

Appendix 13-3 Preliminary Ecological Appraisal

East Reading Mass Rapid Transit Scheme

Preliminary Ecological Appraisal

On behalf of **Reading Borough Council Highways and Transport Department**



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	Name	Position	Signature	Date
Prepared by:	Johanna Fewtrell	Senior Ecologist	JF	May 2017
Reviewed by:	Kerry Elliott	Associate Ecologist	KE	June 2017
Approved by:	Sarah Matthews	Equity Director		
For and on behalf of Peter Brett Associates LLP				

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Executive Summary

The East MRT Site, located to the east of Reading, Berkshire, is proposed for a new mass rapid transit (MRT) scheme; hereafter referred to as the 'proposed development'.

The East MRT Site comprises a narrow swathe of land, the majority of which lies between the River Thames to the north and the Great Western Main Line Railway to the south, with the latter forming an embankment that abuts the southern site boundary. The western end of the East MRT Site is located south of a retail superstore and its car park and the eastern end is immediately to the west of the Thames Valley Business Park. The confluence of the River Kennet forms the approximate mid-point of the East MRT Site (grid reference SU730 738).

To gather baseline ecological information for the East MRT Site, identify potential ecological issues associated with the proposed development, and make recommendations for limiting ecological impacts and promoting enhancement; a Preliminary Ecological Appraisal was undertaken by PBA. This included an ecological desk study and extended Phase 1 habitat survey.

A single non-statutory designated area was identified within the East MRT Site, namely The Coal, Kennetmouth and Kings Meadow East Local Wildlife Site (LWS). Direct and indirect impacts on this LWS are anticipated as a result of the proposed development. A further non-statutory designated area (Henley Road Pit LWS) was identified approximately 100 m north of the East MRT Site. Recommendations relating to direct and indirect impacts on both of these designated areas have been made.

No impacts on additional non-statutory designated areas, nor any statutory designated areas, are anticipated as a result of the proposed development.

In addition to the LWS as identified above, the desk study and extended Phase 1 habitat survey identified the following ecological features associated with the East MRT Site and with potential to be impacted by the proposed development, for which further consideration will also be required:

- Off-site habitats – Habitats of Principal Importance (HPI);
- On-site habitats – on-site HPI and other on-site habitats;
- European protected species: bats;
- Nationally protected species: badgers, breeding birds and reptiles; and
- Species of Principal Importance, or otherwise notable.

Recommendations have been provided in regards these ecological features. Such recommendations include further survey work, ecological mitigation and enhancement.

This Executive Summary contains an overview of the key findings and conclusions. However, no reliance should be placed on any part of the executive summary until the whole of the report has been read.

1 Introduction

1.1 Overview

- 1.1.1 This Preliminary Ecological Appraisal (PEA) Report has been prepared in respect of a planning application for a new mass rapid transit (MRT) scheme to the east of Reading, Berkshire (referred to as the 'proposed development'). An indicative area of works (referred to as the 'East MRT Site') is included on Figure 1: Site Location Plan.

1.2 Project Background

Site Location

- 1.2.1 The East MRT Site is located between Thames Valley Business Park and Napier Road, Reading, to the south of the River Thames and north of the Great Western Main Line Railway, as shown on Figure 1: Site Location Plan.
- 1.2.2 The East MRT Site comprises three main land parcels:
- The land to the east of the River Kennet, which is dominated by a matrix of poor semi-improved grassland and tall ruderal habitat;
 - The central area of broad-leaved woodland associated with The Coal, Kennetmouth and Kings Meadow East Local Wildlife Site (LWS); and
 - The Tesco landholding at the western extent of the East MRT Site which is dominated by hardstanding and introduced shrub.
- 1.2.3 Other habitats across the East MRT Site include: dense and scattered scrub, ephemeral short perennial habitat, and a standalone hedgerow and trees.
- 1.2.4 Within a wider landscape context, the East MRT Site is located approximately 1 km north east of Reading Town within the county of Berkshire. South of the East MRT Site the land is dominated by residential and commercial development associated with Reading town. North of the East MRT Site lies the settlement of Caversham, as well as a network of lakes and other waterbodies (including a marina and rowing lakes) which lie adjacent to the River Thames.

1.3 Proposed Development

- 1.3.1 The proposed description is described as follows:

'Construction of a segregated fast-track public transport, pedestrian and cycle bridge and viaduct, comprising concrete bridge structure with a river span of 59.5m and a land span of 316m, supported by concrete columns, steel beams and reinforced soil embankment, together with new footpath links and existing footpath alterations, replacement supermarket car parking provision, junction improvements and landscaping.'

- 1.3.2 The proposed development comprises:

- Creation of a new route for public transport only, including cycle path and footway between Napier Road and the A3290 at Thames Valley Park proposed Thames Valley Park & Ride (TVP P&R);
- The erection of a new bridge over the River Kennet;

- Formation of a new T-junction with Napier Road;
- Connection to the proposed TVP P&R;
- Development of new and improved footpath links to Tesco and the towpath; and
- Associated infrastructure and landscaping.

1.3.3 The proposed development is being promoted by Reading Borough Council (RBC), working with Wokingham Borough Council (WBC), Thames Valley Berkshire Local Enterprise Partnership (TVB LEP) and Peter Brett Associates LLP (PBA). The public-sector led project has been allocated funding by TVB LEP from the Local Growth Fund.

1.4 Aims of Study

1.4.1 The overall aim of this study is to gather initial baseline ecological information for the East MRT Site, to identify any potential ecological constraints and opportunities associated with the proposed development and to provide information to support a planning application.

1.4.2 The main aims of this report are to:

- Identify any statutory and non-statutory designated areas with the potential to be either directly or indirectly impacted by the proposed development;
- Establish the extent and condition of the habitats currently within the East MRT Site;
- Present evidence of, or potential for, protected or notable species likely to be supported by the East MRT Site;
- Identify and map the extent of invasive plant species that present on the East MRT Site;
- Set out the legislative and/or policy protection afforded to habitats or species present, or likely to be present, within the East MRT Site;
- Present an outline assessment of ecological impacts of the proposed development based on the results of the desk study, field survey and the current proposals for the East MRT Site;
- Provide recommendations for further surveys considered necessary to help inform scheme design and support a planning submission; and
- Provide outline recommendations on mitigation, compensation and/or enhancement measures within the context of relevant planning policy and wildlife legislation.

2 Methods

2.1 Desk Study

2.1.1 A desk study was completed in March 2016, with the following records obtained from Thames Valley Environmental Records Centre (TVERC) for the East MRT Site itself, as well as land within 2 km of its boundaries:

- Statutory designated areas;
- Non-statutory designated areas;
- Protected species;
- Notable species;
- Invasive species; and
- Habitats of Principle Importance as listed under Section 41 of the NERC Act.

2.1.2 Further to this, a review of European designated areas within 10 km of the East MRT Site was undertaken using resources available online (i.e. the Multi-Agency Geographic Information for the Countryside website (MAGIC) available at: <http://magic.defra.gov.uk/>).

2.2 Field Survey

2.2.1 An extended Phase 1 habitat survey was undertaken by Johanna Fewtrell (ACIEEM) of PBA on 8th April 2016. Habitats within the East MRT Site were identified and mapped following standard JNCC Phase 1 habitat survey methodology as detailed in the Phase 1 Habitat Survey Handbook (JNCC, 2010). This uses a system of codes to describe different habitat types based on the dominant vegetation present.

2.2.2 The survey was extended to give particular consideration to the potential of the habitats present to support protected species or species of conservation importance. In particular, consideration was made as to the likely potential for the adjacent River Thames and River Kennet to support water voles. Where possible, the East MRT Site was also searched for the presence of invasive non-native plants (listed on Schedule 9 of the Wildlife and Countryside Act (1981) as amended), such as Japanese knotweed *Fallopia japonica*.

2.3 Limitations

Desk Study

2.3.1 Data supplied by records centres provides useful baseline information on the species that have been recorded within a local area and details of sites with nature conservation designations. This data often includes surveys undertaken by third parties on an 'ad hoc' basis so may be incomplete. Absence of species records may not therefore indicate absence of that species from an area. However, despite these limitations, sourcing existing ecological data is a useful component part of a Preliminary Ecological Appraisal.

Field Survey

2.3.2 The field survey for the East MRT Site was carried out in April. Although this falls within the recommended season for habitat survey within the south of England, it is still relatively early in the year and as such, not all botanical species may be evident at this time. Due to the

presence of dominant or characteristic flora however, it remained possible to accurately identify and map the broad habitat types present, and gain sufficient information to undertake an assessment of the potential for the site to support protected species and Species of Principle Importance (SPI) (see Appendix C).

- 2.3.3 Given that the planning application boundary for the proposed development had not been fixed at the time, the area included within the survey varied slightly from the current East MRT Site – see Figure 2 for extent. This namely affected land within the eastern portion of the East MRT Site, where habitat data was not collected as part of the extended Phase 1 habitat survey. The overall area from which habitat data was collected during the extended Phase 1 habitat survey has been termed the ‘study area’.

3 Results and Interpretation

3.1 Overview

- 3.1.1 This section sets out the results of the desk study and survey work, and determines which ecological features associated with the East MRT Site are worthy of further consideration with reference to the proposed development and to relevant ecological planning policy and legislation. Summaries of relevant planning policy and legislation are included within the interpretations where relevant, to provide context to the assessment. Full details relating to relevant legislation and planning policy are provided within Appendix C.

3.2 Designated Areas

Statutory Designated Areas

- 3.2.1 No European designated areas were identified within 10 km of the East MRT Site.
- 3.2.2 A single statutory designated area, Highwood Local Nature Reserve (LNR), was identified within 2 km of the East MRT Site (approximately 1.75 km south-east). Highwood LNR is described as containing a number of exotic trees species, which once formed an arboretum. Information relating to the LNR also confirmed the presence of mixed lowland woodland and an area of heathland which support a variety of bird species. Highwood LNR is located between Southlake and the University of Reading and is managed in partnership with the Friends of Highwood, an independent group of local residents who seek to promote its use by wildlife, as well as people. Due to the distance between Highwood LNR and the East MRT Site, as well as the already highly urbanised nature of the intervening land; no impacts on Highwood LNR are anticipated as a result of the proposed development.
- 3.2.3 Although there are no other statutory designated areas within 2 km of the East MRT Site, a number of Site of Special Scientific Interest (SSSI) Impact Risk Zones (IRZ) were identified (www.magic.gov.uk). Of these, the East MRT Site itself fell only within the IRZ for Lodge Wood and Sandford Mill SSSI, located approximately 4.5 km south east of the East MRT Site. The IRZ is a tool used to determine whether planning applications are likely to impact on European designated areas or, as in this case, SSSI's. The citation for Lodge Wood and Sandford Mill SSSI identifies the area to comprise two small wet woodlands, bordering the River Loddon; with notable populations of Loddon Lily identified to be present. The IRZ for Lodge Wood and Sandford Mill SSSI identifies that impacts on this area are only anticipated as a result of the following development types: airports, helipads and other aviation proposals; pig & poultry units, slurry lagoons > 750m³ & manure stores > 3500t; and as such no impacts on Lodge Wood and Sandford Mill SSSI are anticipated as a result of the proposed development.
- 3.2.4 Given these findings, statutory designated areas are not considered further within this report.

