OXFORD FLOOD ALLEVIATION SCHEME
OUTLINE MANAGEMENT PLAN FOR HARMFUL WEEDS AND INVASIVE SPECIES

As the Oxford Flood Alleviation Scheme is further developed and constructed, this outline plan will be updated by the Environmental Clerk of Works in consultation with the Principal Contractor and re-issued following approval by the Senior Environmental Project Manager (EA).

1.0 MANAGEMENT PLAN OBJECTIVES

The aim of the plan is to manage Harmful Weeds and Invasive Non-Native Species (INNS) on the Oxford FAS site in a timely and appropriate way in order to:

- prevent the spread of such species within and beyond the site and thus limit the potential damage that they may cause;
- minimise construction costs; and
- prevent delays in the work programme.

Whilst it is not an offence to have harmful weeds growing on your land, landowners/ managers are required to:

- prevent them from spreading to agricultural land, particularly grazing areas or land used to produce forage, like silage and hay;
- choose the most appropriate control method for the site; and
- not plant them in the wild.

Under the Wildlife and Countryside Act 1981 (as amended) it is an offence to plant or otherwise cause to grow in the wild any non-native plant, or release any non-native animal.

2.0 DELIVERING THE MANAGEMENT PLAN

Awareness of the Management Plan

- All site staff will be made aware of the management plan and trained to identify harmful weeds and invasive non-native species through a series of tool-box talks, as set out in the Environmental Action Plan (EAP).

- The Environmental Clerk of Works for the scheme will ensure that the Management Plan is implemented.

- All site staff will be trained to understand the role and authority of the Environmental Clerk of Works in overseeing the execution of the management plan.

The principles set out in this management plan will also be delivered by following the relevant clauses of the Oxford Flood Alleviation Scheme Works Information Appendix I: Landscape and Planting Specification, and Appendix G: Environmental Action Plan. The locations of all invasive non-native species have been mapped and are included in the Works Information.

3.0 HARMFUL WEEDS

The following weeds may be a danger to animals, or cause problems for agricultural production if left to spread unchecked:

- Common ragwort *Jacobaea vulgaris*
- Spear thistle *Cirsium vulgare*
- Creeping or field thistle *Cirsium arvense*
- Broad-leaved dock *Rumex obtusifolius*
- Curled dock *Rumex crispus*

a) Pre-construction surveys

Having carried out extensive archaeological trial trenching across the site in autumn 2017, we are aware, from observation, that all of the species listed above have the potential to colonise disturbed ground on the Oxford FAS.

b) Pre-construction mitigation

Where harmful weeds have colonised the reinstated archaeological trial trenches, they will be controlled using a combination of:

- removal of live, dead or dying plants by pulling or digging them out;
- spraying or weed wiping the plants with glyphosate-based herbicide; and
- cutting plants back to prevent the dispersal of seeds.

The trial-trenches will be re-seeded and managed to ensure quick establishment of a grass/wildflower sward to minimise the availability of bare areas where harmful weeds can become established.

c) Management during construction

Identified risks

- Vegetation removal and earthworks will result in the direct disturbance of soil and creation of large areas of bare earth, creating conditions that may allow harmful weeds to colonise and spread within and outside the Scheme boundary.

Preventing colonisation by harmful weeds

- All areas of bare soil will be sown with the specified grass/wildflower seed mix at the earliest opportunity (under suitable growing conditions) and managed to ensure that a sward is established that will minimise the availability of bare areas where harmful weeds can become established.

Disposal of harmful weeds

- Disposal will be undertaken in a way that will prevent seeds from spreading and that will not put grazing animals at risk.
- It may be possible to dispose of smaller quantities of harmful weeds on-site by letting them rot down, using a container with a lid to prevent dispersal (such as a rigid compost bin). Otherwise all material will be taken off-site to a suitably licensed waste site.

d) Post-Construction management

- Under the initial construction contract, ongoing monitoring and treatment of harmful weeds within and immediately adjacent to the Scheme area will continue for five years after the Scheme opens, or until the land is returned to its current owner, if sooner.

- Long-term management plans (20 years+) for the Scheme area include the control of harmful weeds.
- Within the second-stage channel, treatment of Japanese knotweed *Fallopia japonica* and Himalayan balsam *Impatiens glandulifera* will continue indefinitely as part of routine maintenance, since all parts of the second-stage channel need to be kept unobstructed.

4.0 INVASIVE NON-NATIVE SPECIES

Invasive Non-Native Species (INNS) are those non-native species that have the ability to spread rapidly and become dominant in an area or ecosystem, causing adverse ecological, environmental and economic impacts. INNS can also affect our health.

Examples of the negative effects caused by invasive non-native species include; economic cost, structural damage, environmental degradation, aesthetic degradation, biodiversity loss, loss of land function, access restrictions and increased risk to human and animal health and safety.

Costs incurred because of invasive non-native species can include repairs to damaged structures and environment, delays to works, loss in value of a landholding or other asset, potential for prosecution because of damage caused by invasive species or infringement of legislation. There is also a risk of loss of reputation through mismanagement of invasive species, especially where the interest of sensitive local groups (such as Angling Societies) could be affected.

