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# **Cambridge Sport Lakes**

## **Update on ecological assessment and response to planning**

**June 2006**

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## Update on ecological assessment and response to planning

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### Issue and Revision Record

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## Executive Summary

This report updates and expands upon the previous Ecology and Nature Conservation Volume 4 of the Environmental Statement, which was issued in March 2005.

The proposed Cambridge Sport Lakes development provides an opportunity to significantly enhance the ecological importance of the region.

The specific impacts of the proposed development can be summarized:

- The project will create new habitats of significant ecological value, notably substantial areas of open water, water margins, and large areas of scrub, species-rich grassland and the planting of native tree species.
- The proposed habitat creations on the site will provide suitable foraging and breeding areas for a rich diversity of fauna, including badgers, bats, water voles, reptiles, amphibians and birds, including Schedule 1 species and UK and local Biodiversity Action Plan priority species.
- No locally or nationally designation protected areas will be impacted by the proposed development.
- Mitigation measures will be instigated to compensate for the potential loss of habitats which may contain protected species which are in the area, notably the creation of new habitats for water voles, and the translocation and habitat creation for badgers.
- Mitigation and compensation measures will be put in place to minimize any potential disturbance to breeding birds on or near the site, in particular to nightingales and grasshopper warblers which occur near to the proposed site.
- Additional surveys will be undertaken on over-wintering bird species, and any necessary mitigation and compensation measures considered.

While the proposed development does have an ecological impact on the area, with the loss of some ecological features, the site will be greatly enhanced through the careful implementation of mitigation and compensation strategies. While the short-term construction of the site may be a slight adverse impact, the long-term ecological impact of the proposed development is likely to result in a slight to moderate beneficial effect.

# **1 Update on previous investigations**

## **1.1 Overview**

Following the formal responses in early 2006 to the Cambridge Sport Lakes Trust (CSLT) Environmental Statement dated March 2005, Mott MacDonald was commissioned by CSLT to undertake a walkover of the proposed Cambridge Sport Lakes (CSL) development site in May 2006. The objective of the walkover was to assess any changes in the ecological features of the site, as previously described in the CSLT Environmental Statement, and subsequently address some of the issues raised in the objection letters to the proposed development.

For conciseness, a summary of the findings from the walkover is provided in this section. Information from the walkover is then integrated into the ecological assessments presented in Sections 2 & 3.

## **1.2 Update on Certain Ecological Features**

### **1.2.1 Tree and vegetation inventory**

A tree inventory of the entire site was undertaken in May 2006. The objective of the survey was to identify the areas of vegetation and trees which are to be lost or retained by the proposed development.

Hawthorn and other shrubs lower than 3 m in height are not recorded. The number of trees in dense woodland stands and individual multi-stemmed specimens are approximate. Some willow specimens recorded appear to be hybrids and are not true to type. Table 1.1 summarises the likely effect of the proposed scheme.

**Table 1.1: Tree Survey Descriptions**

Location	Description	Number of trees in total	Effect of proposed scheme
Waterbeach Road Hedge line A	Semi ornamental avenue planting consisting of a mixture of trees and shrubs between 1.5m to 7m in height. The majority of the trees are between the road and a perimeter field ditch. Self-sown willow present in the ditch in places.	3 Whitebeam 1 Hawthorn 2 hawthorn (pink) 2 Ash 1 cherry 4 Field maple 1 White willow 1 willow 1 Beech	Entrance road to cut through avenue resulting in the loss of approximately 6 trees.  Further trees are unlikely to be affected
Field drain and hedge line B	Gappy, overgrown hawthorn hedgerow along the western bank with willow, osier and a single oak specimen in the drain. Hedge sections to 4m in height, willows and oak upto 10m in height	1 oak 5 Willow 2 Osier 1 Crack willow 2 Hawthorn	Hedgerow and 11 trees will be lost to the scheme
Field Drain C	Scrubby elder and hawthorn	1 Hawthorn	1 hawthorn lost to the scheme
Field drain D	Isolated specimens of willow, hawthorn and sycamore, overall height of the willow and hawthorn to 7m, although the condition of the latter was poor with damage to the bole and crown die back. Sycamore height 5m	1 Hawthorn 1 Willow 1 Sycamore	3 trees lost to the scheme
Field drain E	Isolated specimens of willow and white willow, overall height between 4 and 5m.	4 Willow 1 White Willow	5 trees lost to the scheme
Ditch at Hepworth Farm Hedge line F	Scrubby continuous double hedge line consisting of predominantly Ash, single oak with hawthorn, blackthorn, elder and regenerating elm to an overall height of 4m. Ash between 6 and 10m in overall height and oak to 13m.	2 Ash 1 Oak	3 trees will be lost to the scheme
Field drain G	Scrubby hawthorn hedge with gaps between 4 and 5m in height with predominantly ash standards (between 5 and 8m in height), single oak (10m), 3 horse chestnut specimens (to 12m in height) and stand of white willow (to 14m in height, number of specimens difficult to assess assumed 10 including saplings)	7 Ash 1 Oak 2 Hawthorn 3 Horse chestnut 10 White willow (approximately)	23 trees will be lost to the scheme
Field Drain H	Gappy hawthorn hedge with isolated standard trees including an oak	1 oak	3 trees will be lost to the scheme