Non-statutory Designated Areas

- 3.2.1 One non-statutory designated area was identified within the East MRT Site: The Coal, Kennetmouth and Kings Meadow East Local Wildlife Site (LWS). A summary of the citation is provided below:
- The Coal is an old colliery spoil site comprising a central and riverside woodland area and an area of open wayleave at the foot of a steep railway embankment;
 - Kennetmouth is a short length of towpath at the confluence of the River Kennet and the River Thames. The site is important for the presence of the nationally scarce vascular

plant Loddon lily *Leucojum aestivum*. Several slender groundhoppers *Tetrix subulata* were previously identified; colonies of which are often isolated along the Thames Valley; and

- Kings Meadow East is largely used for recreational purposes containing a mosaic of habitats including mixed broadleaved woodland, scrub and tall herb and rough grassland. At the time that the survey to support the designation was completed (2004), the elevated central grassland areas were identified as being the most interesting, being moderately rich in plant species at some locations. The surrounding low lying land was identified as being occupied by woodland and scrub elements, densely shaded and botanically impoverished. Some large canopy trees were identified, including a mature avenue of horse chestnuts along the riverside.

- 3.2.2 Overall, The Coal, Kennetmouth and Kings Meadow East LWS is identified to contain some areas that may be classed as 'open mosaic habitat on previously developed land'.
- 3.2.3 Although the citation and mapping for The Coal, Kennetmouth and Kings Meadow East LWS does not break the area down into the individual land portions as identified above, it is predicted from the citation information that the Kennetmouth and Kings Meadow East element are located within the East MRT Site, with The Coal element located outside the East MRT Site to the west.
- 3.2.4 A second non-statutory designated area, Henley Road Pit LWS was identified approximately 100 m north of the East MRT Site; immediately north of the River Thames. Henley Road Pit LWS is cited as comprising a large pit located next to the Thames which supports a range of overwintering wildfowl as well as nationally scarce insects.
- 3.2.5 An additional five non-statutory designated areas were identified within 2 km of the East MRT Site. Further details for all the non-statutory designated sites, including their distances from the site, are provided in Appendix A : Table A1.
- 3.2.6 Non-statutory designated areas are afforded protection through Policy CS 36 of the Reading Borough Local Development Framework: Core Strategy, Policy EN12 of the RBC Local Plan (draft) and CP 7 of WBC Core Strategy (see Appendix C).
- 3.2.7 For non-statutory designated areas located over 500 m away from the East MRT Site, impacts arising as a result of the proposed development are not anticipated on account of both the intermediary distance and the already highly urbanised nature of the intervening land; and as such, these are not considered further in this report.
- 3.2.8 Due to the potential for direct and indirect impacts on both The Coal, Kennetmouth and Kings Meadow East LWS, and Henley Road Gravel Pit LWS as a result of the proposed development, and with regard to the local planning policy by which they are protected; further recommendations are made in the subsequent sections of this report in relation to these areas.

3.3 Habitats

Desk Study

- 3.3.1 The desk study data from TVERC identified the following notable habitats within 2 km of the East MRT Site:
- Eutrophic standing water;
 - Lowland fens;
 - Lowland mixed deciduous woodland (on-site and elsewhere within 2 km);

- Lowland wood pastures and parkland;
 - Reedbeds;
 - Rivers; and
 - Traditional Orchards.
- 3.3.2 The habitats described above are referred to as 'Habitats of Principal Importance' (HPI) and are included on a list drawn up in response to the requirements of Section 41 of the Natural Environment and Rural Communities (NERC) Act, 2006. Under Section 40 of the NERC Act, the LPA has a duty to have regard for HPI in determining planning (see Appendix C).
- 3.3.3 Due to the potential for direct and indirect impacts on both the on-site and nearby HPis as a result of the proposed development, and to support their due regard within the planning process, further recommendations are made in the subsequent sections of this report.
- 3.3.4 A single portion of Ancient Woodland was also identified within 2 km of the East MRT Site. Due to the location however, approximately 960 m north of the East MRT Site and located on an island within the Henley Gravel Pits, it is considered highly unlikely the proposed development would adversely impact on this feature and as such, Ancient Woodland is not considered further within this report.

Site Walkover Survey

- 3.3.5 The following habitat types, as categorised with their alphanumeric codes within JNCC, 2010, were recorded within the study area during the extended phase 1 habitat survey:
- Broad-leaved Semi-Natural Woodland (A1.1.1);
 - Dense Scrub (A2.1);
 - Scattered Scrub (A2.2);
 - Scattered Broad-Leaved Trees (A3.1);
 - Poor Semi-Improved Grassland (B6);
 - Tall Ruderal (C3.1);
 - Running Water (G2);
 - Marginal Vegetation (F2.1);
 - Amenity Grassland (J1.2);
 - Ephemeral/ Short Perennial Habitat (J1.3);
 - Introduced Shrub (J1.4);
 - Defunct Hedgerow – Species Poor (J2.2.2);
 - Boundary Features – Fence (J4); and
 - Hardstanding (J3.4).

- 3.3.6 In addition to this, a number of habitat matrices were also present on the study area, where more than one habitat type as outlined above, was present within a discrete area.
- 3.3.7 The study area's habitats are described in more detail below. Their distribution is shown in Figure 2 with target notes provided in Appendix B .

Broadleaved Semi-Natural Woodland (A1.1.1)

- 3.3.8 Three distinct areas of broad-leaved semi-natural woodland were present within the study area. These were all located to the west of the River Kennet, within The Coal, Kennetmouth and Kings Meadow East LWS.
- 3.3.9 The first parcel, immediately west of the River Kennet, was more open in structure. The centre of this parcel was dominated by ephemeral, short perennial and scattered ruderal species, grading to dense scrub in the south.
- 3.3.10 Woodland species included: mature horse chestnut *Aesculus hippocastanum* trees (forming a line along the northern edge of the woodland), with a poor quality understory containing semi-mature ash *Fraxinus excelsior*, elder *Sambucus nigra*, butterfly bush *Buddleia davidii*, silver birch *Betula pendula*, sycamore *Acer pseudoplatanus* and bramble *Rubus fruticosus*. Limited ground flora was present at the time of survey.
- 3.3.11 Species contained within the more open central area included: ground ivy *Glechoma hederacea*, nettles *Urtica dioica*, cleavers *Galium aparine*, ragwort *Jacobaea vulgaris* and moss sp. *Bryophyta* sp. Some brash piles were also present.
- 3.3.12 To the west of this, and separated by a fenceline, two further areas of broad-leaved semi natural woodland were present. These were characteristically distinct and bisected by a north west to south east orientated footpath. The woodland to the north of the footpath comprised a line of mature horse chestnut located along the northern edge of the woodland, with other species noted to include: silver birch, elder and ash. A poor quality understorey of ash saplings, butterfly bush and hawthorn *Crataegus monogyna* scrub was present. Ground flora was limited throughout, with nettles or bare ground dominating.
- 3.3.13 To the south of the footpath, the woodland was secondary in nature and dominated by silver birch. Some mature standard trees were present amongst the silver birch, with additional species including horse chestnut, elder and lime *Tilia* sp. Mature buddleia stands were also noted to be present. Again, the ground flora was of poor quality, with many areas comprising either bare ground or dominant nettles. Other species present included: bracken *Pteridium aquilinum*, nettle, borage *Borago officinalis* and ground ivy.

Dense Scrub (A2.1)

- 3.3.14 Dense scrub was present in several discrete areas throughout the study area, as well as forming part of habitat matrices, as detailed in paragraph 3.3.33 below.
- 3.3.15 At the eastern extent of the study area, a portion of dense scrub was present alongside the riverside path. Species included: hawthorn, blackthorn *Prunus spinosa*, ivy *Hedera helix*, butterfly bush, rose *Rosa* sp. and ash saplings with largely bare ground or ivy dominant ground flora.
- 3.3.16 An area dominated by dense dogwood *Cornus* sp. growth was also present at the eastern extent of the study area, adjacent to the off-site railway corridor. Other species present in this area included: bramble and rose with a nettle dominated ground flora.
- 3.3.17 At the western extent of the study area, areas of dense scrub were present to the south of the broad-leaved woodland (within The Coal, Kennetmouth and Kings Meadow East LWS) and to the south of the Tesco landholding. Species present in these areas included those often

associated with disturbed land, such as butterfly bush, bramble and sycamore, with nettles often present. Elder, bramble and gorse *Ulex europaeus* were also identified with litter and waste material present throughout.

Scattered Scrub (A2.2)

- 3.3.18 Scattered scrub was present across the study area, often encroaching from the adjacent railway corridor. This largely formed part of habitat matrices, as detailed in paragraph 3.3.33 below.

Scattered Broad-Leaved Trees (A3.1)

- 3.3.19 Scattered trees were present throughout the study area. These ranged in age and included: semi-mature to mature willow *Salix* species along the river's edge, as well as set back from the river itself. Other species included mature hawthorn and ornamental trees, including fruit species, within the introduced planting associated with the Tesco store.

Poor Semi-Improved Grassland (B6)

- 3.3.20 Poor semi-improved grassland was present in several locations across the study area, with the largest portion dominating the land east of the River Kennet. Largely integrated with tall ruderal species, further details in relation to this habitat type have been provided in paragraph 3.3.33 below.

Tall Ruderal (C3.1)

- 3.3.21 Areas dominated by tall ruderal habitat were present on the study area with ruderal species also associated with the habitat matrices, as detailed in paragraph 3.3.33 below. Areas of tall ruderal habitat, where present, were frequently dominated by nettle growth on what looked to be recently disturbed ground, with other species including cleavers, ground ivy, burdock *Arctium* sp. and dock *Rumex* sp.

Running Water (G2)

- 3.3.22 Running water associated with the River Kennet was present within the study area boundary, i.e. where the proposed development route spans this watercourse. The River Kennet is connected to the River Thames (located to north); the southern extent of which was also located within the study area for a length of approximately 260 m. Riparian habitat associated with the edge of this habitat type is considered within the section below.

Marginal Vegetation (F2.1)

- 3.3.23 The banks of the River Kennet and River Thames were reinforced throughout much of the extent of the study area. Located at the confluence between the River Kennet (western bank), and the River Thames (southern bank) however, a short portion of marginal bankside vegetation was identified.
- 3.3.24 The portion along the western bank of the River Kennet was approximately 57m in length with species including: iris *Iris* sp., willow trees and scrub. With increased distance from the water's edge, the habitat graded to have a higher proportion of tall ruderals species including: nettles and cleavers.
- 3.3.25 The portion of marginal habitat along the southern bank of the River Thames was approximately 50m in length. This area was dominated by bare ground, suspected to be due to heavy grazing by mute swans *Cygnus olor*, with patches of dominant nettle. Stands of iris were present along the water line, with other species including: nettles, cleavers, dock, lesser celandine *Ranunculus ficaria*, iris sp. and Loddon lily *Leucojum aestivum*.

Amenity Grassland (J1.2)

- 3.3.26 Running along the northern extent of the riverside footpath in the eastern portion of the study area, was a strip of amenity grassland. This was close mown/ grazed and largely of poor quality with a high proportion of bare ground. Species present included: cocksfoot *Dactylus glomerata*, lesser celandine, dandelion *Taraxacum officinale*, clover *Trifolium* sp., ribwort plantain *Plantago lanceolata*, moss, cleavers, broad leaved plantain *Plantago major*, yarrow *Achillea millefolium*, perennial ryegrass *Lolium perenne* and ground ivy.

Ephemeral/ Short Perennial (J1.3)

- 3.3.27 At the western extent of the study area was an area dominated by ephemeral short perennial habitat. Species present included: dominant moss, stonecrop *sedum* sp., cranesbill *Geranium* sp., creeping cinquefoil *Potentilla reptans*, speedwell *Veronica* sp., dandelion, birdsfoot trefoil *Lotus corniculatus*, ragwort, ground ivy, thistle *Cirsium* sp. and burdock. Scattered ruderals and scrub were also present, with species including: cocksfoot, cow parsley *Anthriscus sylvestris*, bramble, teasel *Dipsacus fullonum*, butterfly bush and nettles. Further ephemeral/ short perennial habitat formed part of on-site habitat matrices, as detailed in paragraph 3.3.33 below.