5.0 INVASIVE NON-NATIVE FLORA

a) Pre-construction surveys:

Invasive plant species surveys were carried out within the Scheme boundary in 2016 and 2017. These confirmed the presence of two INNS plant species within the Scheme boundary:

- Japanese knotweed was found in a single location to the east of the railway. Subsequently, Japanese knotweed was noted just south of Botley road during ground investigation work; and
- Himalayan balsam was observed along all water bodies within the Scheme area.

b) Pre-construction mitigation

The stands of Japanese knotweed and Himalayan balsam were pre-treated with a herbicide throughout 2017 and 2018, in an attempt to eradicate them from the site, or at least limit their extents prior to construction. Spraying of all above ground vegetation with glyphosate-based herbicide will continue up until the point at which the areas are cleared and excavated during construction. The aim is to significantly reduce the amount of material to be treated/disposed-of during construction.

c) Management during construction

Identified risks

- Vegetation removal and earthworks will result in the direct disturbance of soil, including vegetative parts or seed-bank of invasive species including Himalayan balsam and Japanese knotweed, which may potentially cause these species to spread within and outside the Scheme boundary.

- In addition to considering the treatment of known INNS on the site, it is also important to consider potential pathways of introductions of different species onto the site from elsewhere.
- The change in water dynamics, and the increased wetland, as a result of the Scheme may favour the aquatic invasive species, known to be present within the watercourses. The works to the river banks and bottoms are also likely to increase potential habitats for a number of invasive species.

Preventing colonisation by INNS

- All areas of bare soil will be sown with the specified grass/wildflower seed mix at the earliest opportunity (under suitable growing conditions) and managed to ensure that a sward is established that will minimise the availability of bare areas where INNS can become established.

Moving INNS materials on site

- The amount of Japanese knotweed and Himalayan balsam infested soil to be excavated and moved will be minimised wherever possible.

- All areas of INNS on site will be fenced off and signposted to ensure that they are treated separately from other materials on site and to avoid accidental disturbance.

- Designated haul routes will be set up on site to avoid cross-contamination. The routes will be clearly marked and vehicles involved in moving infested material will be restricted to these routes.

- No INNS-infested soil will be transported across Hinksey Meadow Local Wildlife Site (LWS).

- Vehicles will be decontaminated before they leave the designated routes.

- INNS-infested soil that has not been treated will not be reused for landscaping the site and will be taken offsite to a suitably licensed waste site.

Moving INNS materials off-site

- Trucks will be filled to a maximum of 20cm from the top and the void sealed with a well-secured membrane. This must prevent any material from being lost when it is moved.

- The outside of vehicles will be cleaned whenever they leave an area contaminated with INNS.

- After contaminated soil has been moved, the rear of trucks will be cleaned using a pressure washer and stiff-haired brushes, to make sure that any areas that might retain rhizomes/roots are thoroughly covered. Particular attention will be paid to tyre treads and wheel arches. Any material dislodged during this process will be included within the INNS waste. This process will be carried out over a root barrier membrane layer or hard surface that can contain and collect the material washed off. The material must not be allowed to contaminate drains, ditches or watercourses.

d) Post-Construction Management

- Under the initial construction contract, ongoing monitoring and treatment of invasive plant species within and immediately adjacent to the Scheme area will continue for five years after the Scheme opens, or until the land is returned to its current owner, if sooner.

- Long-term management plans (20 years+) for the Scheme area include the control of INNS.

- Within the second-stage channel, treatment of Japanese knotweed and Himalayan balsam will continue indefinitely as part of routine maintenance, since all parts of the second-stage channel need to be kept unobstructed.

6.0 INVASIVE NON-NATIVE FAUNA

a) Pre-construction surveys:

Signal crayfish *Pacifastacus leniusculus* are known to be present within the River Thames, and are therefore assumed likely in all of the watercourses within the Scheme area.

A single record of American mink *Neovison vison* scat was recorded in an otter and water vole survey for the Hinksey Flood Alleviation scheme, prepared for Network Rail (URS, 2014). We are proceeding on the assumption that mink are likely to be widespread within the Scheme area.

An aquatic invertebrates and mussel survey in 2016 found evidence of both demon shrimp *Dikerogammarus haemobaphes* and Asian clam *Corbicula fluminea* within the waterways of the proposed Scheme.

A red-eared terrapin *Trachemys scripta elegans* was recorded at Kennington Pool LWS during a bird survey in 2017. This non-native species is assumed to be a released individual.

b) Pre-construction mitigation

- All survey work will be undertaken following standard biosecurity protocols.

c) Management during construction

Identified impacts

- The construction of the Scheme may lead to minor reductions in populations of aquatic invasive species due to individuals being taken or killed during the works but this will not affect overall populations as all but one of the species are already widespread.
- The exception is red-eared terrapin, which is reported at only one site in or near the Scheme area (Kennington Pool LWS) and which may be eliminated from the local area if all individuals are captured and removed.

Preventing the spread of aquatic INNS

- Check, Clean, Dry biosecurity procedures will be followed to help prevent the spread of problem non-native species http://www.nonnativespecies.org/checkcleandry/

7.0 References

Environment Agency (2013) The Knotweed Code of Practice – Managing Japanese knotweed on development sites. Withdrawn 11/07/2016

SEPA (2016) Biosecurity and management of invasive non-native species for construction sites and Controlled Activities

https://www.gov.uk/guidance/prevent-the-spread-of-harmful-invasive-and-non-native-plants

http://www.nonnativespecies.org/checkcleandry/ Non-Native Species Secretariat (NNSS) Check, Clean, Dry