Location	Description	Number of trees in total	Effect of proposed scheme
	to 10m in height and 2 white willow trees to 10m in height	2 white willow	
Railway boundary I	Intermittent scrubby edge with 1 ash (6m in height) and 2 white willow (5m in height). Extensive sallow and osier generation in the ditch with some hawthorn	2 White willow 1 Ash	Works are unlikely to be within 5m of the network Rail ditch therefore trees and scrub will be unaffected
Field Drain J	Intermittent hedgerow with standard trees including 2 sallow (to 4m in height), 8 oaks (between 4 and 10m in height),	5 Sallow (approximately) 8 Oak	13 trees will be lost to the scheme
Hedge line K	Recently planted mixed hedgerow including dogwood, hawthorn, hazel and field maple (to 4m in height) Single oak specimen 6m high	1 oak Note field maple not recorded individually	Works are unlikely to be within 8m of hedgerow therefore trees and hedgerow will be unaffected
Field Drain L	Intermittent hedge line flowing drain. Some sallow in the ditch with occasional ash (to 10m in height) a single oak set away from the drain (to 8m in height), 2 poplars (to 21m in height) and extensive white willow (between 10 and 15m in height) Note a barn owl was seen	1 Oak 2 Ash 2 Poplar 6 White Willow 1 sallow	12 trees will be lost to the scheme
Hedge line M	Gappy hedge line with dead elm and hawthorn. Hawthorn specimens were poor. 2 Oak specimens close to the railway the one closest to the railway had a good shape to a height of 12m.	2 Hawthorn 2 Oak	2 Hawthorn will be lost to the scheme. The 2 oaks may be retained dependant on the proximity of the works to the railway.
Field drain N	Very open with sallow in the ditch in places	2 Sallow	2 trees will be lost to the scheme
Field drain O	Isolated trees along the line of the drain small sections of hedgerow with regenerating elm and bramble. Trees ash and oak of variable quality. Oaks varied from 5m in height to 2 specimens between 15 and 17m. Ash tended to be multi-stemmed with open crowns. Heights between 4 and 12m	3 oak 11 Ash	14 trees will be lost to the scheme
Field Drain P	Single ash to the east adjacent to the drain again lopped to accommodate the overhead services	Mixed hedgerow to 5m in height	Hedgerow will be lost to the scheme
Hedge line along Track Q	Continuous mixed hedge to the west, containing regenerating elm, oak and ash. All trees lopped to allow for clearance of the overhead services.	1 ash	1 ash will be lost to the scheme
Field Drain R	Continuous hedge line consisting of regenerating elm and bramble. Standard trees include sycamore (to 8m in height) and a single ash, 10m in height. Field maple was present throughout between 5 and 8m in height	1 Ash 2 Sycamore 9 Field maple 2 Hawthorn	14 trees will be lost to the scheme
Hedge line S and copse	Small copse with even aged sycamore (to 10m in height), some cherry and hawthorn. Hedgerow consists of a single oak (to 6m in	29 Sycamore (approximately)	35 Trees will be lost to the scheme

Location	Description	Number of trees in total	Effect of proposed scheme
	height), 1 Horse chestnut 10m. Hedgerow continues outside the site boundary supporting large trees upto 20m in height.	3 Cherry 1 Oak 1 Horse Chestnut 2 Hawthorn	
Field drain T	Isolated hawthorn (to 5m in height) and stand of Grey poplar (12 to 15m in height) with hawthorn and ash.	4 Hawthorn 30 Grey poplar (approximately) 5 Ash	39 trees will be lost to the scheme
Woodland block and hedge line U	Mixed planted woodland with horse chestnut (to 22m in height), ash (to 15m in height) and elm (regenerating). Very dense understorey leading to a dense wooded hedge line supporting a stand of grey poplar (to 16m in height), sycamore, hawthorn and white willow (9m in height) and ash (to 15m). Isolated ash saplings in the field with scrubby willow	3 White willow 1 Sycamore 2 Hawthorn 5 Grey poplar 7 Ash Woodland block numbers are approximate as follows: 3 Horse chestnut 5 Ash	18 trees will be lost to the scheme (approximately)
Double hedge line adjacent to track V	East of the track: Mature line of ash specimens (between 15 and 20m in height) with occasional hawthorn (to 5m), sycamore (to 18m) and field maple (between 8 and 15m). West of the track: Willow dominated (specimens to 25m in height) with sections of scrubby hedge with ash (between 8 and 15m in height), hawthorn, blackthorn, elder and bramble.	East of the track: 39 Ash 4 Field maple 1 Sycamore 2 Sallow 9 Hawthorn West of the track: 14 White willow 14 Ash 3 Hawthorn 1 Sycamore	Trees east and west of the track should be able to be retained, subject to the detailed design of the tow-path.
Hedge line along Fen Road W	Line of ash (between 10 and 15m in height) with small sections of hawthorn. Large ornamental ash in the garden of the cottage	6 Ash	5 Ash will be lost to the scheme
Hedge line X	Double hedge line staggered either side of the ditch including ash standards (between 8 and 15m in height), osier (to 6m), white willow (to 15m) split bole, stands of dense grey poplar (to 20m in height) and ash.	1 Osier 5 White willow 19 Ash 7 Hawthorn 7 Grey poplar	38 trees will be lost to the scheme (subject to land purchase agreements)