Introduced Shrub (J1.4)

- 3.3.28 Significant beds of introduced shrub planting were present within the Tesco car park. These formed the borders between parking bays, and provided continuous habitat along the southern extent of the car parking area curtilage. Species present were largely ornamental including a variety of non-natives, box *Buxus sempervirens*, cherry laurel *Prunus laurocerasus*, cotoneaster *Cotoneaster* sp, with scattered tree species including cherry *Prunus* sp., pine *Pinus* sp. and silver birch (these are shown within the 'introduced shrub' category on Figure 2, rather than as standalone broad-leaved trees).
- 3.3.29 Introduced shrub was also present surrounding the blocks of flats (off-site) at the western extent of the Site. Species included: lavender *Lavandula angustifolia*, willow sp., cherry, privet *Ligustrum* sp., butterfly bush and Himalayan cotoneaster *Cotoneaster simonsii*.

Hedgerow - Species Poor (J2.2.2)

- 3.3.30 A single hedgerow was present on the study area. This was a defunct species poor hedgerow, comprising willow only. This was located to the east of the River Kennet overbridge.

Boundary Features – Fence (J4)

- 3.3.31 Numerous intact and defunct fencelines were present across the study area, cordoning off land parcels, or ownership boundaries.

Hardstanding (J3.4)

- 3.3.32 Hardstanding was present along much of the study area; including the car parking and road infrastructure associated with the Tesco store in the west, and the riverside footpath.

Habitat Matrices

- 3.3.33 A number of habitat matrices were present on the study area, where more than one habitat type as outlined above, was identified within a discrete area. These included:
- Two areas identified as a matrix of Tall Ruderal (C3.1) and Dense to Scattered Scrub (A2.1 and A2.2) (TN5 and TN6);

- Two areas identified as a matrix of Ephemeral/ Short Perennial (J1.3), Tall Ruderal (C3.1) and Scattered Scrub (A2.2) (TN7 and TN8); and
- An area of Poor Semi-Improved Grassland (B6) and Tall Ruderal (C3.1) (TN9), dominating much of the eastern portion of the East MRT Site, to the east of the River Kennet.

Notable Off-Site Habitats

- 3.3.34 The East MRT Site is located immediately adjacent to the River Thames, a narrow strip of which is included within the study area. The River Thames is approximately 65 m in width along the extent parallel to the East MRT Site and, although subject to control, was noted to be fast flowing (west to east), with frequent and high usage by boats at the time of the survey. The River Thames connects the East MRT Site to the Henley Road Pit LWS, located approximately 100m to the north, and parcels of HPI, located to the north east (downstream).
- 3.3.35 The confluence between the River Kennet and the River Thames is present midway along the East MRT Site. The River Kennet is approximately 24 m in width at this point, flowing from south to north to meet the River Thames.
- 3.3.36 The banks of the River Thames were largely reinforced along the extent of the study area, with concrete to the east of the confluence with the River Kennet, extending round to form the eastern bank of the River Kennet; and stone to the west. With the exception of the portion of marginal habitat designated within The Coal, Kennetmouth and Kings Meadow East LWS (forming the western bank of the River Kennet and extending round to form a short stretch of the southern bank of the River Thames); very little aquatic marginal vegetation was noted to be present.
- 3.3.37 Although no building or built structures were present within the study area, a railway bridge was present immediately to the south where the mainline railway crossed the River Kennet at grid reference: SU730 738. An arched structure, the railway bridge was of brick construction. Some gaps and cracks were noted to be present within the mortar of the brickwork, with butterfly bush growth in places. An adjacent pedestrian footbridge (the Horseshoe Bridge) of wood and metal construction was present immediately to the north of the railway bridge.
- 3.3.38 Inaccessible Network Rail land was adjacent to the southern boundary of the study area, along the entire extent. This was fenced throughout and as such, viewed from surrounding vantage points only. Habitats present looked to vary along the extent depending on the levels of disturbance and management. Such habitats were noted to include: areas of dense scrub, dominated by dense bramble and butterfly bush; areas of more 'open habitat', which included dense and scattered scrub and dense and scattered ruderals; and an area of habitat which looked to be subject to seasonal inundation. Scattered semi-mature trees were also noted to be present.

Habitats Summary

- 3.3.39 The study area and its immediate surroundings contain a variety of habitat types, which may be either directly or indirectly impacted as a result of the proposed development. Such habitats include those which have been listed as reasons for LWS designation (see paragraph 3.2.1); or are recorded as other HPIs for nature conservation (see paragraph 3.3.1). Further recommendations with regard the protection of such habitats (as identified within local planning policy), and the presumption of no net loss of biodiversity (as identified within national planning policy) (see Appendix C); are made in the subsequent sections of this report.

3.4 Protected or Notable Species

- 3.4.1 Results of the desk study and field surveys are combined below to determine the likelihood of protected or notable species to be present on site. These are presented in order of the level of protection they receive, for which further details are provided in Appendix C .

European Protected Species

Bats

- 3.4.2 Numerous bat records were returned from within 2 km of the East MRT Site within the last 10 years. These included records for Daubenton's bat *Myotis daubentonii*, noctule bat *Nyctalus noctula*, Common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus* and brown long eared bat *Plecotus auritus* with additional records for bat sp. *Chiroptera* and pipistrelle bat species *Pipistrellus* sp. Confirmed roost records were returned for bat sp., located 1,450 m south of the East MRT Site in 2009, and soprano pipistrelle, located 770 m south west of the East MRT Site in 2010.
- 3.4.3 Although no building or built structures were located on within the study area, the railway bridge over the River Kennet was located immediately adjacent to the south at grid reference SU730 738. Following initial observations, and due to the age of the structure, it was considered possible that the bridge may provide features suitable for use by roosting bats (e.g. gaps in the brickwork, cracks where mortar may be missing etc.). Further to this, several mature and semi-mature trees identified within the study area were noted to be of sufficient age and condition to support potential roost features (e.g. split limbs, gaps, rot holes etc.). Such trees were contained both within on-site woodland and as standalone specimens. Further details are provided in Appendix B .
- 3.4.4 Habitats across the study area ranged in value for use by foraging and commuting bats with linear features such as the woodland edges, lines of trees and the off-site but immediately adjacent River Thames and River Kennet of greatest value. Although such features provide a sheltered flightline and are likely to support a greater diversity of invertebrates upon which bats may forage; with high levels of ambient lighting anticipated on account of the urban location, as well as the presence of the busy mainline railway, the species assemblage may be limited. In this context, the more open habitats, such as the area of poor semi-improved grassland to the east of the study area, are considered to be of lower value for use by foraging and commuting bats.
- 3.4.5 All species of bats, and their roosts, are protected under the Conservation of Habitats and Species Regulations 2010 (as amended) and the Wildlife and Countryside Act 1981 (as amended) (see Appendix C). Some bat species are also classified as Species of Principal Importance (SPIs) (see Appendix C). These include soprano pipistrelle and noctule bats *Nyctalus noctula*, both of which have the potential to use the site for foraging and potentially roosting. SPI are included on a list drawn up in response to the requirements of Section 41 of the NERC Act, 2006.
- 3.4.6 Due to the presence of built structures, trees and habitat, the study area, and therefore the East MRT Site, is considered to be of value to roosting, commuting and foraging bats. Further recommendations in relation to their legislative protection are made within subsequent sections of this report.

Great Crested Newts (and Other Amphibians)

- 3.4.7 No records of great crested newts (GCN) were returned from within 2 km of the East MRT Site within the last 10 years; although records of common toad *Bufo bufo* (an SPI included on the list drawn up in response to the requirements of Section 41 of the NERC (2006) Act) were

identified 1.7 km south of the East MRT Site in 2008 and 1.8 km south of the East MRT Site in 2007.

3.4.8 Additional amphibian records were provided for:

- Common frog *Rana temporaria* from 1.8 km south of the East MRT Site in 2007; and
- Smooth newt *Lissotriton vulgaris* from 1.2 km north east of the East MRT Site in 2010 and 1.8 km south of the site in 2007.

3.4.9 No standing waterbodies, which might otherwise provide suitable breeding habitat for amphibians, were identified within the study area itself or within 250 m of its boundaries (following a review of OS mapping (1:25,000)). Furthermore, although the terrestrial habitats on site were identified to provide some suitable habitat for use by amphibians, due to the lack of nearby standing waterbodies and the high levels of anthropogenic disturbance associated with pedestrians, dog-walkers and nearby construction and management works; such habitats were considered largely sub-optimal and unlikely to be utilised by this species group.

3.4.10 With regard to national planning policy, and enable due consideration for common toad listed on Section 41 of the NERC (2006) Act (and by default, other amphibian species), general site wide enhancement measures are made within subsequent sections of this report. Such enhancements will seek to avoid net loss in the terrestrial value of the East MRT Site to amphibian species, and will create a net gain where possible.

Hazel Dormouse

3.4.11 No records of hazel dormouse *Muscardinus avellanarius* were returned from within 2 km of the East MRT Site from within the last 10 years.

3.4.12 The study area provides a small amount of suitable, although largely suboptimal, habitat for hazel dormice. Given the high levels of anthropogenic disturbance associated with the study area, its isolation from more substantive habitat suitable for dormice within the wider landscape, and the absence of known hazel dormice records however, this species is considered highly unlikely to be present within the study area, and therefore the East MRT Site; and hazel dormice are not considered further within this report.

Otter

3.4.13 Five records of European otter *Lutra lutra* were returned from within 2 km of the East MRT Site in the last 10 years (2009 – 2011). The closest of these was from c. 625 m west of the East MRT Site, although c. 1.3 km when following the alignment of the river.

3.4.14 No incidental field signs of otter (such as spraints, etc.) were recorded during the site walkover survey.

3.4.15 Otter are legally protected under the Conservation of Habitats and Species Regulations 2010 (as amended) and afforded additional protection from disturbance under the Wildlife and Countryside Act 1981 (as amended). Otter are identified as an SPI and included on the list drawn up in response to the requirements of S41 of the NERC Act (see Appendix C).

3.4.16 Although, the study area provides some habitat which may be suitable for terrestrial use by otter (for example, woodland edges and mature trees); in this context, due to the limited extent of habitat present, and high levels of anthropogenic disturbance, the value of the study area is greatly reduced. In addition, the banks of the River Thames to the north are more suitable for this species being well-vegetated and less disturbed. Occasional and transitional use of the River Thames / River Kennet by otter, cannot be entirely ruled out; however more superior habitat quality is provided elsewhere within the immediate vicinity. No further consideration of impacts of the scheme on otter is therefore given. The measures to prevent adverse effects on

the River Thames / River Kennet would maintain these watercourses for such occasional and transitional use by this species.

