A&R TEAM THAMES AREA		Environment Agency	
BIOLOGICAL SUMMARY REPORT			
REPORT AUTHOR:	Tim Flood	**SURVEY DATE:**	18/08/2016
WATERCOURSE:	Kennington Pit	**SURVEYORS:**	Tim Flood Glen Meadows
SURVEY REASON:	Survey for Oxford FAS	**REPORT DATE:**	13/01/2017

SUMMARY

Survey results classify Kennington Pit as a *Priority Pond Habitat* under the UK Post-2010 Biodiversity Framework.

Priority Ponds are a designated habitat under the Natural Environment and Rural Communities Act 2006. This requires all public bodies to have due regard for biodiversity when carrying out any activity that may affect a designated habitat.

Whorled water-milfoil was the most abundant submerged plant. This species is classed by the IUCN (International Union for Conservation of Nature) as *Vulnerable* in the UK, which means it is considered to be facing a high risk of extinction in the wild.

Common valerian was also present on the margins and bank top. This species is classed as *Near Threatened* in England.

The Freshwater Habitats Trust state that Kennington Pit is one of the richest ponds in Oxfordshire for its plant life, and one of the most important freshwater sites in the county.

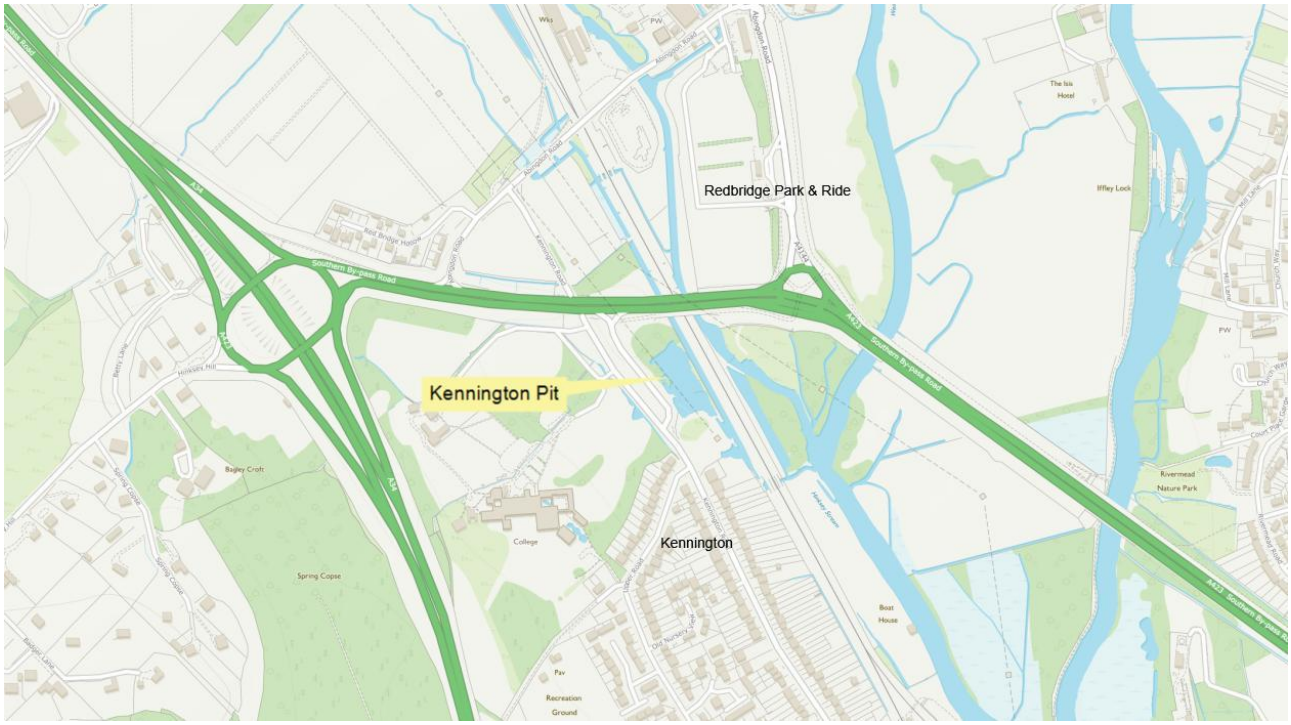
BACKGROUND

A plant survey of Kennington Pit was required for the Oxford Flood Alleviation Scheme as part of the Environmental Impact Assessment. This was done by the A&R team as it was the only plant survey required for the EIA.

Kennington Pit (SP 51867 03390) was created in the 19th century when material was removed for railway construction. The method of excavation means it has a convoluted shape and consequently has lots of marginal habitat. It has been historically a site of biological interest with uncommon aquatic plants and invertebrates, and is a local nature reserve. In the 1990s it was one of two sites in the UK of a rare pond snail. However since then water quality issues are thought to have caused the pond to become degraded and the snail has not been found there since 1993.

The plant survey was undertaken from the bankside as the pond was overgrown with willows making access with a boat too difficult. The northern and north east edges were not accessible (approximately 30% of the margin) due to being overgrown. Plant species were recorded following the PSYM method (developed by the Freshwater Habitats Trust) where plant species were recorded without cover values, though the dominant plant species were noted. The PSYM model was then used to classify the pond's biological quality.

