

A stylized, grey map of North West Cambridge is positioned on the left side of the page, partially overlapping a dark blue background. The map shows the irregular coastline and internal landmasses of the area.

# NORTH WEST **cambridge**

Construction Environment Management Plan

Condition 52

May 2013





# North West Cambridge – Construction Environmental Management Plan

NWC1-URS-SW-SWD-XX -  
RPT-CE-0006

P07

For Information

Prepared for:  
University of Cambridge

UNITED  
KINGDOM &  
IRELAND



Issue	Date	Details	Prepared by	Checked by	Approved by
P01	19/10/12	Version 1	Andrew Alty Senior Engineer	Suzanne Scobie Principal Engineer	David A Smith Technical Director
P02	19/11/12	Version 2	Andrew Alty Senior Engineer	Suzanne Scobie Principal Engineer	David A Smith Technical Director
P03	06/12/12	Version 3	Andrew Alty Senior Engineer	Suzanne Scobie Principal Engineer	David A Smith Technical Director
P04	14/12/12	Version 4	Andrew Alty Senior Engineer	Suzanne Scobie Principal Engineer	David A Smith Technical Director
P05	15/02/13	Version 5	Andrew Alty Senior Engineer	Suzanne Scobie Principal Engineer	David A Smith Technical Director
P06	29/03/13	Version 6	Andrew Alty Senior Engineer	Suzanne Scobie Principal Engineer	David A Smith Technical Director
P07	15/05/13	Version 7	Andrew Alty Senior Engineer	Suzanne Scobie Principal Engineer	David A Smith Technical Director

URS  
Scott House  
Alençon Link  
Basingstoke  
Hants  
RG21 7PP

Telephone: +44(0)1256 310200  
Fax: +44(0)1256 310201

## Limitations

URS Infrastructure & Environment UK Limited (“URS”) has prepared this Report for the sole use of the University of Cambridge in accordance with the Agreement under which our services were performed. No other warranty, expressed or implied, is made as to the professional advice included in this Report or any other services provided by URS. This Report is confidential and may not be disclosed by the Client nor relied upon by any other party without the prior and express written agreement of URS.

The conclusions and recommendations contained in this Report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from whom it has been requested and that such information is accurate. Information obtained by URS has not been independently verified by URS, unless otherwise stated in the Report.

The methodology adopted and the sources of information used by URS in providing its services are outlined in this Report. The work described in this Report was undertaken between **September 2012** and **February 2013** and is based on the conditions encountered and the information available during the said period of time. The scope of this Report and the services are accordingly factually limited by these circumstances.

Where assessments of works or costs identified in this Report are made, such assessments are based upon the information available at the time and where appropriate are subject to further investigations or information which may become available.

URS disclaim any undertaking or obligation to advise any person of any change in any matter affecting the Report, which may come or be brought to URS’ attention after the date of the Report.

Certain statements made in the Report that are not historical facts may constitute estimates, projections or other forward-looking statements and even though they are based on reasonable assumptions as of the date of the Report, such forward-looking statements by their nature involve risks and uncertainties that could cause actual results to differ materially from the results predicted. URS specifically does not guarantee or warrant any estimate or projections contained in this Report.

## Copyright

© This Report is the copyright of URS Infrastructure & Environment UK Limited. Any unauthorised reproduction or usage by any person other than the addressee is strictly prohibited.

## TABLE OF CONTENTS

1.	GENERAL ENVIRONMENTAL MANAGEMENT .....	1
1.1	Introduction .....	1
1.2	Planning Condition 52 .....	2
1.3	Planning Condition 53 .....	4
2.	WORKS-SPECIFIC CONSTRUCTION METHOD STATEMENTS .....	5
2.1	Introduction .....	5
2.2	General documentation .....	5
2.3	Construction works .....	5
2.4	Legal requirements .....	6
2.5	Environmental requirements .....	6
3.	ENVIRONMENTAL MONITORING .....	8
3.1	Introduction .....	8
3.2	Environmental Management during Construction [Planning Condition 52(s)] .....	8
4.	BREEAM AND THE CODE FOR SUSTAINABLE HOMES9	
4.1	Introduction .....	9
5.	GENERAL SITE INFORMATION .....	11
5.1	Introduction .....	11
5.2	Construction and Phasing Programme [Planning Condition 52(a)] .....	11
5.3	Working Hours [Planning Condition 52(c) & 52(d)] .....	11
5.4	Layout .....	11
5.5	Hoardings & Fencing [Planning Condition 52(m)] .....	12
5.6	Site Access [Planning Condition 52(b)] .....	12
5.7	Haul Roads .....	13
5.8	Traffic Routes [Planning Condition 52(b)] .....	13
5.9	Enforcement Measures [Planning Condition 52(b)] .....	13
5.10	Parking [Planning Condition 52(b)] .....	14
5.11	Signing and Monitoring [Planning Condition 52(b)] .....	14
5.12	Deliveries/compounds [Planning Condition 52 (e and u)] .....	15
5.13	Use of Concrete Crusher [Planning Condition 52(i)] .....	15
5.14	Site Reinstatement .....	16
5.15	Contaminated Land (Planning Condition 52 (g)) .....	16
5.16	Considerate Principal Contractor Scheme / Code of Construction Practice [Planning Condition 52(s)] .....	17
5.17	Highway and utility works - Huntingdon Road and Madingley Road and interference with Public Highway [Planning Condition 52(o)] .....	18
5.18	External safety and information signing and notices [Planning Condition 52(p)] .....	19
5.19	Communication with the workforce .....	19
5.20	Liaison, Consultation & Publicity [Planning Condition 52(q)] .....	20