Nationally Protected Species

Badger

- 3.4.17 Three confidential records of Eurasian badger *Meles meles* were returned from within 2 km of the East MRT Site in the last 10 years; although none of these were identified to be within 500 m of the East MRT Site's boundaries. Of these records, two were for road kill (2010 and 2012), with a single sett record from 2013.
- 3.4.18 No field signs of badger (such as holes, guard hairs etc.) were recorded during the site walkover survey. Although some distinct mammal paths and evidence of shallow digging was observed, it was considered likely that these were of rabbit *Oryctolagus cuniculus* origin, a species noted to be present during the site walkover. The mammal paths are likely to be used by other mammal species, such as foxes *Vulpes vulpes* and deer species and evidently were also subject to high levels of usage by humans and their dogs.
- 3.4.19 Badgers and their setts are protected under the Protection of Badgers Act 1992; making the intentional or reckless destruction, damage or obstruction of a badger sett an offence (see Appendix C).
- 3.4.20 Badgers tend to build setts in areas where there is some form of cover. Woodland copses, scrub and hedgerows are preferred locations for setts as they allow badgers to emerge inconspicuously and young cubs to play near the sett entrances without being visible to potential predators and people (Neal & Cheeseman, 1996). Although present on the East MRT Site, these habitat types were limited in size and largely devoid of sufficient scrubby understorey required to provide such privacy and avoid the disturbance anticipated from high levels of anthropogenic activity nearby.
- 3.4.21 Badgers preferentially feed on earthworms, and therefore often favour areas of grassland and pasture as foraging habitat, where earthworms can be an abundant and accessible food source. Badgers are omnivorous and they supplement their diet with carrion and fruits from hedgerows, trees and shrubs (Neal & Cheeseman, 1995; Roper, 2010). Although the poor semi-improved grassland areas and scattered scrub on the East MRT Site are likely to provide habitat suitable for use by foraging badgers; again, due to the high levels of anthropogenic disturbance, these are considered sub-optimal.
- 3.4.22 Overall therefore, it is considered unlikely that badgers use the study area, and therefore the East MRT Site, as a primary resource for either setting or foraging, particularly given the presence of the more suitable and largely inaccessible Network Rail corridor located immediately to the south, and the more extensive King's Meadow to the west. Given the legal protection afforded to this species and their setts however, and the presence of suitable, albeit suboptimal habitat on the site, precautionary recommendations are made within subsequent sections of this report.

Breeding birds

- 3.4.23 Numerous bird records were returned from within 2 km of the East MRT Site in the last 10 years, including the following species listed on Schedule 1 of the Wildlife and Countryside Act, 1981:
- Greylag goose *Anser anser*¹;

¹ Schedule 1; Part 2 only.

- Peregrine falcon *Falco peregrinus*; and
 - Kingfisher *Alcedo atthis*.
- 3.4.24 Additional records were provided for six species identified as SPI and therefore included on the list drawn up in response to the NERC (2006) Act, with a further eight 'amber' listed species, in accordance with the Birds of Conservation Concern (BoCC). The locations of the above records largely comprised: Henley Road Gravel Pit (approximately 100 m north of the site), Whiteknights Park (approximately 1,540 m south of the site) and Thames Valley Park (approximately 1,500 m north east of the site).
- 3.4.25 A total of seven bird species were recorded incidentally whilst on site. These comprised:
- House sparrow *Passer domesticus*;
 - Blue tit *Cyanistes caeruleus*;
 - Wood pigeon *Columba palumbus*;
 - Great tit *Parus major*;
 - Mute swan *Cygnus olor*;
 - Black bird *Turdus merula*; and
 - Robin *Erithacus rubecula*.
- 3.4.26 All wild birds and their nests receive protection under the Wildlife and Countryside Act 1981 (as amended) (see Appendix C). This Act makes it an offence to intentionally kill, injure or take any wild bird; or take, damage or destroy its nest whilst in use or being built; or take or destroy its eggs. Those bird species listed under Schedule 1 of the Wildlife and Countryside Act 1981, such as kingfisher, receive additional protection during the breeding season which prohibits disturbance of individuals or their dependent young at or near an active nest site. In addition, a number of bird species are classified as SPI's (see Appendix C).
- 3.4.27 Although many of the habitat types on site were considered suitable for use by common and widespread breeding birds, typical of the semi-urban environment (including those species identified during the site walkover survey); use by a particularly notable or diverse assemblage was considered unlikely, due to:
- The absence of high quality habitat on site. Most notably, although a large area of broad-leaved semi-natural woodland was present on site, a lack of structural diversity, particularly scrubby understorey, was considered likely to significantly limit both the diversity of species and number of individuals which may be present;
 - The levels of disturbance anticipated across the study area associated with high levels of anthropogenic activity, both through, and in close proximity to areas of suitable bird nesting habitat; limiting the likelihood of breeding success; and
 - The presence of large areas of high quality habitat surrounding the study area, which are likely to be preferred by breeding birds on account of providing greater expanses of more suitable high quality habitat, whilst also being subject to lower levels of anthropogenic disturbance. Such habitats are present within the Henley Road LWS to the north, and King's Meadow Park to the west.
- 3.4.28 Consequently, the works required to facilitate the proposed development are considered unlikely to significantly affect the assemblage of birds within the local area, and as such no

further surveys are required to inform the planning submission. Further recommendations in relation to their legislative protection however are made within subsequent sections of this report.

Reptiles

- 3.4.29 A single record of common lizard *Zootoca vivipara* was returned from 1.2 km north east of the East MRT Site in 2013, with a single record of adder *Vipera berus* returned from 1.4 km north of the East MRT Site in 2008. Three records of grass snake *Natrix natrix* were returned from within 2 km of the East MRT Site within the last 10 years, with the closest record from within The Coal LWS; which is connected to the site through contiguous suitable habitat.
- 3.4.30 All species of common reptile are protected from killing and injury under the Wildlife and Countryside Act, 1981 (as amended). Reptiles are also classified as SPI's (see Appendix C).
- 3.4.31 Although no incidental sightings of reptiles were made during the site walkover survey, some limited habitat areas suitable for use by this species group were identified.
- 3.4.32 Reptiles prefer a mosaic of habitats with a varied vegetation structure providing conditions suitable for both sheltering and foraging (Edgar *et al.*, 2010). Those areas of the study area which comprised heavily grazed poor semi-improved grassland and hardstanding were therefore considered largely unsuitable for this species group. The areas of ruderal/ scrub habitat and woodland were of higher value; although their overall suitability is limited on account of the high level of anthropogenic disturbance.
- 3.4.33 Due to the presence of suitable, albeit largely suboptimal habitat for this species group, and with regard to their legislative protection; further recommendations are made within subsequent sections of this report.

Water Vole

- 3.4.34 Although a single water vole record was returned from within the search area in the last 10 years; no incidental field signs of water vole (e.g. droppings, burrows, feeding remains) were recorded during the site walkover survey. Furthermore, habitat within/adjacent to the study area was considered unsuitable for water vole for the following reason:
- The banks of the River Thames and River Kennet were largely reinforced, making them unsuitable for water vole burrow creation;
 - Where areas of river bank had not subject to reinforcement, their topography was shallow (again limiting the potential for burrow creation), and isolated from nearby suitable burrowing habitat within the wider landscape;
 - The presence and diversity of bankside vegetation was limited, with little to no volume of grasses, sedges or reeds available to provide a food source suitable for water voles; and
 - High levels of anthropogenic disturbance throughout the East MRT Site both terrestrially and on the Rivers themselves.
- 3.4.35 As such, water voles are considered likely absent from the study area and therefore the East MRT Site and this species is not considered further within this report.

Species of Principal Importance, or Otherwise Notable

Flora (Excluding Trees)

- 3.4.36 Two nationally scarce plant species (Status-NS) were identified from within 2 km of the East MRT Site in the last 10 years:
- In 2012, two records of summer snowflake *Leucojum aestivum subsp. Aestivum* (also known as 'Loddon lily') were returned from within the East MRT Site boundary. These were identified within The Coal, Kennetmouth and Kings Meadow East LWS. An additional record was returned from within Thames Valley Park; and
 - A single record of sea-buckthorn *Hippophae rhamnoides* was identified from within Whiteknights Park, approximately 1.7 km south of the East MRT Site, in 2006.
- 3.4.37 The phase 1 habitat survey confirmed the presence of summer snowflake (Loddon lily) within the study area (although outside the East MRT Site). This was recorded from the marginal habitat at the confluence of the River Kennet and River Thames. Due to the presence of this species, as well as the potential for the study area, and as such, the East MRT Site to support a number of other protected and notable floral species (as indicated within The Coal, Kennetmouth and Kings Meadow East LWS citation, and the categorisation of on-site HPI); further recommendations are made within subsequent sections of this report.
- 3.4.38 Although no plant species listed on Schedule 9 of the Wildlife and Countryside Act, 1981 were noted during the initial site walkover survey (i.e. non-native invasive species), several species of an invasive nature were identified. These included significant growth of butterfly bush (buddleia) and cotoneaster species contained within the introduced shrub planting on site. As such, further recommendations are made within subsequent sections of this report.

Fish

- 3.4.39 The information reviewed for the desk study revealed six records of European eel *Anguilla Anguilla* from within 2 km of the East MRT Site in the last 10 years. European eel are included on the list drawn up in response to the requirements of Section 41 of the NERC (2006) Act. Of these records, five were returned from c. 495 m north east of the East MRT Site from within the River Thames, with a single record from 380 m south of the East MRT Site, within the River Kennet.
- 3.4.40 Whilst the proposed development will span the River Kennet, with a narrow strip of the River Thames also present within the study area, no direct impacts on fish species are anticipated. Indirect impacts as a result of the proposed development process cannot be ruled out however. To protect the riverine habitats and their associated fish populations against such impacts, precautionary recommendations are made within subsequent sections of this report.

Invertebrates

- 3.4.41 The following protected and notable invertebrate records were returned from within 2 km of the East MRT Site within the last 10 years:
- Stag beetle *Lucanus cervus*;
 - Common club-tail *Gomphus vulgatissimus*; and
 - Depressed (or compressed) river mussel *Pseudanodonta complanata*.
- 3.4.42 The study area provides a variety of terrestrial habitats which may support a broad diversity of invertebrates including protected and notable terrestrial species such as stag beetle, identified

within the desk study. That said, due to the nature of habitats present (largely well-managed and highly disturbed), and the fact they are limited in extent, it is considered unlikely that the study area, and therefore the East MRT Site would support a notable site-wide invertebrate assemblage.

- 3.4.43 With regard to national planning policy, and enable due consideration for invertebrate species included on the list drawn up in response to the requirements of Section 41 of the NERC (2006) Act, general site wide enhancement measures are made within subsequent sections of this report. Such enhancements will seek to avoid net loss in the terrestrial value of the East MRT Site to invertebrate species, and will create a net gain where possible.
- 3.4.44 Direct impacts on aquatic invertebrate species are not anticipated however indirect impacts as a result of the proposed development process cannot be ruled out. To protect the riverine habitats and associated protected and notable species against such impacts; precautionary recommendations are made within subsequent sections of this report.

Other Mammals

- 3.4.45 Five records of hedgehog were returned from within 2km of the East MRT Site within the last 10 years; all from 2006. Of these, the closest record was 615m south west of the East MRT Site.
- 3.4.46 Although no incidental field signs of hedgehog were recorded during the site walkover survey, the study area provided a range of habitats, including woodland, scrub and open grassland, which may be utilised by this species.
- 3.4.47 With regard to national planning policy, and enable due consideration for hedgehogs, listed on Section 41 of the NERC (2006) Act; general site wide enhancement measures are made within subsequent sections of this report. Such enhancements will seek to avoid net loss in the terrestrial value of the study area, and therefore the East MRT Site to hedgehogs, and will create a net gain where possible.

4 Potential Impacts and Recommendations

4.1 Overview

4.1.1 This section sets out avoidance measures, recommendations for further survey work and outline ecological mitigation and enhancement required for the ecological receptors identified within Section 3 above and summarised below:

- Non-statutory designated areas – The Coal, Kennetmouth and Kings Meadow East LWS, and Henley Road Pit LWS;
- Off-site habitats – HPI and the adjacent River Thames and River Kennet;
- On-site habitats – on-site HPI and on-site habitats; and
- Protected and notable species: European protected species, nationally protected species and SPI or otherwise notable species.