Location	Description	Number of trees in total	Effect of proposed scheme
Woodland edge Y	Willow and poplar edge to Milton Country Park. All trees appear to be either in the ditch or along the western bank. A number of the sallow are spreading into the site. Species include white willow (to 20m in height), crack willow (to 18m in height) osier and sallow scrub and grey poplar (to 18m)	4 Sallow 6 White willow 6 Grey poplar 1 osier 1 crack willow	Trees should be unaffected by the scheme
Award Drain Z	Individual white willows on the southern bank of the ditch, some old pollards between 8 and 22m in height	11 White willow	Trees should be unaffected by the scheme subject to engineering requirements for the Award Drain
River Cam AA	Willow pollards following the line of the drainage ditch. 2 willows not pollarded (to 22m in height), pollards roughly 6 to 7m in height	33 White willow 1 cherry 1 Hawthorn	33 trees will be lost to the scheme
Railway hedge line BB	Intermittent hawthorn hedge with occasional ash (to 7m in height) and willow scrub in the ditch	5 Hawthorn 4 Sallow 1 Osier 4 Ash	Trees should be unaffected by the scheme
Hedge line CC	Scrubby hawthorn hedge with Field maple (to 5m in height) blackthorn and elder	2 Field maple	2 trees will be lost to the scheme

### **1.2.2 Badger assessment**

The entire area was surveyed for possible badgers during the walkover. There are signs of badger activities within the northern area of the proposed development site, with clear evidence of badger foraging along the field margins and hedgerows.

There is an active, single-hole badger sett within the area of the proposed development. This sett is probably occupied by a single lone male which may have been rejected from a neighbouring badger sett. However no other badger setts were found within the area of the proposed development.

No sett could be located during the walkover within 30m adjacent to the proposed site. However, the badgers are active within the site and mitigation measures will need to be implemented prior to the start of construction (Section 2 of this report).

### **1.2.3 Great-crested newt assessment**

The existing drainage ditches in the area of potential impact on the development site are sub-optimal for great-crested newts, and the surrounding habitats, predominantly arable fields are unsuitable.

The only pond in the area is sub-optimal but the pond does have potential to contain great-crested newts. There are no previous records of great-crested newts in the immediate area. It is regarded as being highly unlikely that the proposed development will have any impact on great-crested newts because:

- The pond is in sub-optimal condition for newts.
- If newts are present it is highly likely to only be small population, and;
- There are significant ecological barriers between the pond and the area of potential impact.

### **1.2.4 Water voles**

The current distribution and status of the water vole populations within the area of potential impact of the proposed development remains unchanged. The habitats within the drainage ditches on the site, as illustrated in Figures E1 to Figure E3 in Volume 4 of the Environmental Statement, remain suitable for water voles, and water voles are highly likely to be present in the three identified ditches and potentially throughout the neighbouring network of drainage ditches.

## 2 Summary of Ecological Features & Potential Impacts

Assessment on the ecological features and the potential impacts of the proposed development has already been provided in Volume 4 of the Environmental Statement. A summary of the potential impacts and mitigations has already been provided in the Environmental Statement (Volume 4, Table 7.9).

Taking into consideration of the responses and stakeholder interests, the new PPS9 guidance on planning and biodiversity, and the recent walkover update (Section 1 of this report), the impacts, mitigations & compensation have been modified. For conciseness, the modified assessments are summarised below in Table 2.1.

The criteria used to make the impact assessments, as presented in Table 2.1, are based the Department of Transport Biodiversity Impact Assessment Guidance (WebTAG), which are modified in accordance with the *Guidelines on Ecological Impact Assessments* as prepared by the Institute of Ecology and Environmental Management (IEEM), presented in Appendix A of this report.

Further details regarding mitigation, compensation and enhancement are also provided in Section 3 of this report.

**Table 2.1: Summary of Impact and Proposals**

Characterisation of impact		
Code	Descriptor	Subcodes
SI	Sign	Positive (+ve) or negative (-ve)
PO	Probability of occurring	Certain, Probable, Possible, Unlikely
CO	Complexity	Direct, Indirect or Cumulative
MA	Magnitude	Level of severity of influence
RE	Reversibility	Reversible, or Not Reversible
DU	Duration	Duration of the impact; Short Term, Medium Term, Long Term, Permanent.

