



## Yorkshire Peat Partnership Technical Specification:

Construction of Ponds on Swarth Moor for Dragonflies

Target species: Common Hawker (*Aeshna juncea*), Black Darter (*Sympetrum danae*), Emerald Damselfly, White Faced Darter (*Leucorrhinia dubia*)

Updated: 20<sup>th</sup> August 2024 AS

### POND SPECIFICATION:

#### 1 Pond location:

- They must be on acidic peaty soil on at least 0.8cm deep peat.
- The Peat Project Officer will identify the exact locations of the ponds to the contractor.
- See **Figure 1** for Pond Location Area and placements on Swarth Moor

#### 2 Pond dimensions:

- The ponds will have an area of between 40m<sup>2</sup> - 100m<sup>2</sup> each (e.g. minimum dimensions 6.4mx6.4m up to maximum 10mx10m).
- Pond depth will be sloped with a minimum base of **0.7 m** and a maximum 2m, ideally aiming for **0.7-1.0 m** deep.
- The pond should not be constructed deeper than the peat layer, so for an area of 1m deep peat, the pond depths should be no more than 1m. If the clay/mineral base is exposed, peat should be layered on top at a depth of >0.05m
- The margins of the pond need to slope steadily to the base of the pond with a shallow angle, steep slopes should be avoided.
- The pond shape does not need to be uniformly circular: straight lines should be avoided on the perimeter, an asymmetrical shape or kidney-shape is preferable.
- See **Figure 2** for Pond Dimensions

#### 3 Machinery on bogs:

- Ponds will be constructed using low-ground pressure machinery using wide bog tracks.
- All machinery needs to adhere to the guidance for machines on bogs, taken from YPP's technical specification 1:

- Ponds must be constructed using a very low ground pressure 360-degree excavators with wide (“bog”) tracks. Even with bog tracks, however, the total machine weight should be less than 10 tonnes and portable “bog mats” will be needed to traverse areas of wet deep peat.
- All machine operators must be able to demonstrate a high level of expertise in working in a bog environment.

#### **4 Pond Construction:**

- The digger strips out the vegetation (to a depth sufficient to ensure the root zone stays intact) from the surface area of the specified pond location and places the stripped vegetation to the side of the pond for later use (see **Section 5**).
- The machine then digs to the required depths, creating the pond. The excavated pond spoil is also set aside for later use (see **Section 5**), separate to the vegetated turves.
- Shallow slopes are to be created down to the base of the pond; steep slopes should be avoided.

#### **5 Relocation of spare peat and turves from ponds:**

- Spare peat and turves excavated from the newly created ponds will stay in situ on Swarth Moor and will stay as close to their original location as possible.
- Spare peat and turves will be used within the bunding area close to the ponds.
- All machinery carrying spare peat or turves need to minimise tracking distances between the ponds and bunding locations.
- To reduce the number of journeys carrying spare peat or turves, diggers can load material into a dumpy bag on the back of Argocats, to be moved once directly to the bunding location for unloading.
- To reduce tracking damage to areas of wet ground, ‘bog mats’ must be made use of for all machinery.
- The Peat Project Officer will identify the exact areas for the peat to be relocated to (see **Figure 3**)
- At the bunding location, an area of existing ground vegetation will be stripped back and set aside. The peat spoil is then placed onto the exposed ground and smoothed down into a uniform layer <1.0m in height. Then the ‘existing’ vegetation will be placed over the new peat spoil area. Finally, the ‘pond’ turves will be placed the existing ground vegetation which will then be used to cover the rest of the peat bund, pushing the turves together so that so there is no bare peat exposed.

#### **6 Sphagnum plug planting around pond edges**

- After construction, the ponds will be planted with bog plug plants namely *Sphagnum spp* moss plugs, containing *Sphagnum cuspidatum*.
- Sphagnum plugs will be planted at up to 4 plugs per 1m<sup>2</sup> within 2m of the circumference of the pond. This will minimise trampling of the newly exposed bare peat and will enable the Sphagnum to grow from the pond edges inwards.
- See Yorkshire Peat Partnership's Technical Specification's 3 and 4 for full guidance on revegetation and Sphagnum moss plug planting.