4.1.2 Such recommendations are made within the context of relevant planning policy and legislation, with reference to guidance and good practice requirements, as appropriate.

4.2 Non-Statutory Designated Areas

4.2.1 The results of the desk study and field survey identified that part of The Coal, Kennetmouth and Kings Meadow East LWS falls within the East MRT Site. This area is also identified as the HPI: lowland mixed deciduous woodland. Further to this, Henley Road Pit LWS was identified approximately 100 m north of the East MRT Site; immediately north of the River Thames. Recommendations for these LWS, with consideration for the protected and notable species they support, are provided below.

Further Survey

4.2.2 To ascertain the current condition of the on-site portion of The Coal, Kennetmouth and Kings Meadow East LWS, and also to map the areas of greatest value for biodiversity, a detailed botanical survey and mapping exercise will be completed. The results of these will be used to inform future discussions, recommendations or constraints associated with direct impacts on The Coal, Kennetmouth and Kings Meadow East LWS that may arise as a result of the proposed development.

Retention and Protection

4.2.3 Exact recommendations relating to direct impacts on the LWS will be subject to confirmation following the results of the detailed botanical work (as outlined above) and finalisation of scheme design. At this state it is anticipated that these will comprise a variety of avoidance, retention and protection measures.

4.2.4 As well as physical habitat removal (direct impact); the construction and operation of the scheme has the potential to generate a number of environmental changes which may indirectly affect both The Coal, Kennetmouth and Kings Meadow East LWS and Henley Road Pit LWS. These have been summarised, with outline protection measures, below:

- Changes in air quality through dust creation: construction of the proposed development may result in dust generation which could adversely impact the habitats for which the LWS's have been designated. An appropriate Construction Environmental Management

Plan (CEMP) will need to be specified and implemented as part of the development of the East MRT Site, in order to suitably control dust generation;

- Changes in water quality: similarly, the construction of the proposed development may result in surface run-off carrying increased levels of waterborne pollutants, including chemicals and sediments, which could adversely impact the habitats for which the LWS's have been designated. As outlined above, an appropriate CEMP will be required to suitably control such run-off. Once operational, the proposed development has the potential to result in both increased volumes of surface run-off, due to the increase in impermeable surface; and increased levels of waterborne pollutants. It is recommended that an appropriate drainage strategy is implemented as part of scheme design with consideration as to the installation of pollution tolerant 'buffer' planting to decrease the amount of surface run-off reaching the riverine habitats; and
- Light spill: it is anticipated that increased light spill may occur as a result of construction (albeit temporarily) and operation of the new bus route. As outlined above, an appropriate CEMP will be required to suitably control such light-spill during construction, with ecological input to any future lighting strategy for the operation of the East MRT Site. The lighting strategy will be designed to minimise any light spill into The Coal, Kennetmouth and Kings Meadow East LWS so that it remains suitable for use by nocturnal species.

Enhancement

- 4.2.5 Although the condition and value of the habitats contained within the on-site LWS will be confirmed following the detailed botanical work, as outlined above; it is anticipated that the scheme provides significant opportunity for habitat enhancement through, for example; removal of non-native species, appropriate understorey planting and implementation of a LWS management plan.

4.3 Off-Site Habitats

- 4.3.1 The results of the desk study and field survey identified that the presence of off-site HPI, connected to the East MRT Site by aquatic habitats (eutrophic standing water, reedbeds, lowland fens); as well as the presence of the downstream River Thames and River Kennet (extending beyond the East MRT Site boundary). Recommendations for these habitats, and considering the protected and notable species they support, are provided below.

Further Survey

- 4.3.2 No further surveys are recommended in relation to the off-site habitats.

Retention and Protection

- 4.3.3 Direct impacts on the off-site HPI and riverine habitats are not anticipated. However, the construction and operation of the proposed development has the potential to generate a number of environmental changes which may cause indirect impacts on these valued and sensitive habitats. These largely correlate with those identified for the LWS's, so brief notes only are provided below:
- Production of a CEMP to support the implementation of sufficient control measures to avoid negative construction impacts associated with dust creation, run-off, including run-off containing waterborne pollutants and construction related light spill;
 - Production of an appropriate drainage strategy to support the implementation of sufficient control measures to avoid negative operational impacts associated with run-off; and

- Ecological inputs will also be required as the scheme design emerges to prevent, or appropriately mitigate the impacts that may arise as a result of operation, including: ecological input to the development and lighting design.

Enhancement

- 4.3.4 Subject to the implementation of sufficient constructional and operational control measures, it is considered unlikely at this stage that enhancement for off-site habitats will be required.

4.4 On-Site Habitats (including Consideration for Flora and Invasive Species)

- 4.4.1 The results of the desk study and field survey identified that presence of on-site HPI, (an area of woodland, much of which falls within the LWS boundary), riverine habitat (as dealt with above) and other habitats suitable for the growth of protected and notable flora. Recommendations for on-site habitats are provided below, with riverine habitats considered above.

Further survey

- 4.4.2 Those areas of on-site habitat contained within The Coal, Kennetmouth and Kings Meadow East LWS will be subject to a detailed botanical survey and mapping exercise as outlined above (as such, including the on-site HPI woodland), with botanical sampling to be completed for habitats across the wider site. The results of these will be used to inform future discussions, recommendations or constraints associated with direct impacts to the on-site habitats that may arise as a result of the proposed development. The presence of protected and/ or notable flora, as well as non-native invasive species will be identified at this time.

Retention and protection

- 4.4.3 Although exact recommendations relating to direct impacts to the on-site habitats will be subject to confirmation following the results of the detailed botanical work (as outlined above); it is anticipated that these will comprise a variety of avoidance, retention and protection measures.
- 4.4.4 These will require suitable protection throughout construction and operation; and should their loss be unavoidable, appropriate replacement to support compliance with national planning policy, within which there is a presumption for no net loss of biodiversity.
- 4.4.5 Due to the potential for on-site habitats to support protected and notable species, additional, species specific requirements for habitat retention and protection may also be derived. Such requirements are dealt with in Section 4.5 below.

Enhancement

- 4.4.6 The Proposed Development provides opportunity to enhance the biodiversity of the East MRT Site and improve the condition of the LWS, with suggestions for consideration including:
- Creation of new areas of species-rich grassland notably within the eastern portion of the East MRT Site;
 - Removal of non-native invasive species;
 - Installation of an area of marginal planting along the eastern extent of the East MRT Site to soften the existing hard engineering and create new biodiverse habitat; and

- Improve the habitat contained within the LWS, as detailed in paragraph 3.2.1 above.

4.5 Protected and Notable Species

- 4.5.1 The results of the desk study and field survey identified that the East MRT Site has the potential to support a number of protected and or notable species; as such further recommendations are provided below.

Further survey

- 4.5.2 To fully inform the ecological baseline of the East MRT Site, protected species surveys will be required for bats and reptiles. The inclusion and scope of these surveys have been discussed and agreed with RBC / WBC, with a summary provided within Appendix D .
- 4.5.3 Species-specific mitigation measures will need to be determined following completion of these surveys.

Retention and protection

- 4.5.4 Although no further surveys are recommended, to comply with the legislation by which the following species are protected; additional working methods will should also be adhered to:
- Badger: care should be taken to monitor conditions on-site during the aforementioned further survey work to ascertain continued likely absence of this species; and
 - Birds: appropriate working methods for site clearance will be required (i.e. appropriate timing of site clearance works so as to avoid the bird breeding season).
- 4.5.5 The scope of habitat to be affected as a result of the proposed development (and consequently, the implications on the above protected and notable species), will be determined as the scheme design evolves. As such, species-specific mitigation measures are subject to determination. As it stands however, these are likely to only be required for birds and may include provision of suitable alternative nesting habitat; whether through suitable alternative planting, or inclusion of man-made features such as bird nest boxes.

Enhancement

- 4.5.6 The habitat enhancement measures as detailed in Section 4.4 will deliver benefits for a variety of protected and notable species with potential to occur within the East MRT Site. Species specific enhancement measures that could also be delivered as part of scheme design include:
- Bats – incorporation of features suitable for roosting bats into mature trees to be retained on the East MRT Site;
 - Birds – incorporation of features suitable for nesting birds into mature trees to be retained on the East MRT Site and planting of berry bearing species within new areas of habitat planting to improve autumn/winter foraging opportunities; and
 - Amphibians and reptiles – provision of log/brush piles and/or purpose built hibernacula within suitable areas of habitat to create additional sheltering and over-wintering opportunities. These will also provide habitat suitable for use by invertebrate species and hedgehogs.

5 Conclusions

- 5.1.1 The study area, and therefore the East MRT Site, was found to support some habitats of ecological value, including: broad-leaved semi-natural woodland, marginal habitat and scattered trees. Much of the study area, and therefore the East MRT Site was considered to be of limited ecological value however, with habitats including: poor semi-improved grassland, introduced shrub and hardstanding.
- 5.1.2 Further botanical surveys should be carried out within the habitats across the East MRT Site, using a detailed approach within those habitats located within the on-site LWS (namely broad-leaved semi-natural woodland), and a sampling approach across the remainder of the East MRT Site.
- 5.1.3 In addition to direct impacts associated within the on-site LWS, indirect impacts on both this site (The Coal, Kennetmouth and Kings Meadow East) and the nearby Henley Gravel Pits LWS may arise. Recommendations relating to appropriate controls during construction and an appropriate lighting strategy and drainage scheme once operational, have been made accordingly.
- 5.1.4 The study area, and therefore the East MRT Site, has the potential to support a number of protected and notable species/species groups including the following for which further surveys will be required:
- Bats (including trees, built structures and foraging and commuting habitats); and
 - Reptiles.
- 5.1.5 Appropriate working methods have also been provided in relation to: badgers and breeding birds.
- 5.1.6 Assuming any future development retains and protects valued habitats where possible, (to be determined following the detailed botanical survey), or mitigates their loss through scheme design; and progresses in accordance with subsequent protection measures, impacts on the majority of protected and notable species will be limited.
- 5.1.7 Further to the above, development of the East MRT Site offers opportunities for biodiversity enhancement as promoted by Government and local policy.