LOCATION MAP



AERIAL PHOTOGRAPH

Looking west (from Bing Maps)

SITE PHOTOGRAPHS

PSYM RESULTS

Submerged + marginal plant species	
Predicted (SM)	26.5
Actual (SM)	24
EQI (SM)	0.91
IBI (SM)	3
Uncommon plant species	
Predicted (U)	4.5
Actual (U)	6
EQI (U)	1.34
IBI (U)	3
Trophic Ranking Score (TRS)	
Predicted (TRS)	8.46
Actual (TRS)	9.15
EQI (TRS)	1.08
IBI (TRS)	2

Sum of Individual Metrics	8
Index of Biotic Integrity (%)	89%
PSYM quality category (IBI >75%=Good, 51-75%= Moderate, 25-50%=Poor, <25%=V Poor)	Good
Is this a Priority Pond? (Good quality category) Note: based on plants only	Yes

PLANT SPECIES RECORDED IN THE SURVEY

Kennington Pit - PSYM plant survey 18/08/16 (dominant species are in **bold)**		
HABITAT	**COMMON NAME**	**SPECIES NAME**
Marginal (bank-side)	Bittersweet	*Solanum dulcamara*
	Common valerian	*Valeriana officinalis*
	Creeping buttercup	*Ranunculus repens*
	Creeping jenny	***Lysimachia nummularia***
	Gipsywort	*Lycopus europaeus*
	Great pond-sedge	*Carex riparia*
	Kneiff's feather-moss	*Leptodictyum riparium*
	Lesser water-parsnip	*Berula erecta*
	Marsh bedstraw	*Galium palustre*
	Marsh horsetail	*Equisetum palustre*
	Meadowsweet	*Filipendula ulmaria*
	Pendulous Sedge	*Carex pendula*
	Pocket-moss	*Fissidens sp.*
	Purple loosestrife	*Lythrum salicaria*
	Remote sedge	*Carex remota*
	Showy feather-moss	*Oxyrhynchium speciosum*
	Silverweed	*Potentilla anserina*
	Slender tufted-sedge	*Carex acuta*
	Square-stemmed St John's wort	*Hypericum tetrapterum*
	Water figwort	*Scrophularia auriculata*
	Water forget-me-not	*Myosotis scorpioides*
	Water-mint	***Mentha aquatica***
	Willowherb	*Epilobium sp.*
	Yellow-flag iris	*Iris pseudacorus*
Emergent	Arrowhead	*Sagittaria sagittifolia*
	Branched bur-reed	*Sparganium erectum*
	Gipsywort	*Lycopus europaeus*
	Great pond-sedge	*Carex riparia*
	Horsetail	*Equisetum fluviatile*
	Lesser water-parsnip	*Berula erecta*
	Norfolk reed	***Phragmites australis***
	Water dock	*Rumex hydrolapathum*
	Water mint	***Mentha aquatica***
	Yellow-flag iris	*Iris pseudacorus*
Floating	**Blanketweed**	***Cladophora***
	Swollen duckweed	***Lemna gibba***
	Yellow water-lily	***Nuphar lutea***
Submerged	Blanketweed	*Cladophora*
	Blanketweed	*Spirogyra*
	Bur-reed	*Sparganium sp.*
	Ivy-leaved duckweed	***Lemna trisulca***
	Kneiff's feather-moss	*Leptodictyum riparium*
	Nuttall's pondweed	*Elodea nuttallii*
	Starwort	*Callitriche sp.*
	Water plaintain	*Alisma sp.*
	Whorled water-milfoil	***Myriophyllum verticillatum***
	Yellow water-lily	*Nuphar lutea*
Non-native species	Japanese knotweed*	*Fallopia japonica**
	Nuttall's pondweed	*Elodea nuttallii*
	Orange balsam*	*Impatiens capensis**
	* above the survey recording zone	

DISCUSSION

The plant community was very diverse with thirty six different species recorded (not all of which are used by the PSYM model). Each habitat type had a diverse community but the highest diversity was found within the marginal zone, reflecting the large marginal area at the site.

The most unusual species recorded was whorled water-milfoil (*Myriophyllum verticillatum*) which dominated the submerged plant community. This species has experienced much decline throughout its range since the mid-1900s, and is classed by the IUCN (International Union for Conservation of Nature) as *Vulnerable* in the UK, which means it is considered to be facing a high risk of extinction in the wild. Currently in Oxfordshire it is known from the River Ray at Islip, and at this site.

Common valerian (*Valeriana officinalis*) was present on the bank top and within the marginal zone. Despite its name, common valerian is classed within the Red List published by the Botanical Society of Britain and Ireland as *Near Threatened* in England, which means it has suffered a reduction in population since 1930 and should be regarded as a conservation priority in England.

The PSYM results calculate the site as being of Good Quality therefore is classed by the UK Post-2010 Biodiversity Framework (formerly the Biodiversity Action Plan) as a Priority Pond Habitat. Kennington Pit also meets two further criteria for a Priority Pond ('Species of high conservation importance', and 'Exceptional assemblages of key biotic groups') so qualifies under three out of the five criteria.

Priority Ponds are a designated habitat under the Natural Environment and Rural Communities Act 2006. This act requires all public bodies to have due regard for conserving biodiversity when carrying out any activity, with particular regard to be given to activities that may affect a designated habitat.

It is not possible to compare PSYM results with other local sites to give an indication to the local importance of Kennington Pit. However the Freshwater Habitats Trust (who developed the methodology used in this survey) state (pers.comm.) that botanically Kennington Pit is one of the richest sites in Oxfordshire, and in a new project they are undertaking the site comes out as one of the most important freshwater sites in the county.

The first PSYM plant survey at Kennington Pit was in the early 1990s. Since then certain species such as long-stalked pondweed (*Potamogeton praelongus*) and river water-dropwort (*Oenanthe fluviatilis*) have disappeared, probably due to an increase in the level of plant nutrients entering the pond. Despite this Kennington Pit continues to be an important pond for its plant community, and should be a focus for conservation.