WATERCOURSE AND FLOOD DEFENCE BUND MANAGEMENT PLAN

NEW MONKS FARM DEVELOPMENT

LANCING

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1 Introduction

1.1 This Watercourse and Flood Defence Bund Management Plan has been prepared at the Planning Application stage of the New Monks Farm Development and will form a live document throughout the lifetime of the development.

1.2 The Surface Water Management Company will be formed including representatives from:

- The Community Stadium Limited
- Brighton & Hove Albion Football Club Limited
- Occupiers of the proposed commercial development of New Monks Farm
- Occupiers of the residential units assisted with support from West Sussex County Council as Lead Local Flood Authority, Adur District Council and the Environment Agency

1.3 The Surface Water Management Company will maintain:

- All the water courses on New Monks Farm
- The Northern Channel on Brighton City Airport that leads to the pumping station at the Northern Outfall
- The Pumping Station at the Northern Outfall

1.4 It is not envisaged that the watercourses will require dredging in order to maintain bed levels.

1.5 Planting along this channel and within the development generally will be chosen to keep weed cutting maintenance to a minimum.

2 Routine Management

2.1 Visual Survey

2.1.1 A visual walkover survey will be undertaken of all watercourses and treatment areas within the Residential Site and the Country Park and along the extent of the Northern Channel.

2.1.2 Small obstructions if any are encountered will be removed by hand.

2.1.3 The visual survey will include all culverts, condition of penstocks. Any defects will be reported to the Surface Water Management Company.

2.1.4 Sedimentation levels in the wetland treatment areas will be monitored and silt removal undertaken as and when required to prevent migration of any silt or sediment to the wider downstream network.

2.1.5 Sedimentation levels in the wider watercourses will be monitored and silt removal will occur under supervision of an ecologist if or when required from the wider watercourses.

2.2 Water Levels Records

2.2.1 A weekly water level record to Ordnance Datum will be taken at the new Culvert at Mash Barn Lane in order to provide an ongoing record of water levels at the head of the Northern Channel.

2.2.2 The data collected will enable the management proposals within this plan to be adapted as required balancing water levels by alteration of pump float heights as may be required.

2.2.3 These records will be supplied to the Lead Local Flood Authority, the District Council and the Environment Agency on request.

3 Penstock Maintenance

3.1 Generally

3.1.1 In addition to the weekly visual inspection each penstock will be fully wound between open and shut once per month to ensure they remain operational.

3.1.2 Upon completion each penstock will be returned to its design level.

3.1.3 All Penstocks will be maintained and serviced in accordance with the manufacturer's guidance and with visual inspection as noted above undertaken weekly

3.1.4 Any parts or materials that require replacement will be replaced by the Management Company as required.

3.2 Lubrication

3.2.1 Penstock gears will be greased on a six monthly basis.

4 Vegetation Management

4.1 Generally

4.1.1 Maintenance work will be undertaken broadly in accordance with the recommendations of ADA / Natural England 2008 The Drainage Channel Biodiversity Manual.

4.2 Initial Year

4.2.1 The Pond Edge wild flower and grasses mixture is suitable for the margins of ponds, streams and ditches. The Pond Edge Mixture (EP1 – wildseed.co.uk) is best sown late summer or late spring (August-September and March-April) so that they benefit from the warmth and moisture they require. This also helps prevent loss of seed due to winter flooding.

4.2.2 Good preparation is essential for successful establishment by ensuring perennial weeds are removed and the soil is of low fertility.

4.2.3 Management in the first year is generally focussed on weed cut back to allow the meadow to fully establish. Regular mowing will be required to a height of 40-60mm with collection and removal of arisings. The first cut should begin as soon as vegetation reaches a height that it can be cut and then continue throughout the growing season at monthly intervals.

4.2.4 Once the meadow/grasslands are established a relatively stable plant community will develop.

4.3 General Management

4.3.1 As noted, planting within the channels and within the development generally will be chosen to keep weed cutting maintenance to a minimum and by design routine vegetation management will not be required.

4.3.2 Generally Management is as follows:

- A main mid-summer hay cut – from late June to late August and done in rotation
- Autumn cut – cut at least twice from main mid-summer cut to remove excessive growth
- Spring cut – cut following first flush of growth to produce later flowering meadow that is shorter and less prone to collapse

4.3.3 Cutting should be done with a handheld rotary flail or strimmer and arisings should be collected and removed.

4.3.4 Once established cutting back and removing short sections to allow regrowth helps thinning more dominant species (eg. yellow Iris). This should be done in short sections and between September and November to minimise the disruption to wildlife on a year on year rotational schedule. This clearance can be done with mechanical equipment but needs to minimise damage to soil and vegetation.

4.4 Reed Bed Reed Cutting

4.4.1 Reed cutting within the new Reed Bed to the east of the Travellers Site will be undertaken annually to ensure healthy growth and maximise water treatment. This will be undertaken by hand.

4.5 Long Term Ecological Objectives

4.5.1 The long term objectives are to provide a network of ecologically valuable watercourses and biodiversity rich habitats on site. These have been designed to provide suitable habitat for a range of wildlife species including birds, reptiles, amphibians, fish and invertebrates. The watercourses are designed to maximise biodiversity with low maintenance and providence of native plant species which in turn provide high quality native habitats.