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Figures

Figure 1: Site Location

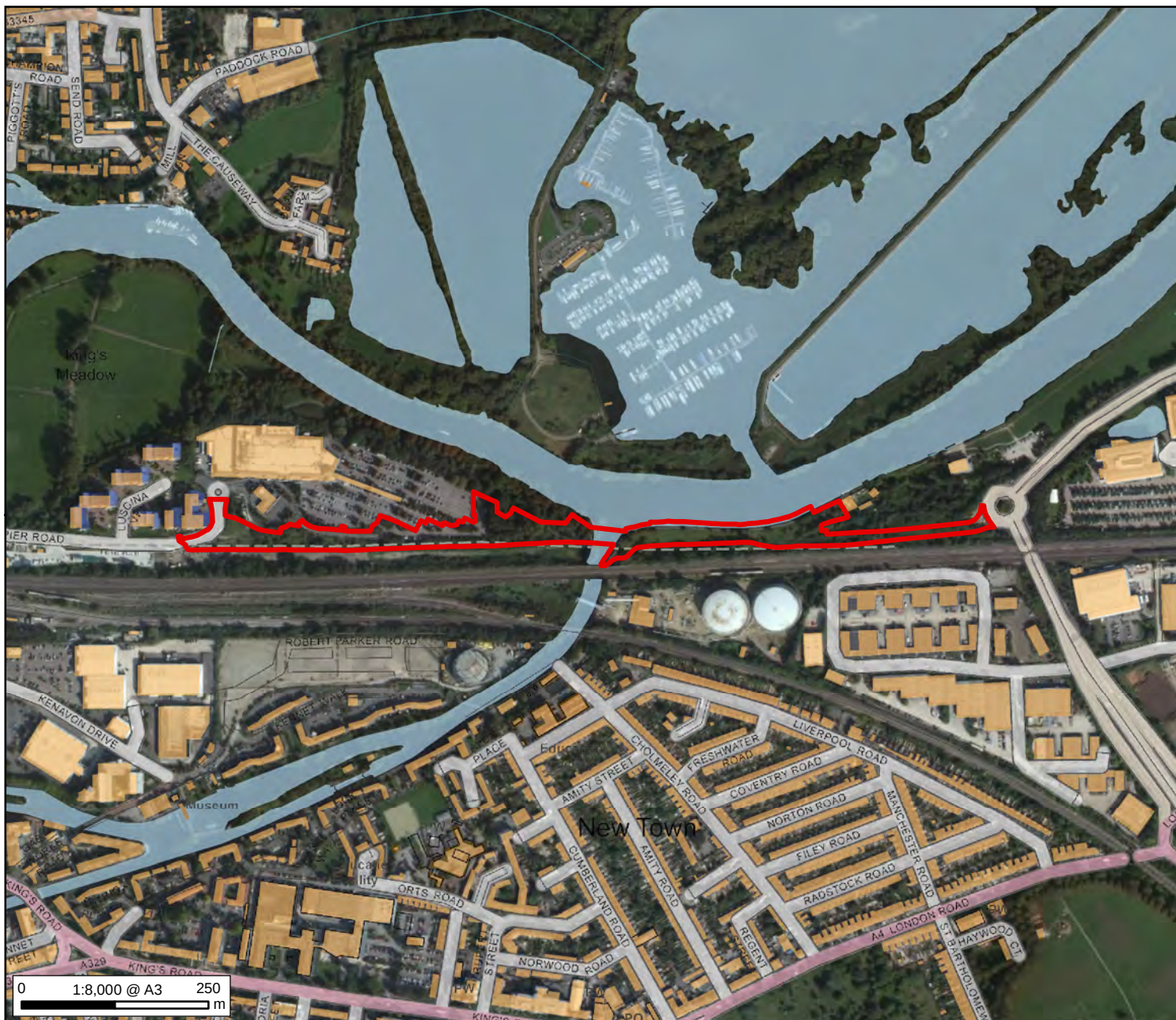
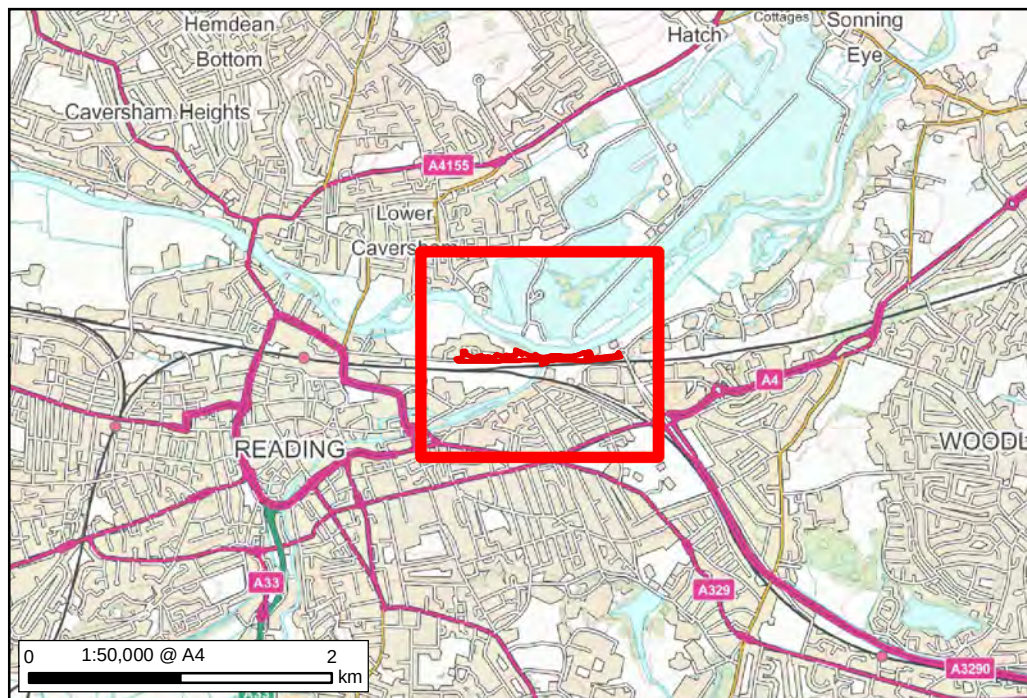
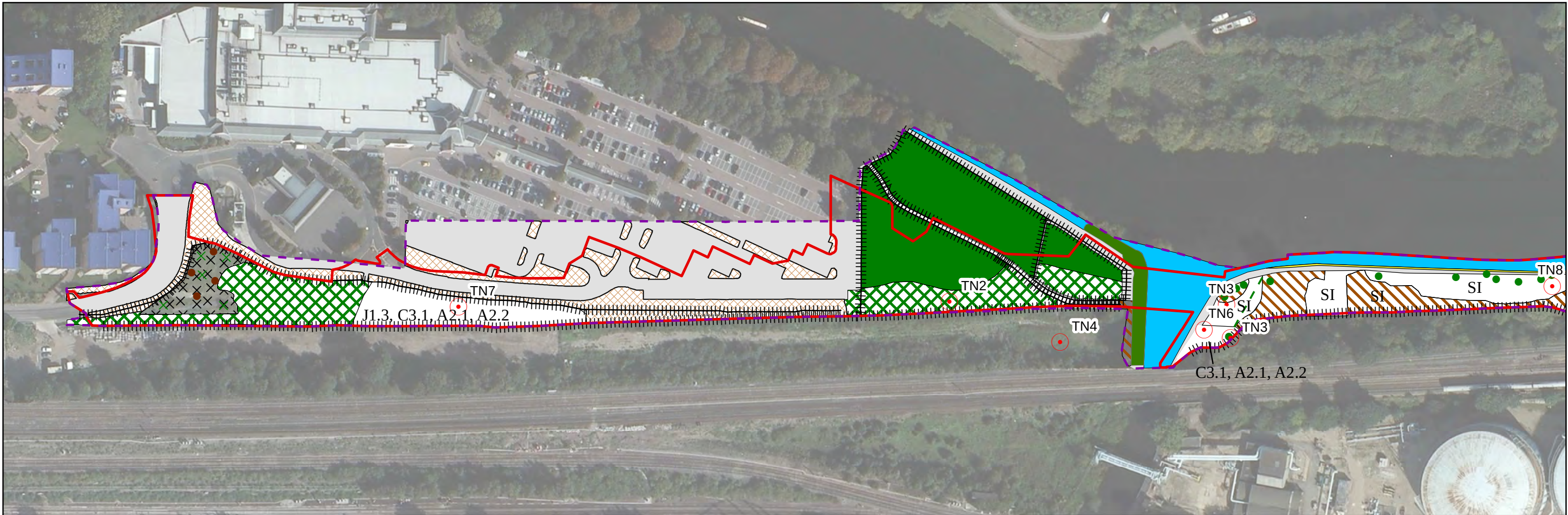


Figure 2: Phase 1 Habitat Survey Plan



East MRT Site	Broadleaved woodland - semi-natural
Survey area	Cultivated/disturbed land - ephemeral/short perennial
Target Notes	Cultivated/disturbed land - amenity grassland
Scattered trees	Introduced shrub
Scattered scrub	Marginal and inundation - marginal vegetation
Scattered ruderal	Other habitats
Defunct hedge - species-poor	Other tall herb and fern - ruderal
Fence	Poor semi - improved grassland
Hedge with trees - native species-rich	Running water
Bare ground	Scrub - dense/continuous

Appendix A Non-Statutory Designated Sites

Table 1: Non-Statutory Designated Sites within a 2 km radius of the East MRT Site

SINC Name	Status	Brief Description/Reason for Designation	Area/ Length	Approx. Distance to Site
The Coal, Kennetmouth and Kings Meadow East	Local Wildlife Site (LWS)	The Coal is an old colliery spoil site comprising a central and riverside woodland area and an area of open wayleave at the foot of a steep railway embankment. Kennetmouth is a short length of towpath at the confluence of the River Kennet and the River Thames. The site is important for the presence of the nationally scarce vascular plant Loddon lily. Several slender groundhoppers (<i>Tetrix subulata</i>) were also known to be present; colonies of which are often isolated along the Thames Valley. Kings Meadow East is largely used for recreational purposes containing a mosaic of habitats including mixed broadleaved woodland, scrub and tall herb and rough grassland. The elevated central grassland areas tend to be the most interesting, being moderately rich in plant species at some locations. The surrounding low lying land is occupied by woodland and scrub elements and tends to be densely shaded and botanically impoverished. There are some large canopy trees including a mature avenue of horse chestnuts along the riverside. Overall, in some areas, the site might be classed as open mosaic habitat on previously developed land.	3.62 ha	On-site
Henley Road Gravel Pit	LWS	Large pit located next to the Thames which supports a range of overwintering wildfowl as well as nationally scarce insects.	53.7 ha	c. 100 m north
Reading Cemetery	LWS	A large, old cemetery, bound by a high stone wall, with sections of semi-improved grassland, with more diverse, flower-rich areas. Several mature and immature trees and shrubs are scattered around the site including both native and ornamental species.	4.7 ha	530 m south
Thames Valley Park	LWS	Thames Valley Park Nature Reserve forms part of the River Thames floodplain and consist of a mosaic of habitats including man-made lakes, wildflower seeded grasslands, ponds, planted scrub, secondary woodland and small areas of wet woodland and swamp habitat. Section 41 Habitats of Principal importance include a small area of wet woodland, fen and eutrophic standing water.	10.57 ha	1.5 km north east

SINC Name	Status	Brief Description/Reason for Designation	Area/ Length	Approx. Distance to Site
Whiteknights Park	LWS	A mosaic of landscaped trees and mown grassland, a large shaded lake, mixed secondary woodland, several stands of introduced shrubs and trees and some areas managed as meadow. This site includes protected and notable habitats and species.	26.09 ha	1.5 km south
Holy Brook	LWS	A stream carrying water to and from the River Kennet; a chalk river. Species present include alder and willow with notable species including notable invertebrates and water voles.	4.5 km	1.5 km south west
River Kennet/ Kennet and Avon Canal	LWS	The River Kennet is one of the best examples of a chalk river nationally and is a UK BAP Priority Habitat. The Kennet and Avon Canal section is also fed by water from the River Kennet and is also calcareous in nature. Protected and notable species associated with these include: water vole, freshwater crayfish and bluebells.	Not confirmed	1.6 km south west

Appendix B Target Notes

Table 2: Target Notes

TN	Description	Photograph
1	Matrix of Ephemeral/ Short Perennial (J1.3), Tall Ruderal (C3.1) and Scattered Scrub (A2.2) located at the eastern extent of the study area. Dominated by an area of disturbed ground with rubbish present throughout. A high proportion of bare disturbed ground was present with species including: dominant nettles and moss species, with prickly sowthistle, umbellifer sp., thistle sp., and cleavers, with scattered blackthorn and buddleia.	
2	An area to the south of the silver birch dominated woodland. Dominated by nettles, moss and buddleia scrub with silver birch trees. Encroaching bramble scrub was also present from the adjacent Network Rail land.	
3	Trees identified as having the potential to support roosting bats. Full ground level assessment of every tree was not completed at this time.	