Ecological feature	Possible impact	Characterisation of Impact	Mitigation proposal	Compensation proposal	Enhancement proposal	Impact after mitigation & compensation
Tree and woodland	- dust & pollution - habitat loss - damage & loss of individual trees as outlined in Table 1.1.	SI: -ve PO: C CO: D&InD MA: Moderate RE: Rev DU: MT	- dust suppression plan. - minimize clearance. - BS5837 guidance	- 1:2 re-planting policy, onsite and off-site planting. - habitat creation on site	- additional tree planting and habitat creation onsite and offsite.	Minor to moderate positive  [long-term positive through additional planting]
Hedgerows	- dust & pollution - habitat loss	SI: -ve PO: C CO: D MA: Moderate RE: Rev DU: MT	- potential for hedgerow translocation. - minimize clearance - clearance outside breeding bird period.	- hedgerow reinstatement around site perimeter	- replacement of species poor hedges with species rich hedgerow	Neutral
Grasslands	- dust & pollution - habitat loss	SI: -ve PO: C	- minimize clearance and	-	- creation of species rich	Minor to moderate

Ecological feature	Possible impact	Characterisation of Impact	Mitigation proposal	Compensation proposal	Enhancement proposal	Impact after mitigation & compensation
		CO: D&InD MA: Low RE: Rev DU: MT	removal - potential translocation of species rich turf.		wildflower meadows across the site.	positive  [increase in grassland habitats]
Drainage ditches	- increased pollution loading - pollution risk - habitat loss	SI: -ve PO: C CO: D&InD MA: High RE: Rev DU: MT	- minimize risk of discharge and spillage accidents. - minimize clearance.	- creation of aquatic habitats and drainage ditches	-	Moderate negative
Breeding birds	- noise & physical disturbance - loss of nesting sites - habitat fragmentation	SI: -ve PO: Pr CO: D MA: Moderate RE: Rev DU: ST	- vegetation clearance outside breeding bird period. - minimize loss	- habitat creation onsite with tree and scrub planting - nest boxes onsite.	- additional habitat creation onsite more than that being removed	Minor positive  [increase in total area with scrub and trees, increase in diversity of habitats in area]
Wintering birds	- noise & physical disturbance - loss of feeding areas.	SI: -ve PO: Pr CO:D MA: Moderate? RE: Rev DU: ST	- minimize activities and disturbance if Schedule 1 species represent.	- scrub/habitat creation onsite.	- additional open water and water margins currently not in the area.	-  [survey pending]
Nightingales & grasshopper warblers, other Schedule 1 species	- noise & physical disturbance - potential loss of some feeding areas	SI: -ve PO: Po CO: D MA: Low RE: Rev DU: ST	- minimize disturbance, keep construction activities to minimum in the area while species present.	- additional scrub creation. - 30m buffer zone between current species location and construction site.	-	Neutral  [habitat creation balances out disturbance]
Skylark	- noise & physical disturbance. - potential loss of feeding areas. - loss of habitats	SI: -ve PO: Pr CO: D MA: Moderate RE: NRev	- main construction outside breeding season.	-	-	Minor negative
Amphibians	- disturbance during construction. - accidental killing if on site. - loss of habitats.	SI: -ve PO: Pr CO: D&InD MA: Low RE: Rev DU: MT	- Phase habitat clearance. - trapping and translocations	- open water and water margins suitable for amphibians	- creation of ponds on site suitable for great-crested newts.	Minor positive potential  [drainage ditch loss balanced against open water and pond creation]
Reptiles	- disturbance during construction. - accidental killing if on site. - loss of habitats.	SI: -ve PO: Pr CO:D&InD MA: Low RE: Rev DU: MT	- Phase habitat clearance. - trapping and translocations	- habitat creation onsite, notably embankments for basking and increase in open water and water margins for grass snake.	-	Minor to moderate positive  [creation and additional increase of suitable habitats]
Badgers	- loss of sett. - loss of foraging	SI: -ve PO: C	- translocation	- creation of habitats suitable	- possible creation of	Neutral