4.5.2 Native flower, wildflower and marginal pond mixes sown on the banks will provide good quality marginal habitat providing a range of food sources for wildlife as well as refuge from predators. The watercourses will also provide green corridors for wildlife to commute across the site and in turn across the local area.

4.5.3 Common reed will develop within the watercourses allowing habitat for warblers and other wetland bird species. As part of the mitigation works, sediment and detritus from the bases of existing ditches that are to be lost on site will be removed and stored within wet conditions during works and translocated to the newly constructed watercourses on site. The aim of this exercise is to transfer the existing seed bank and invertebrates to the newly formed watercourses to help quickly establish and maximise biodiversity within the network.

4.5.4 Maintenance for the watercourses on site has been designed to be infrequent, so that natural habitats area allowed to establish and thrive, which in turn provides long term high quality habitat for wildlife.

5 Northern Outfall Pump Station

5.1 Generally

5.1.1 The general condition of the pump station structure, eel pass and penstocks will be included in the weekly visual survey with any concerns reported to the Surface Water Management Company.

5.2 Maintenance Schedule

5.2.1 Warning Systems

5.2.1.1 Telemetry and electrical warning systems will be tested once per month for operation.

5.2.2 Mechanical

5.2.2.1 The Archimedes screw pumps including all bearings, gearboxes and motors will be maintained and serviced in accordance with the manufacturer's guidance with visual inspection of the above carried out on a three monthly basis.

5.2.2.2 Any parts or materials that require replacement will be replaced by the Management Company as required.

6 Surge Tide Warning Procedure

6.1 Generally

6.1.1 To safeguard against the possibility of a breach of the new Environment Agency owned Adur Tidal Flood Defences a Surge Tide Warning Procedure is proposed.

6.1.2 This procedure will be followed when surge tides are predicted or in the event that the Environment Agency issues a Flood Warning.

6.1.3 The Pump Station will be operated to reduce water levels within the Northern Channel throughout the high tide period.

6.1.4 A minimum of three operatives from Brighton and Hove Albion Football Club will be made available to attend the site for at least 1.5 hours either side of the predicted high tide. These operatives will be stationed at the Northern Channel Flood Bund Culvert through the New Monks Farm Site Flood Bund.

6.2 Breach Event Procedure - Northern Channel

6.2.1 In the event of a breach of the new coastal defences resulting in the inundation of the Northern Channel the following procedure will be followed:

- Close penstock at Northern Channel Flood Bund Culvert to the east of the Travellers Site
- Open penstock to the Sedge Bed to allow flows normally entering the Northern Channel to be bypassed into the onsite Lancing Ditches
- Once the tide has receded reopen the penstock at Northern Channel Flood Bund Culvert and close the penstock to the Sedge Bed

6.3 Breach Event Procedure - New Monks Farm Outfall

6.3.1 In the event of a Breach of the new coastal defences resulting in the inundation of the southern Lancing Ditches the following procedure will be followed:

- Close penstock at New Monks Farm Flood Bund Culvert
- Once the tide has receded reopen the New Monks Farm Flood Bund Culvert to its previous level

6.3.2 The volume of the Lancing Ditches has been established within the Flood Risk Assessment Addendum as sufficient to adequately accommodate a six hour storm with the penstock fully closed with a spare capacity of over 11,000m^3 and no further actions are required.

6.3.3 In the event of a breach affecting both the Northern Channel and the Southern Lancing Ditches both penstocks will be closed with action taken first at the Northern Channel Flood Bund Culvert followed by action at the Sedge Bed Penstock and finally at the New Monks Farm Flood Bund Culvert.

7 Structure and Treatment Area Records and Observations

7.1 Culvert 1 – Mash Barn Lane Culvert and Overflow to Sedge Bed

Date	Water Level (m AOD)	Level of Penstock Base (top of clear opening) (m AOD)	Comments/Observations	Date of next review

7.2 Culvert 2 – IKEA Culvert

Date	Water Level (m AOD)	Comments/Observations	Date of next review

7.3 Culvert 9 – Travellers Culvert – Emergency Penstock

Date	Water Level (m AOD)	Level of Penstock Base (top of clear opening) (m AOD)	Comments/Observations	Date of next review

7.4 Culvert 7 – Travellers' Overflow

Date	Water Level (m AOD)	Level of Penstock Base (top of clear opening) (m AOD)	Comments/Observations	Date of next review

7.5 Culvert 3 – Runway Culvert

Date	Water Level (m AOD)	Comments/Observations	Date of next review

7.6 Culvert 4 – Almond Avenue Culvert

Date	Water Level (m AOD)	Comments/Observations	Date of next review

7.7 Culvert 5 – Cecil Pashley Way Culvert

Date	Water Level (m AOD)	Comments/Observations	Date of next review

7.8 Culvert 8 – Outflow Culvert

Date	Water Level (m AOD)	Level of Penstock Base (top of clear opening) (m AOD)	Top Level of Stop Logs if in place (m AOD)	Comments/Observations	Date of next review

7.9 Treatment Area 1

Date	Water Level at downstream end of Sedimentation Bay (m AOD)	Comments/Observations	Date of next review

7.10 Treatment Area 2

Date	Water Level at downstream end of Sedimentation Bay (m AOD)	Comments/Observations	Date of next review

7.11 Treatment Area 3

Date	Water Level at downstream end of Sedimentation Bay (m AOD)	Comments/Observations	Date of next review