafficking category. Care is required to confine the mixture to the joint and prevent staining of the surface. Trafficking should only be allowed once the mortar has gained the appropriate strength.

#### Cleaning Generally

### 5.9 Paving - Concrete Asphalt and paved surfacing

The following recommendations deal with vehicles and associated equipment for use on paved footways/footpaths/pedestrian areas and roads:

- The equipment should be purpose designed to sweep the particular area and surfacing product. If there is any doubt, the vehicle manufacturer should be consulted.
- Polypropylene, not wire, brushes should be used.
- Sweeping brush pressures should be set to the minimum required to suit the particular task, i.e. surfaces swept regularly will require a lower setting than those swept infrequently or those covered with heavy deposits.
- When sweeping, engine revolutions should be set at the minimum required to maintain vacuum (suction) pressure.
- Operators, including relief's, should be trained to manufacturers' recommendations and tyre and brush pressures should be regularly checked.

#### Specific Cleaning Tasks

### 5.10 The use of Power Washing Equipment on Concrete Asphalt paved surfacing

To aid in the removal of surface staining power washing equipment is often considered. Whilst such techniques offer certain benefits, particularly for larger areas, it is important that care is taken in their use to avoid damage to the structural integrity of the paving.

## 5.0 Hardworks Maintenance Tasks (cont'd)

When using any form of Power Washer the following guidelines should be strictly adhered to:

- Do not direct the power lance directly down on to the paving, as this can result in loss of jointing material.
- Ideally a spraying movement should be adopted holding the power lance at a shallow angle, not greater than 30° across the diagonal (i.e. not parallel to joints).
- Certain high-pressure jetting machines have been known to mark / damage the surface of certain types of paving material. It is therefore prudent to carry out a small test area before commencing on a larger area.
- The area should be inspected after cleaning to ensure that joints are full.

### 5.11 Dirt & 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.

### 5.12 Moss, lichens and algae.

Moss, lichen and algae can be prevalent on hard surfacing where the area is heavily shaded, is 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.

### 5.13 Rust & Stains.

Initially action must be taken to eliminate the sources of staining.

To remove the rust stain, the surface should first be wetted with clean water and then the affected area treated with a 7 to 10% dilution of Hydrochloric acid solution.

Guidance on the safe use of chemical treatments is given below (Acid Washing) of this document.

### 5.14 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 manufacturers 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

## 5.0 Hardworks Maintenance Tasks (cont'd)

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.

### 5.15 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.

### 5.16 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.

### 5.17 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.

### 5.18 Smoke, Fire and Tobacco Stains.

Normally such stains can be removed by scrubbing with detergent and hot water. Where the stains persist, a mixture of scouring powder and household bleach can be used. It is important the bleach is washed from the area with clean water once cleaning is completed and the run-off carefully disposed of.

### 5.19 Beverage Stains.

These can normally be removed by scrubbing the stain with detergent and hot water. If the stain is persistent, apply a household bleach solution and then rinse the area with clean water taking care to dispose of the run-off safely.

### 5.20 Chewing Gum.

Chewing gum is a particularly difficult substance to remove from hard surfaces.

Newly discarded gum can be scraped off by using a mechanical scraper but hardened gum can only be removed by both freezing the gum and chiselling it from the surface of the paving or utilising a hot water/steam cleaner.

## 5.0 Hardworks Maintenance Tasks (cont'd)

For specific advice on chewing gum removal it is recommended that specialist contract cleaning companies be contacted directly for further details.

### 5.21 Scuff marks from vehicle tyres.

These can normally be removed by steam cleaning, or by scrubbing the area with detergent and hot water.

### 5.22 Cement & Lime Staining.

Both types of staining can occur on paved surfaces, usually as a result of contamination from other sources, such as concrete street furniture or the use of onsite mortars and concrete. Cement and lime deposits are generally insoluble and therefore require treatment by a suitable acid cleaner to fully remove them.

Acid Washing: Stubborn and persistent stains that will not generally weather away naturally will require the application of a specific acid cleaning treatment to remove them.

Prior to any acid cleaner being applied, the surface must be thoroughly wetted with clean water to prevent the acid being absorbed directly into the paving. A dilution of 7 to 10% of hydrochloric acid should then be prepared and applied to the affected area.

As the staining begins to dissolve, some frothing may be apparent, which should be followed by agitation of the surface using a stiff bristle brush to completely remove all trace of the stain.

Once this process is complete the whole surface should be rinsed thoroughly with clean water, taking care to dispose of the run off safely. In the vast majority of cases, one treatment will be sufficient; however, in some cases re-treatment may be required.

When using any form of chemical treatment the following guidelines should be strictly adhered to:

- With deeper stains, the degree of acid treatment may result in an acid etched appearance.
- Protective clothing (gloves, boots, goggles etc.) should be worn at all times when using chemicals and the appropriate first aid measures must be available on-site.
- Take care to ensure that surrounding materials and landscaping are protected. Soft landscaping and exposed metals can be severely affected by chemical treatments.
- It is better to treat several times with the correct dilution than to use concentrated acid, which may damage the surface of the unit.
- When diluting acids, always add acid to water and not water to acid

### Other Landscape Elements

### 5.23 Street Furniture - Timber to Seating.

The seating is expected to go grey prior to any treatment being applied. Thereafter, every 2 years the wood should be cleaned down using the Alfresco pre treatment which de-oxidises the wood and then re-coating with the Alfresco. As long as this is done, the wood will revert back to its original colour. Alfresco is a commercially available product and will be available through any good wholesaler or exterior furniture supplier. Specialist wood stain suppliers should be able to recommend alternatives.

### 5.24 Steel Furniture, Litter Bins, Cycle Racks, Signage.

## 5.0 Hardworks Maintenance Tasks (cont'd)

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 steel is due to contamination from site operations.

For further maintenance refer to manufacturer's recommendations.

Architecture  
Masterplanning  
Landscape  
Interior Design  
Visualisation  
Animation  
Virtual Reality  
Design Advisor  
Technical Advisor