TN	Description	Photograph
4	To the south of the fenceline, is an area of inaccessible Network Rail land which looked to include a seasonally damp central depression. Again, it looked to be short grazed however rushes were present throughout. Much of the remainder graded from scattered to dense scrub, with species including dominant butterfly bush.	
5	Matrix of Tall Ruderal (C3.1) and Dense to Scattered Scrub (A2.1 and A2.2) with several distinct mammal paths present throughout. Located at the eastern extent of the study area. Species included: dominant nettles, brambles, ribwort plantain, moss, cleavers, willowherb sp., umbellifer sp. (dead), creeping thistle and bristly oxtongue.	
6	Matrix of Tall Ruderal (C3.1) and Dense to Scattered Scrub (A2.1 and A2.2) located to the east of the River Kennet on previously disturbed ground. Additional species present included: borage, burdock and hogweed, with hawthorn and buddleia scrub.	
7	Matrix of Ephemeral/ Short Perennial (J1.3), Tall Ruderal (C3.1) and Dense and Scattered Scrub (A2.1 and 2.2) At the western extent of the study area, an area of ephemeral short perennial habitat was present with large and substantial areas of dense scrub. Scrub species included: dominant bramble and buddleia, with elder, gorse, dogwood and willow. Ephemeral short perennial species included: dominant moss, speedwell sp., cranesbill sp., creeping cinquefoil, with locally dominant nettles.	

TN	Description	Photograph
8	Matrix of Poor Semi-improved Grassland (B6) and Tall Ruderal (C3.1). Much of the eastern portion of the study area, to the east of the River Kennet, comprised an area of poor semi-improved grassland and tall ruderal habitat. Short throughout, this area was heavily grazed with the proportions of grassland species and ruderal species varying throughout. Broadly speaking, the grassland species included: cocksfoot, perennial ryegrass, sedge sp., broad-leaved plantain, ground ivy, dandelion, daisy, yarrow, buttercup, lesser celandine, with ruderals including locally dominant nettles, cleavers, red dead nettles, white dead nettle, thistle sp. Moss, dock sp., and prickly sowthistle. The stumps of mature butterfly bush were also present in this area, with the ruderal species dominating in the surrounding areas.	

Appendix C Legislation and Planning Policy

C.1 Overview

- C.1.1 This section briefly summarises the relevant national and local planning policies and legislation pertaining to habitats and species mentioned within this report. Please note that the following text does not constitute legal advice.

C.2 European Legislation

Conservation of Habitats and Species Regulations 2010 (as amended)

- C.2.1 In relation to wildlife and nature conservation, two key Directives have been adopted by the European Community. These are (i) Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds ("The Birds Directive" formerly 79/409/EEC); and (ii) Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora ("The Habitats Directive"). These Directives provide for the protection of animal and plant species of European importance and the habitats which support them, particularly through the establishment of a network of protected sites.
- C.2.2 The Habitats Directive is transposed into domestic law through the Conservation of Habitats and Species Regulations 2010 (as amended). These regulations first came into force on 1 April 2010 and consolidate the many changes that have been made to the domestic law over the years since the predecessor regulations made in 1994. The regulations provide for the designation and protection of European sites, the protection of European protected species and the adaptation of planning and other controls for the protection of European sites.

C.3 National Legislation

Wildlife and Countryside Act, 1981 (as amended)

- C.3.1 The Wildlife and Countryside Act 1981 (as amended) (WCA) consolidated and amended existing national legislation to implement the Convention on the Conservation of European Wildlife and Natural Habitats (The Bern Convention) and the Birds Directive. There have been various amendments since the original enactment.
- C.3.2 Schedules 1 and 5 of the Wildlife and Countryside Act 1981 (as amended) identify species of bird and other animal in relation to which the Act makes killing, injury, taking and disturbance an offence while Schedule 8 to the Act lists species of plant in relation to which the Act makes it an offence to intentionally pick, uproot or destroy.

The Natural Environment and Rural Communities Act, 2006

- C.3.3 The Natural Environment and Rural Communities Act 2006 (NERC) introduced changes intended to benefit rural communities and the environment. Section 40 of the Act creates a duty on public bodies to have due regard for habitats and species of principal importance for biodiversity in England when exercising their duties; Section 41 requires the Secretary of State to maintain a list of such habitats and species. This is important in the context of planning decisions as the National Planning Policy Framework (paragraph 117) affords planning policy protection to the habitats of species listed by virtue of Section 41.

The Protection of Badgers Act, 1992

- C.3.4 Badgers are protected under the Protection of Badgers Act 1992. This makes it an offence to wilfully kill, injure, take, possess or cruelly ill-treat a badger, or to attempt to do so; or to intentionally or recklessly interfere with a sett. Sett interference includes disturbing badgers whilst they are occupying a sett, as well as damaging or destroying a sett or obstructing access to it. A licence can be granted by Natural England to permit works that would otherwise result in an offence (e.g. to allow sett closure where activities close by may otherwise result in disturbance or damage to the sett).

Wild Mammals (Protection Act, 1996 (as amended))

- C.3.5 Under the Wild Mammals (Protection) Act 1996 it is an offence to cause unnecessary suffering to wild mammals, including crushing and asphyxiating. This Act is primarily concerned with animal welfare and aims to prevent cruelty. As a result, offences include those actions with the intent to inflict unnecessary suffering. A wild mammal includes any mammal which is not domestic or captive. Red foxes, wild deer and other mammals such as rabbits are therefore covered by the Act.

C.4 National Planning Policy Framework

- C.4.1 The National Planning Policy Framework (NPPF) sets out how the planning system should protect and enhance nature conservation interests. It consolidates previous planning guidance (including Planning Policy Statement 9 (PPS9), the previous guidance on the protection of biodiversity through the planning system) into a single document. A key function of the NPPF is to promote a presumption in favour of sustainable development whilst ensuring that planning decisions should protect, and try to improve, wildlife and the habitats they live in. The framework sets out nationally important issues whilst leaving other planning matters to be decided upon by local authorities and communities through the presumption of sustainable development.

- The NPPF (paragraph 109) states that, *“The planning system should contribute to and enhance the natural and local environment by: Protecting and enhancing valued landscapes, geological conservation interests and soils;*
- *Minimising impacts on biodiversity and providing net gains in biodiversity, where possible contributing to the Government’s commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures; and*
- *Preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability”.*

- C.4.2 The National Planning Policy Framework (NPPF) sets out how the planning system should protect and enhance nature conservation interests. It consolidates previous planning guidance (including Planning Policy Statement 9 (PPS9), the previous guidance on the protection of biodiversity through the planning system) into a single document. A key function of the NPPF is to promote a presumption in favour of sustainable development whilst ensuring that planning decisions should protect, and try to improve, wildlife and the habitats they live in. The framework sets out nationally important issues whilst leaving other planning matters to be decided upon by local authorities and communities through the presumption of sustainable development.

- C.4.3 The NPPF (paragraph 109) states that, *“The planning system should contribute to and enhance the natural and local environment by:*

- *Protecting and enhancing valued landscapes, geological conservation interests and soils;*

- *Recognising the wider benefits of ecosystem services;*
- *Minimising impacts on biodiversity and providing net gains in biodiversity, where possible contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;*
- *Preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability; and*
- *Remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate."*

C.4.4 The NPPF also states that *"When determining planning applications, local planning authorities should aim to conserve and enhance biodiversity by applying the following principles:*

- *If significant harm resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*
- *Proposed development on land within or outside a Site of Special Scientific Interest (SSSI) likely to have an adverse effect on a SSSI (either individually or in combination with other developments) should not normally be permitted. Where an adverse effect on the site's notified special interest features is likely, an exception should only be made where the benefits of the development, clearly outweigh both the impacts that it is likely to have on the features of the site that make it of special scientific interest and any broader impacts on the national network of SSSIs;*
- *Development proposals where the primary objective is to conserve or enhance biodiversity should be permitted;*
- *Opportunities to incorporate biodiversity in and around developments should be encouraged; and*
- *Planning permission should be refused for development resulting in the loss or deterioration of irreplaceable habitats, including ancient woodland and the loss of aged or veteran trees found outside ancient woodland, unless the need for, and benefits of, the development in that location clearly outweigh the loss".*

C.4.5 The Government launched new Planning Practice Guidance to support the NPPF on 6 March 2014. The Guidance on the Natural Environment (ID:8) states that information on biodiversity impacts and opportunities should inform all stages of development. It refers to guidance in Government Circular 06/2005 (ODPM, 2005) with regards to protected species. Paragraph 99 of the Circular states "It is essential that the presence or otherwise of protected species, and the extent that they may be affected by the proposed development, is established before the planning permission is granted, otherwise all relevant material considerations may not have been addressed in making the decision."

C.4.6 The Planning Practice Guidance reiterates section 40 of the NERC Act 2006, which places a duty on all public authorities in England and Wales to have regard, in the exercise of their functions, to the purpose of conserving biodiversity. Paragraph 117 of the NPPF also states that local authorities should seek to promote the preservation, restoration and re-creation of priority habitats and recovery of priority species populations, linked to national and local targets, through planning policies. Priority habitats and species referred to in the NPPF relate to species and habitats of principle importance listed in accordance with Section 41 of the NERC Act, 2006.

C.5 Local Planning Policy

- C.5.1 The site is located partially within Reading Borough and partially within Wokingham Borough; as such, the relevant planning policy for each borough has been outlined below.

Reading Borough Local Development Framework: Core Strategy

- C.5.2 Reading Borough Local Development Framework: Core Strategy was adopted in January 2008, with alterations adopted on 27th January 2015. This document sets out the overall planning strategy and important principles for development.
- C.5.3 'Living within Environmental Limits' is one of the five 'Guiding Principles' set out within the strategy. This sets out the Environmental Objectives for the borough which include: '*Value, protect and enhance the amount and diversity of habitat and wildlife and other contributors to natural diversity*'.
- C.5.4 Policies contained within the Core Strategy of particular relevance to this scheme include the following:
- C.5.5 Policy CS8: Waterspaces:

'Reading's waterspaces will be protected, so that they can continue to contribute to local and regional biodiversity and ecology, local character and visual amenity, and the provision of accessible leisure and recreational opportunities.

Where development in the vicinity of waterways is acceptable, it will provide, [of relevance to ecology and biodiversity]:

- *A strengthened role for waterways as important landscape features, wildlife corridors and recreation opportunities; and*
- *Improved quality of waterway environment through protecting habitats and ensuring that habitat creation is balanced with access and urban uses.*

- C.5.6 Policy CS34: Pollution and Water Resources:

'Development will only be permitted where it would not be damaging to the environment through air, land, noise or light pollution; where it would preserve or ideally enhance ground and surface water quality; and where existing water resources, sewerage and wastewater treatment infrastructure are adequate to support the proposed development.

Proposals for development that are sensitive to the effects of air, noise or light pollution will only be permitted in areas where they will not be subject to high levels of such pollution, unless adequate mitigation measures are provided to minimise the impact of such pollution.

Development will be permitted on land affected by contamination where it can be demonstrated, to the satisfaction of the LPA, that the contamination can be satisfactorily remediated so that it is suitable for the proposed end use.'