## Specific pond specification

### Pond One

This pond will support the Common Hawker (for the larvae and ovipositing needs) by meeting the following requirements. The Common Hawker prefers a larger, deep pond. A depth of 50cm plus. They need permanent water cover due to a long-life cycle; ponds can't dry up in winter. Needs marginal vegetation. See figure

Pond, one has been placed to give enough space for a 10m x 10m pond and with a peat depth of 80cm can go down to 70cm deep which the Common hawker needs. See figure

#### Key features

- Large pond 10m x 10m
- Sloping margin at 2-3 ° from the edge of the pond to be ~ 0.1 m deep 2.3 m away from the margin margins
- Then sloping at ~ 12 ° to reach a depth of 0.7 m at the centre of the pond
- Approximative volume of 50 m<sup>3</sup>
- Marginal vegetation

#### Dimensions

- The pond should be constructed in an asymmetrical shape or kidney-shape.
- The pond should be the largest constructed 10m x 10m.
- The edge should be 10cm deep sloping down to 70cm in the middle.
- Vegetation should be laid at the sides.

### Pond two

This pond will support the Black Darter by meeting the following requirements. The Black Darter requires a pond depth of below 50cm. The pond margins will be 10cm and descend to 50cm. They prefer to be shaded and have tree cover nearby. Needs marginal vegetation.

Pond two has been placed but the trees for the Black Darters. With a peat depth of 80cm to well accommodate the 50cm needed for the darters.

#### Key features

- Depth 50cm
- Size 6.4-10m
- Tree cover
- Sloping margin at 2 to 4 ° from the edge of the pond to be ~ 0.1 m deep 1.4 to 2.3 m away from the margin margins
- Then sloping at 8 to 10 ° to reach a depth of 0.5 m at the centre of the pond

- Approximative volume of 25 to 35 m<sup>3</sup>

#### Dimensions

- The pond should be constructed in an asymmetrical shape or kidney-shape.
- The pond should be 10cm deep at the edge and slope down to 50cm deep.
- The size of the pond is at the contractor's discretion but should fit within 6.4m – 10m.
- The pond should be constructed close to the trees.

### **Pond Three**

This pond will support the Emerald Damselfly by meeting the following requirements. The Emerald Damselfly prefers a small, shallow pond of standing water. A depth of 50cm max. Will use temporary ponds that dry up in summer and prefer dense vegetation.

Pond three has been placed in the rushes due to the emerald's preference to emergent vegetation.