Ecological feature	Possible impact	Characterisation of Impact	Mitigation proposal	Compensation proposal	Enhancement proposal	Impact after mitigation & compensation
	areas. - habitat fragmentation. - potential mortality due to site traffic. - disturbance during construction.	CO: D&InD MA: Moderate RE: Rev DU: MT	of sett	for badgers	artificial setts onsite.	[short-term negative balanced by long-term compensation]
Bats	- disturbance during construction. - loss of some roosting and/or hibernation sites. - loss of existing foraging areas.	SI: -ve PO: Pr CO: D&InD MA: Local RE: Rev DU: ST	- pre clearance surveys and checks of all potential bat trees.	- habitat creation, with mixed patches of woodland, scrub and open areas.  - erection of bat boxes.	-open water likely to provide additional areas for bat foraging.	Neutral  [potential creation of new habitats, open water margins]
Water voles	- habitat loss. - pollution risks - habitat fragmentation.	SI: -ve PO: C CO: D&InD MA: Moderate RE: Rev DU: MT	- trapping and translocation. - timing of habitat loss to minimize disturbance.	- creation of new drainage ditch system and aquatic habitats	- creation of new drainage ditch system and aquatic habitats	Neutral
Otter	- disturbance during construction.	SI: -ve PO: Po CO: D&InD MA: Low RE: Rev DU: ST	- Phased clearance. - designing culverts to allow otter passage.	- creation of new drainage ditch system and aquatic habitats	-	Minor positive  [increase in open water and margin habitats]
Aquatic invertebrates	- pollution risks. - habitat loss.	SI: -ve PO: C CO: D&InD MA: Moderate RE: Rev DU: ST	- translocation to neighbour areas	- creation of new aquatic habitats.	-	Neutral  [loss compensated by new open water and margins]
Aquatic macrophytes	- pollution risks. - habitat loss.	SI: -ve PO: C CO:D&InD MA: Moderate RE:Rev DU: MT	- translocation to neighbour areas	- creation of new aquatic habitats.	-	Neutral  [loss compensated by new open water and margins]

*Impact after mitigation & compensation based on 5-10 years after construction.*

## **3 Specific Responses and Recommendations**

### **3.1 Overview**

In this section the specific issues raised by English Nature, The SCDC Ecologist, and comments from other stakeholders are addressed, and a summary of the mitigation, compensation and enhancement recommendations provided.

Given the size and complexity of the proposed development, a possible negative short term ecological impact is unavoidable. An overall ecological impact score for the proposed development is a moderate adverse impact. However, much of the existing area is open arable fields of local ecological importance and low conservation value. Through the appropriate mitigation, compensation and enhancement measures this negative impact can evolve into a long-term potentially positive impact.

### **3.2 Impact on River Cam**

A detailed environmental management plan for the CSL will be formulated to ensure that there is no significant negative environmental impact on the River Cam. The management plan will be formulated under close consultation with the Environment Agency and English Nature. The ecological management plan will be formulated after a detailed Phase 2 Flood Risk Assessment and detailed plan of the proposed development have been prepared.

### **3.3 Protected Species**

#### **3.3.1 Birds**

It is accepted that a wintering bird survey is required, and subsequently the potential impacts will need to be reviewed. Once planning permission has been granted a wintering bird survey will be undertaken across and adjoining the proposed development site. Pending the findings of the survey, the necessary mitigation and compensation strategies will be formulated under consultation with English Nature.

An outline of mitigation and compensation plans for breeding birds is already provided in Section 6.1.2 of the Environmental Statement. Overall, the current site dominated by open arable and improved grassland fields will be restored with new, large areas of open water, water margins and significant areas of scattered scrub, dense scrub, trees and open species rich grasslands.

#### **(i) Nightingale**

The current nightingale population is outside the immediate area of impact of the proposed development site. There is an existing 30m buffer zone between the existing nightingale population and the proposed development site at Car Dyke (see attached site map showing proposed mitigation measures). However, there could be construction disturbances and impacts. To mitigate and compensate against any potential negative impacts, the following is proposed:

- 
- Within the 30 m buffer zone a habitat creation plan will be instigated for the eastern flank of the development alongside the Car Dyke grassland. This will be accomplished through the planting of scattered and dense native-species scrub suitable for nightingales and other locally important bird species.
  - Given the scale of the proposed development some construction work is likely to occur during periods when birds are present. Therefore, the installation of barrier fencing between the construction site and Car Dyke is proposed to reduce disturbance.

## (ii) Grasshopper Warbler

The same impacts and mitigation/compensation strategy applied to the nightingale, applies to the grasshopper warbler. However, in addition an area of reed beds, reed swamp and scattered scrub will be created within the south-eastern edges of the storage lake (see mitigation plan). This will provide suitable habitats for grasshopper warblers and other bird species of local importance.

## (iii) Skylarks

Some habitats currently suitable for skylarks will be lost due to the construction of the proposed development. In response:

- Mitigation will include the clearance of skylark habitats outside of the breeding season, and during periods when skylark activity/abundance on the site is at its lowest.
- Habitat loss will be compensated through the creation of open grassland meadow areas south of the Storage Lake.

### 3.3.2 Water voles

Further and more detailed surveys for water vole will be undertaken prior the start of construction and a detailed translocation action plan instigated. It is anticipated that these surveys and subsequent habitats creations (described below) and translocations will occur up to two years prior to the start of construction.