- C.5.7 Policy CS36: Biodiversity and Geology:

- (a) *Development should retain, protect and incorporate features of biodiversity or geological interest (including protected species and their habitats) found within the application site into their schemes.*

On sites with recognised biodiversity or geological value, development will not be permitted where there would be a direct or indirect adverse impact on the site, unless it can be clearly demonstrated that: -

- *The need for development clearly outweighs the need to protect the value of the site; and*
 - *Appropriate compensation, impact minimisation, mitigation and compensation are provided.*
- (b) *Local Nature Reserves and Wildlife Heritage Sites will be safeguarded and where possible, enhanced. Permission will not be granted for any development that would adversely affect a designated nature reserve or Wildlife Heritage Site.*
- (c) *Any development that would sever or threaten the integrity of an established wildlife link, as indicated on an adopted proposals map, will not be permitted. Where applicable, developments should be designed to protect, consolidate, extend and enhance the network of wildlife links and corridors in and adjoining the Borough, working with neighbouring authorities where appropriate.*

C.5.8 Policy CS38: Trees, Hedges and Woodlands:

Individual trees, groups of trees, hedges and woodlands will be protected from damage or removal, and the Borough's vegetation cover will be extended.

Reading Borough Council: Local Plan (Proposed)

C.5.9 Reading Borough Council Local Plan was released as a draft document for consultation on 1st May 2017.

C.5.10 CC1: Presumption in Favour of Sustainable Development

'A positive approach to considering development proposals will be taken that reflects the presumption in favour of sustainable development contained in the National Planning Policy Framework.'

C.5.11 CC3: Adaptation to Climate Change

'All developments will demonstrate how they have been designed to incorporate measures to adapt to climate change. The following measures [of relevance to ecology / biodiversity] shall be incorporated into development:

- *Proposals involving both new and existing buildings shall demonstrate how they have been designed to maximise resistance and resilience to climate change for example by including measures such as solar shading, heating and ventilation of the building and appropriately coloured materials in areas exposed to direct sunlight, green and brown roofs, etc; and*
- *Use of trees and other planting, where appropriate as part of a landscape scheme, to provide shading of amenity areas, buildings and streets and to help to connect habitat, designed with plants that are carefully selected, managed and adaptable to meet the predicted changed climatic conditions'.*

C.5.12 EN11 Waterspaces

Reading's waterspaces will be protected, so that they can continue to contribute to local and regional biodiversity and ecology, local character and visual amenity, the provision of accessible leisure and recreational opportunities and, where appropriate, navigation. Where development in the vicinity of waterways is acceptable, it will provide [of relevance to ecology / biodiversity]:

- *A strengthened role for waterways as important landscape features, wildlife corridors and recreation opportunities*

- *Development set at least ten metres back from the waterway wherever practicable to protect its biodiversity significance; and*
- *Improved quality of waterway environment through protecting habitats and ensuring that habitat creation is balanced with access and urban uses.*

C.5.13 EN12: Biodiversity and the Green Network

The identified Green Network, the key elements of which are shown on the Proposals Map, shall be maintained, protected, consolidated, extended and enhanced. Permission will not be granted for development that affects the sites with identified interest or fragments the overall network. The Green Network comprises:

- *Sites with identified biodiversity interest - Local Wildlife Sites, Local Nature Reserves, Biodiversity Opportunity Areas, protected and priority species and their habitats, Priority and Biodiversity Action Plan habitats, and the River Thames and its tributaries (including the River Kennet and the Kennet and Avon Canal); and*
- *Areas with potential for biodiversity value and which stitch the Green Network together – designated Local Green Space and open spaces, and existing and potential Green Links.*

New development shall demonstrate how the location and type of open space, landscaping and water features provided within a scheme have been arranged such that they maintain or link into the existing Green Network and contribute to its consolidation. Such features should be designed to maximise the opportunities for enhancing this network. All new development should maximise opportunities to create new assets and links into areas where opportunities are as yet unidentified on the Proposals Map.

On all sites, development should not result in a net loss of biodiversity and geodiversity, and should provide a net gain for biodiversity wherever possible. Development should:

- *Protect and where possible enhance features of biodiversity interest on and adjacent to the application site, incorporating and integrating them into development proposals where practicable; and*
- *Provide new tree planting, wildlife friendly landscaping and ecological enhancements (such as wildlife ponds, bird and bat boxes) where practicable.*

In exceptional circumstances where the need for development clearly outweighs the need to protect the value of the site, and it is demonstrated that the impacts cannot be: 1) avoided; 2) mitigated or; 3) compensated for on-site; then new development will provide off-site compensation to ensure that there is “no net loss” of biodiversity. Provision of off-site compensation shall be calculated in accordance with nationally or locally recognised guidance and metrics.

C.5.14 EN14: Trees, Hedges and Woodlands

Individual trees, groups of trees, hedges and woodlands will be protected from damage or removal where they are of importance, and Reading's vegetation cover will be extended. The quality of waterside vegetation will be maintained or enhanced.

New development shall make provision for tree planting within the application site, particularly on the street frontage, or off-site in appropriate situations, to improve the level of tree coverage within the Borough, to maintain and enhance the character and appearance of the area in which a site is located, to provide for biodiversity and to contribute to measures to reduce carbon and adapt to climate change.

Wokingham Borough Council: Local Development Framework - Adopted Core Strategy

C.5.15 Wokingham Borough Council Core Strategy policy document determines the future development of the borough until March 2026. Policies contained within the Core Strategy of particular relevance to this scheme include the following:

C.5.16 CP1: Sustainable Development:

Planning permission will be granted for development proposals that comply with the following, (of relevance to this report):

- *Maintain or enhance the high quality of the environment; and*
- *Limit any adverse effects on water quality (including ground water).*

C.5.17 CP3: General Principles for Development:

Planning permission will be granted for development proposals that comply with the following, (of relevance to this report):

- *Have no detrimental impact upon important ecological, heritage, landscape (including river valleys) or geological features or water courses; and*
- *Maintain or enhance the ability of the site to support fauna and flora including protected species.*

C.5.18 CP7: Biodiversity:

Sites designated as of importance for nature conservation at an international or national level will be conserved and enhanced and inappropriate development will be resisted. The degree of protection given will be appropriate to the status of the site in terms of its international or national importance.

Development:

- (a) Which may harm county designated sites (Local Wildlife Sites in Berkshire), whether directly or indirectly, or*
- (b) Which may harm habitats or, species of principle importance in England for nature conservation, veteran trees or features of the landscape that are of major importance for wild flora and fauna (including wildlife and river corridors), whether directly or indirectly, or*
- (c) That compromises the implementation of the national, regional, county and local biodiversity action plans*

Will be only permitted if it has been clearly demonstrated that the need for the proposal outweighs the need to safeguard the nature conservation importance, that no alternative site that would result in less or no harm is available which will meet the need, and:

- *Mitigation measures can be put in place to prevent damaging impacts; or*
- *Appropriate compensation measures to offset the scale and kind of losses are provided.*

C.6 Biodiversity Action Plans

C.6.1 The UK Biodiversity Action Plan (BAP) was the UK's national biodiversity strategy, prepared in response to the Earth Summit and the Convention on Biological Diversity (CBD) in 1992. Part of it was a description of the UK's biological resources and an outline of how to conserve them.

C.6.2 UK BAP priority species and habitats were identified as those that were the most threatened and required conservation action. The original lists of UK BAP priority species and habitats were created between 1995 and 1999, and subsequently updated in 2007.

- C.6.3 As biodiversity policies have evolved at a national and international level and following devolution in 1998, priorities have shifted away from the UK BAP. England's biodiversity strategy is now set out in 'Biodiversity 2020: A strategy for England's wildlife and ecosystem services', which was published by Defra in August 2011.
- C.6.4 Four areas are targeted for action in the Strategy in order to halt the loss of England's biodiversity by 2020 and to contribute to international commitments. These are:
- A more integrated large-scale approach to conservation on land and at sea;
 - Putting people at the heart of biodiversity policy;
 - Reducing environmental pressures; and
 - Improving our knowledge.
- C.6.5 Although the introduction of England's Biodiversity Strategy means that national priorities have developed and shifted away from the UK BAP, the focus on certain species and habitats remains. The UK BAP lists of priority species and habitats were used to draw up the NERC Act's Section 41 list of species and habitats of principal importance in England.

Berkshire Biodiversity Strategy: The Natural Environment in Berkshire: Biodiversity Strategy 2014 – 2020

- C.6.6 The Berkshire Local Nature Partnership (LNP) have developed the Berkshire Biodiversity Strategy (The Natural Environment in Berkshire: Biodiversity Strategy 2014 – 2020). This document will assist England in achieving its target of halting the loss of biodiversity, by working at a local level to identify and implement opportunities to protect the natural environment. The Berkshire Biodiversity Strategy incorporates aspects of targets from the England Biodiversity Strategy, which can be achieved in Berkshire. It is both a statement of the current state of nature in Berkshire and a strategy for protecting and enhancing our natural environment (Berkshire LNP, undated).

Reading Biodiversity Action Plan

- C.6.7 Reading Biodiversity Action Plan (2005 – 2015) contains full detailed action plans for the following.
- Urban;
 - Semi-natural Grassland;
 - Parkland and Veteran trees;
 - Broadleaved Woodland;
 - Ancient and/ or species rich Hedgerows;
 - Ponds (Standing Open Water) and Reedbeds;
 - Rivers and other waterways;
 - Black poplar;
 - Loddon lily;
 - Glow worm;

- Stag beetle;
- Bats;
- Water vole;
- Black redstart;
- House sparrow;
- Sand martin;
- Great crested newts;
- Slow worm.

Wokingham Biodiversity Action Plan

C.6.8 The Wokingham Biodiversity Action Plan contains five Habitat Action Plans covering the following broad habitat types:

- Communities, Towns and Villages;
- Woodland;
- Grassland and hedgerow;
- Wetland; and
- Heathland.

Appendix D Scope of Further Surveys

The following scope of surveys was circulated to Andy Glencoss (AG) Biodiversity Officer, WBC, and Giles Sutton, (GS), Ecologist, RBC on 29th April 2016, for approval.

Table 3: Scope of Further Surveys

Feature	Scope	Timing
Habitats On-Site	In the first instance it is recommended that a detailed botanical survey and mapping exercise is completed across the on-site LWS and HPI's, with botanical sampling of habitats across the wider East MRT Site. The results of these will be used to inform future discussions, recommendations or constraints to the proposals.	June – July
Protected/ Notable Flora (Incl. Mature Trees)	As for the 'Habitats On-Site' as outlined above. An arboricultural survey is due to be completed for the East MRT Site. Should the proposed development impact on, or require removal of trees, it is likely that comprehensive mitigation will be required.	June - July N/A
Invasive Species	An invasive species survey will be undertaken, for completion at the same time as the further botanical survey work as outlined above. Schedule 9 species or those of an invasive nature should be mapped at this time and appropriate control measures recommended.	June - July
Bats	Trees and Built Structures: In the first instance, woodland, mature and semi-mature trees and built structures should be avoided with sufficient off-set so as to avoid damage or disturbance, including in respect to artificial lighting. Should this not be possible, further survey work may be required. (Trees to be impacted to be confirmed following receipt of arboricultural surveys and confirmation of route alignment). Activity: In accordance with current best practice guidelines (Collins, J. (ed), 2016), bat activity surveys will be undertaken across the East MRT Site to gauge the level of activity and species assemblage present.	Ground level survey work – as soon as possible to allow for additional further survey, if required. Activity surveys: May – August.
Reptiles	In the first instance, it is recommended that any reptile survey data available for the adjacent TVP P&R scheme is reviewed. This will provide further background as to the likely presence of reptiles in the area, and will be used to target further survey effort. Following this, it is recommended that a survey to determine the presence/likely absence of reptiles is completed throughout optimal habitat on and immediately adjacent to the East MRT Site; with methods to follow the current recommended guidelines.	April – September, with April – May and September being optimal.