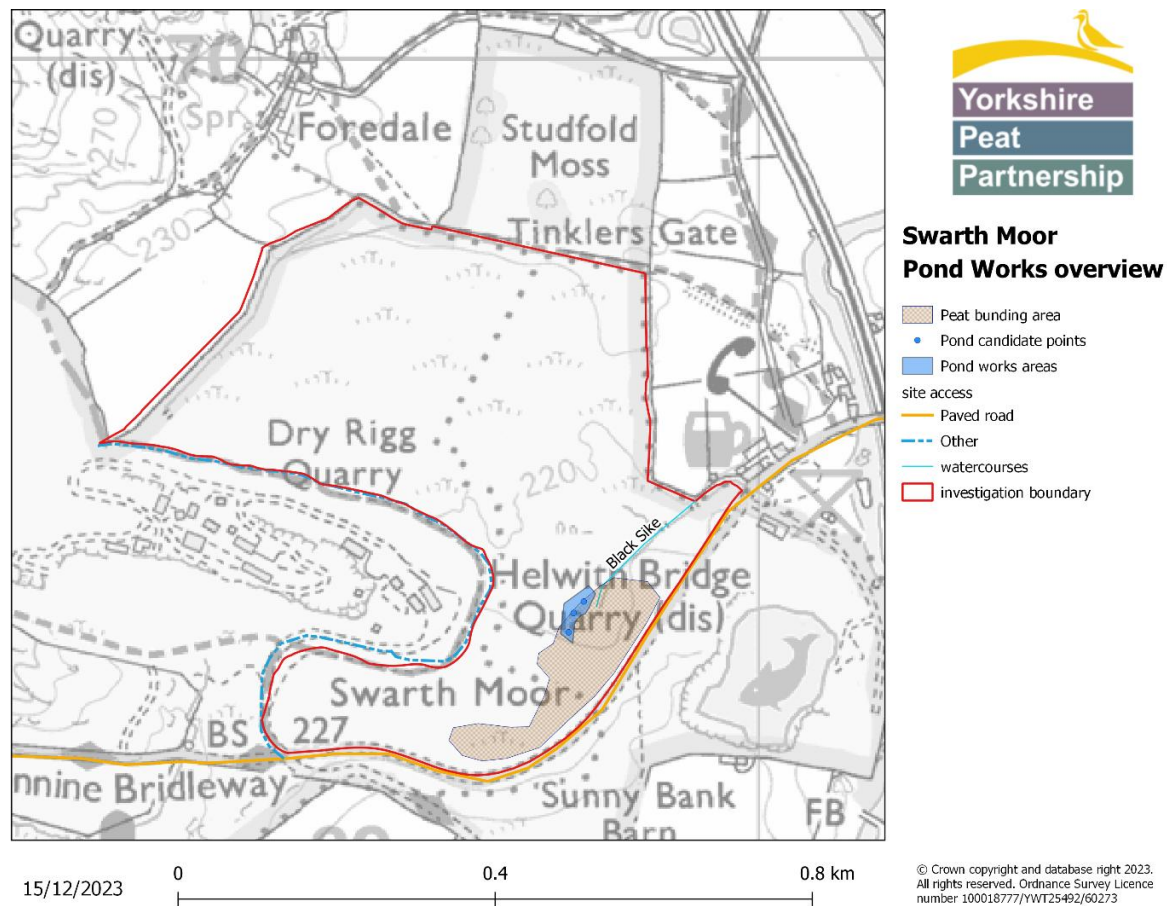
#### Key Features

- Under 50cm
- Size 6.4- 10m
- Shallow gradient: 6 to 9°
- Approximative volume of 20 to 50 m<sup>3</sup>
- Lots of emergent vegetation

#### Dimensions

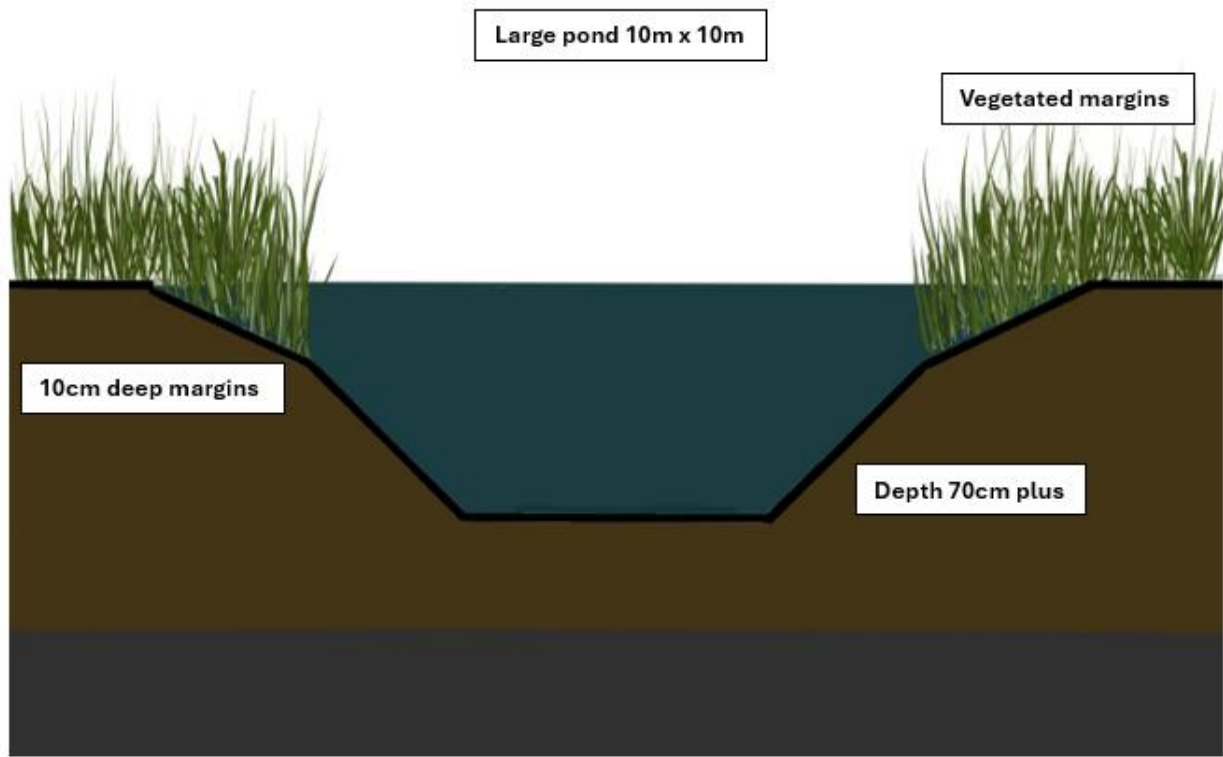
- The pond should be constructed in an asymmetrical shape or kidney-shape.
- The pond should be 10cm deep at the edge then sloping to 40 cm deep.
- The size of the pond is at the contractor's discretion but should fit within 6.4m – 10m.
- To create emergent vegetation the turfs can be laid into the pond bottom so digging to 50-60cm deep to then lay the turfs at 40cm deep.