In addition to the mitigation strategy outlined in Section 6.1.7 of the Environmental Statement, compensation for the loss of habitats is now proposed, thus:

- New aquatic habitats suitable for water voles will be created out from the existing Award Drain. This will include the creation of drainage ditches following English nature guidance on habitat creation for water voles, with tiered embankments, meandering ditches and planting of vegetation along the ditch banks. It is proposed that these aquatic habitats are created prior to the main construction phase of the proposed development to act as a receptor site in the translocation of water voles.
- The aquatic habitats created within a zoned section of the Storage Lake will also be suitable for water voles, and if necessary water voles could be translocated into the Lake from an *ex-situ* population.

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### **3.3.3 Reptiles**

To clarify, artificial refugia were used in the original reptilian surveys, with refugia placed at 10-15m apart along hedgerows edges, field margin and drainage ditch edges. The original survey did not record reptiles. However, given the size of the proposed development site and the presence of suitable habitats, notably for grass snakes, we take the precautionary principles and assume reptiles may be present.

English Nature guidelines on reptile surveys and translocations will be instigated. Long-term monitoring of reptile populations will occur between May and September, followed by between 60 and 90 days of translocations prior to construction. Suitable local receptor sites will be identified prior to translocations and monitoring for existing reptile populations. Given the size of the site it may not be practical to exclude reptiles from all areas. Therefore trapping, translocation and watching briefs will continue up to a point when the area can be considered undesirable for reptiles.

Any loss of habitats for reptiles, as described in the Environmental Statement, will be compensated through the creation of suitable reptile habitats within the proposed development site. In the long-term there could be significant positive impacts on the reptile population within the area. The proposed development comprises of a good diversity of habitats very suitable for reptiles (scattered scrub, woodland patches, and patches of open grassland, water margins and exposed slopes for basking).

### **3.3.4 Amphibians**

No great-crested newts are likely to occur on or within the area of potential impact. However, the need for further newt surveys will be reviewed depending on the final start date of the proposed construction.

If newts are found on the site, a strategy similar to that adopted for reptiles will be instigated for amphibians. Similarly the proposed development should result in significant positive impacts for amphibians. The Storage Lake margins and surrounding scrub will provide highly suitable habitats for amphibians.

### **3.3.5 Badgers**

The recent walkover did identify a single, small badger sett on site. EN guidance on the translocation of badgers from a proposed construction site will be followed.

Subsequent to further surveys, and if required an EN licence will be applied for if a sett is found within 30m of the proposed development site.

## **3.4 Other Species Issues – Post Planning Permission Surveys**

The potential presence of protected species on the site will be reviewed in accordance with the planned start of the construction of the proposed development, post planning permission.

A full protected species walkover will be undertaken at least 12 months prior to the start of construction, and as necessary additional surveys will be undertaken. Following this update, the following additional surveys are proposed, post-planning:

- Wintering bird surveys
- Reptile surveys
- Water vole surveys
- Badger surveys
- Bat surveys in mature tree prior to felling.

The objective of these surveys will be to review the necessary mitigation & compensation measures (notably wintering birds), and provide necessary suitable ecological information prior to instigating a species translocations programmes (reptiles and water voles).

### **3.5 Other Species Issues – Contractors**

Environmental policies and experience with protected species will be important criteria in the selection of contractors to undertake the proposed development works. Ecology toolbox workshop will be given to all contractors working on site. An EN-Licensed ecologist will provide advice on ecological issues as they may arise during the construction process.

### **3.6 Other Species Issues – Monitoring & Review**

As suggested by English Nature, an ecological monitoring programme will be established to assess both the success of the mitigation/compensation measures, but also the ecological impacts to the adjacent areas to the proposed development site. This will be especially important in relation to any potential effects on the River Cam. A detailed ecological monitoring programme can be agreed under consultation with English Nature.

Any necessary additional mitigation measures subsequent to the construction of the proposed development will need to be considered as and when any potential negative impacts which result from the construction of the development have been identified.

### **3.7 Recommendations**

#### **3.7.1 Mitigation measures**

An outline of the mitigation measures is shown on the attached mitigation site plan, as follows:

- All scrub and tree clearance will be kept to a minimum. Where clearance is necessary this will be undertaken outside the bird breeding season (mid-March to end of July, weather pending). If scrub or trees are to be removed within the bird breeding season, then breeding bird surveys will be required and the necessary mitigation measures put in place.
- In areas where trees are adjacent to the site, but not being removed then appropriate tree protection will be provided using recognised methods in accordance with BS 5837 “Guide for Trees in Relation to Construction” and will be carried out by suitably trained or qualified personnel.