**Figure 1 – Location of ponds on Swarth Moor:** Up to 3 ponds will be constructed over the site.

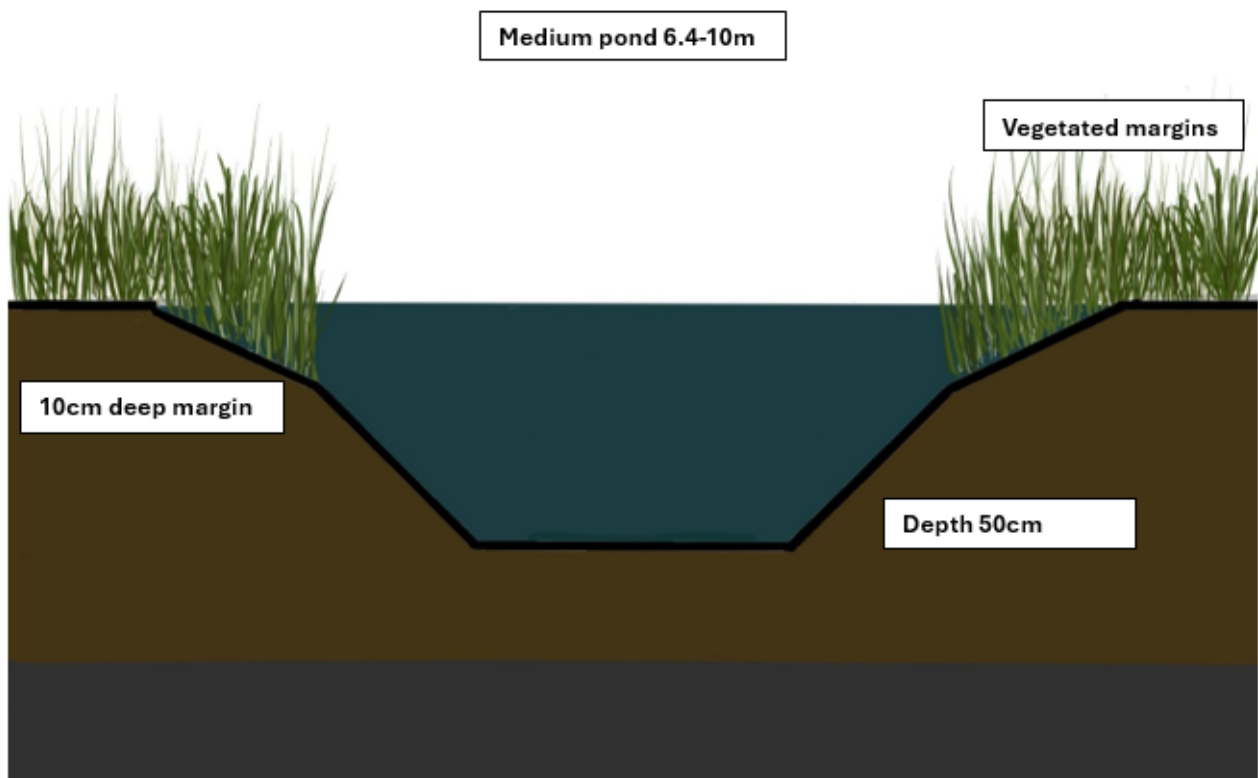


**Figure 2 – Pond Dimensions:**

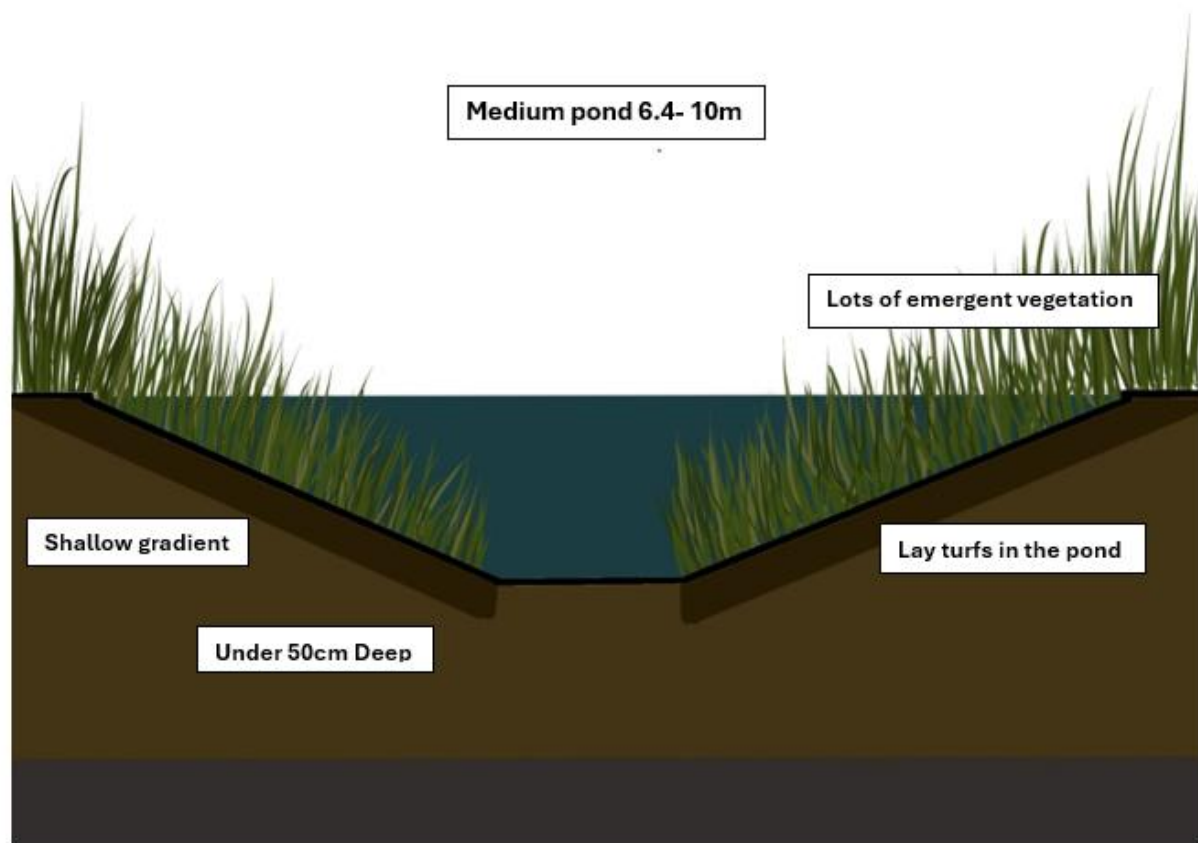
### Pond 1







Pond 2



Pond 3



	Water
	Vegetation
	Peat Turf
	Peat
	Sediment
	Pond outline

**Figure 3 – Location of pond creation and relocation areas**

Pond creation area (yellow polygon) and the peat relocation areas ‘excavated peat reuse area’ (red polygon).