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- Habitats on and/or adjacent to the site are suitable for breeding birds. To minimise any potential impact or disturbance to protected breeding birds, attempts will be made for the main construction periods of the proposed development to be undertaken outside the bird breeding season, from early-August and be complete by mid-March. When construction work is undertaken during or extends into the breeding season (mid-March to end of July), then further assessments and mitigation measures would be necessary to reduce disturbance to neighbouring breeding birds areas, such as barrier fencing to reduce noise.
  - To minimise any potential impact to amphibians (if found near to the site) during construction, the construction should ideally be undertaken between August and January, this is to minimize any killing of amphibians during there migration to and from the drainage ditches. When the construction work is to be undertaken, or extend into, between January and July, then:
    - The site should be searched for amphibians by a trained ecologist immediately before the planned construction, and;
    - If appropriate amphibian exclusion fences should, if possible and practical, be erected along the lines of the proposed pipelines and construction areas.
    - If great-crested newts are found during construction a qualified ecologist will be consulted.
    - As the proposed construction works is close to various water bodies and drainage ditches river, the construction work will follow the Environment Agency guideline on construction working near or adjacent to water bodies.
    - Translocations of macrophyte communities, amphibians, reptiles, water voles and badgers may be necessary subject to post-planning and pre-construction ecological surveys.
    - Culverts and bridges designed to allow safe passage of otters.
    - Phased construction activities and erection of exclusion fencing as appropriate.
    - Watching briefs by fully qualified ecologists and toolbox workshops to contractors.

### 3.7.2 Compensation measures

Due to the potential negative impacts of the proposed development, the following compensation measures will be instigated (also see attached mitigation site plan). These expand on the current mitigation measures presented in the Environmental Statement.

- For every tree removed, two will be replanted. The trees will be native and suitable for the local habitat and soil types. Replanted saplings/trees should be checked up to five year after planting, and any dead saplings replaced.
- The replacement of existing perimeter boundary hedgerows with the re-planting of hedgerows with native tree species where required.
- The creation of habitats for breeding birds as described in Section 6.1.2 of Volume 4 of the Environmental Statement.
- The creation of designated drainage ditches and an aquatic habitat off the existing Award Drain, before construction starts on site, would compensate for loss of water vole habitats and aquatic invertebrates and act as alternative receptor site for water voles, aquatic invertebrates and aquatic macrophytes that are unable to be translocated to adjoining areas.
- Additional planting of scrub on the north eastern flank of the development site alongside the Car Dyke grassland to compensate for potential disturbance to BAP priority bird species, notably grasshopper warbler and nightingale.

- The erection of bird boxes, owl boxes and bat boxes across the development site to compensate for any potential loss of nesting/roosting sites.

### **3.7.3 Enhancement proposals**

In addition to the associated mitigation and compensation proposal, two key proposals which will significantly enhance the ecological importance of the site are proposed, thus:

- The creation of native, species-rich wildflower grassland meadows within the area of the development site, notably along the embankments of the site, within the areas south of the Storage Lake, areas alongside sections of the triathlon track, patches surrounding the car park, and areas alongside the Canterg Track.
- The creation of aquatic habitats and water margins in designated areas of the Storage Lake, including a 'quiet' conservation area within the south-east area of the Lake, to provide suitable habitats for breeding birds, UK BAP priority bird species, amphibians and water voles.

## Appendix A Ecological Impact Criteria

### Criteria for determining the magnitude of impact

Magnitude of impact	Criteria
<b>Major negative</b>	The proposed activities may adversely affect the integrity of the site, equating to an ecological significant impact, in terms of the coherence of the ecological structure and function that enables the site to sustain the habitat, complex of habitats and/or the population levels of species interest.
<b>Intermediate negative</b>	The proposed activities may not adversely affect the site's integrity, but the effect on the ecological objectives of the site is likely to be significantly impacted, with a significant impact on the conservation status of species or habitats at the site.
<b>Minor negative</b>	Some minor negative, but non-significant, ecological impact may be evident
<b>Neutral</b>	No observable impact.
<b>Positive</b>	The proposed activities may provide a net gain for the ecology and conservation value of the site.

### Overall appraisal category

Magnitude of impact	Conservation importance				
	Very High	High	Medium	Low	Negligible
<b>Major negative</b>	Very large adverse	Very large adverse	Moderate adverse	Slight adverse	Neutral
<b>Intermediate negative</b>	Large adverse	Large adverse	Moderate adverse	Slight adverse	Neutral
<b>Minor negative</b>	Slight adverse	Slight adverse	Slight adverse	Slight adverse	Neutral
<b>Neutral</b>	Neutral	Neutral	Neutral	Neutral	Neutral
<b>Positive</b>	Large beneficial	Large beneficial	Moderate beneficial	Slight beneficial	Neutral

Impact description	Criteria
Critical Negative	<p>A major negative impact on:</p> <ul style="list-style-type: none"> <li>• a site of international or national importance</li> <li>• a viable area of an internationally important habitat</li> <li>• a nationally/internationally important population of an internationally important species</li> <li>• a population of species which occurs in internationally or nationally significant numbers</li> <li>• a population of an internationally important species which is rare or threatened in the UK</li> <li>• a site of regional importance with limited opportunities for substitution</li> </ul>
Major Negative	<p>A long-term negative impact on:</p> <ul style="list-style-type: none"> <li>• a site of national or international importance</li> <li>• a viable area of an internationally / nationally significant habitat</li> <li>• a nationally / internationally important population of a nationally / internationally important species</li> <li>• a population of a species which occurs in internationally or nationally significant numbers</li> <li>• a population of an internationally important species which is rare or threatened in the UK</li> <li>• a site of regional importance with limited opportunities for substitution</li> </ul> <p>A major negative impact on:</p> <ul style="list-style-type: none"> <li>• a population of a nationally important species which is rare or threatened in the region / county</li> <li>• a regionally significant population of a nationally important species</li> <li>• a viable area of a regionally important habitat</li> <li>• a population of a species of regional importance on account of regional rarity</li> <li>• an area of ancient woodland &gt; 0.25ha in size</li> <li>• a county-level SINC/SNCI</li> <li>• a locally significant population of a species of county importance</li> </ul>
Moderate Negative	<p>A short-term negative impact on:</p> <ul style="list-style-type: none"> <li>• a site of national or international importance</li> <li>• a viable area of an internationally / nationally important habitat</li> <li>• a nationally / internationally important population of a nationally / internationally</li> </ul>

Impact description	Criteria
	<p>important species</p> <ul style="list-style-type: none"> <li>• a population of a species which occurs in nationally / internationally significant numbers</li> <li>• a population of an internationally important species which is rare or threatened in the UK</li> <li>• a site of regional importance with limited opportunities for substitution</li> </ul> <p>A long-term negative impact on:</p> <ul style="list-style-type: none"> <li>• a population of a nationally important species which is rare in the county or region</li> <li>• a regionally significant population of a nationally important species</li> <li>• a regionally significant habitat</li> <li>• a locally significant population of a nationally or regionally scarce species</li> <li>• an area of ancient woodland &gt; 0.25ha in size</li> <li>• a county-level SINC</li> </ul> <p>A major negative impact on:</p> <ul style="list-style-type: none"> <li>• a locally significant population of a species of regional / county significance</li> <li>• a viable area of habitat of county importance</li> <li>• an area of ancient woodland &lt; 0.25ha in size</li> <li>• a district-level SINC/SNCI</li> <li>• a species or habitat of district importance</li> </ul>
Minor Negative	<p>A minimal negative impact on:</p> <ul style="list-style-type: none"> <li>• a site of international / national / regional importance which does not affect the site's integrity</li> <li>• a viable area of an internationally important habitat which does not affect its integrity</li> <li>• an internationally / nationally important population of a nationally / internationally important species which does not affect its viability</li> <li>• a locally significant population of a regionally important species</li> </ul> <p>A short-term negative impact on:</p> <ul style="list-style-type: none"> <li>• a viable area of a nationally / regionally important habitat</li> <li>• a population of a nationally important species which is regionally scarce</li> <li>• a regionally significant population of a nationally scarce species</li> <li>• an area of ancient woodland &gt; 0.25ha</li> <li>• a county-level SINC/SNCI</li> </ul>

Impact description	Criteria
	<p>A long-term negative impact on:</p> <ul style="list-style-type: none"> <li>• an area of habitat of County importance</li> <li>• a locally significant population of a species of county importance</li> <li>• an area of ancient woodland &lt; 0.25ha</li> <li>• a district-level SINC/SNCI</li> <li>• a parish-level SINC/SNCI</li> </ul> <p>A major negative impact on a species or habitat of parish importance.</p>
Neutral	<ul style="list-style-type: none"> <li>• No impact on a species or habitat of whatever value</li> <li>• Any impact on a species / habitat of negligible value</li> <li>• Any impact creating a feature of negligible value</li> </ul>
Minor Positive	<ul style="list-style-type: none"> <li>• An enhancement for wildlife equivalent in value to that of a site of District/Borough Value or lower</li> <li>• Slight enhancements or improvements to environmental conditions in internationally, nationally or locally important sites</li> <li>• Site or habitat enhancements or management resulting in increased carrying capacity for species of local importance</li> </ul>
Moderate Positive	<ul style="list-style-type: none"> <li>• An enhancement for wildlife equivalent in value to that of a site of county value or regional value but with good potential for substitution</li> <li>• Moderate enhancements or improvements to environmental conditions in internationally, nationally or locally important sites</li> <li>• Site or habitat enhancements or management resulting in increased carrying capacity for species of regional importance</li> </ul>
Major Positive	<ul style="list-style-type: none"> <li>• An enhancement for wildlife equivalent in value to that of a site of national value</li> <li>• Enhancements or improvements to environmental conditions in nationally important sites</li> <li>• Major enhancements or improvements to environmental conditions in regionally (or lower) important sites</li> <li>• Site or habitat enhancements or enhanced management resulting in increased carrying capacity for species of national importance</li> </ul>

Impact description	Criteria
Critical Positive	<ul style="list-style-type: none"><li>• An enhancement for wildlife equivalent in value to that of a site of international value</li><li>• Major enhancements or improvements to environmental conditions in internationally or nationally important sites</li><li>• Site or habitat enhancements or enhanced management resulting in increased carrying capacity for species of international importance</li></ul>