5.21	Complaints procedures [Planning Condition 52(t)].....	21
6.	MEASURES TO BE PROVIDED FOR IN WORKS-SPECIFIC CONSTRUCTION METHOD STATEMENTS .....	22
6.1	Introduction.....	22
6.2	Waste Management [Planning Condition 52(f)] .....	23
6.3	Soil Management Plan [Planning Condition 52(g)] .....	28
6.4	Emission Control .....	29
6.5	Archaeology and Built Heritage [Planning Condition 52(r)]34	
6.6	Geological Site Management Plan .....	35
6.7	Biodiversity [Planning Condition 52(r)] .....	39
6.8	Lighting [Planning Condition 52(k)] .....	42
6.9	Noise and Vibration [Planning Condition 52(h)] .....	43
6.10	Water Management [Planning Condition 52(l)] .....	48
6.11	Landscape and Visual .....	52
6.12	Arboricultural Method Statement [Planning Condition 52(r)]53	
6.13	Construction Traffic Movements and Routeing Strategy .	54
6.14	Pedestrian and Cyclist Routeing Strategy [Condition 52(n)]57	
6.15	Emergency Plan .....	58
7.	CONCLUSION.....	60
Appendix A.....Legislation, codes of practice and guidance relevant to the CEMP		

## **1. GENERAL ENVIRONMENTAL MANAGEMENT**

### **1.1 Introduction**

#### **1.1.1 Background**

The North West Cambridge (NWC) project (“the Development”) has been the subject of an environmental impact assessment and intensive consultation with a wide range of stakeholders, including members of the public, local authorities affected by the scheme and a range of statutory and non-statutory consultees.

The Development will be subject to a number of strict environmental controls and requirements. Measures have been developed through the consultation process with statutory bodies, such as Local Planning Authorities and Natural England.

This Construction Environmental Management Plan has been updated in response to Condition 52 of the planning permission for the Development (reference C/11/1114/OUT and S/1889/11). It sets out the management measures which the University will require its Principal Contractors to adopt and implement for the construction of the Development to avoid, and manage any construction effects on:

- the environment;
- existing surrounding communities; and
- new residents of NWC.

This Construction Environmental Management Plan is a strategic document that provides the overarching details and principles in relation to how environmental issues that arise will be handled to ensure compliance with relevant legislation. This Plan will form the basis of phase/parcel specific Construction Management Plans (CMS) which will be prepared by the appointed contractors to reflect the more detailed requirements proposed as part of submissions of details of reserved matters.

Section 6 of this document includes specifications for particular topic areas. The Principal Contractor will be required to deliver these elements as a minimum requirement.

It should be noted that the Development falls within the administrative boundaries of Cambridge City Council and South Cambridgeshire District Council and the Principal Contractor will have to liaise with officers from both authorities.

Ongoing consultation will be required with Natural England in relation to any further changes made to the Construction Environmental Management Plan that may impact on the Traveller's Rest Pit SSSI, including the final version of this document.

#### **1.1.2 Planning Policy context**

The North West Cambridge Area Action Plan policy NW28: Construction Process states the following:

*Where practicable the development will:*

- a. *Recycle construction waste;*



- b. *Accommodate construction spoil within the development, taking account of the local urban and landscape character and avoiding creation of features alien to the topography;*
- c. *Maximise the reuse and recycling of any suitable raw materials currently available on site during construction, such as redundant buildings or infrastructure;*
- d. *Avoid disruption to adjacent parts of the City and Girton.*
- 10.1 *The construction process utilises a significant amount of resources and development on this scale will generate a considerable amount of spoil and waste building material. Any existing resources available on the site, such as materials from redundant buildings, can help reduce the amount of materials that have to be imported onto the site.*
- 10.2 *It would not be appropriate to transport construction spoil over considerable distances as this would be unsustainable and simply transfer the problem elsewhere. The general principle should be for construction spoil to be treated and utilised on site. However, it would not be acceptable to alter the land forms locally by concentrating the spoil into one or more large mounds as this would introduce an alien character into this area.*
- 10.3 *Construction spoil can be used in the construction of sport and recreation facilities provided this is in appropriate locations and will not have adverse implications for landscape character.*
- 10.4 *The development of North West Cambridge will take place over a number of years and the construction process can have implications for amenity, public safety, and the landscape setting of Cambridge and Girton if not properly planned. The construction process will therefore need careful management in order to avoid or minimise disruption to the adjacent parts of the City and Girton as well as parts of North West Cambridge which have already been built. Realistically, it will not be possible to avoid any impact when development is being undertaken immediately adjoining existing areas but measures should be undertaken to reduce the impact as far as possible. It will also be important to ensure that there is no adverse impact on the Traveller's Rest Pit Site of Special Scientific Interest (SSSI).*
- 10.5 *Haul routes, storage compounds, plant and machinery can all be located in such a way as to minimise any impact and in some cases, it will be appropriate for haul routes to further mitigate their impact through landscaping in locations where the duration and scale of the development is extensive.*
- 10.6 *A Construction Environmental Management Plan including a Site Waste Management Plan will be required to support a planning application.*

## 1.2

### Planning Condition 52

Prior to the commencement of development, a site wide Construction Environmental Management Plan (CEMP) shall be submitted to and approved in writing by the local planning authority. The CEMP shall accord with and give effect to the principles for such a Statement proposed in the Environmental Statement submitted with the application and shall include, but not be limited to, the consideration of the following aspects of construction:

- a) Site wide construction and phasing programme.
- b) Principal Contractors' access arrangements for vehicles, plant and personnel including the location of construction traffic routes to, from and within the site, details of their signing,

monitoring and enforcement measures, along with location of parking for Principal Contractors and construction workers.

- c) Construction and demolition hours, which shall be carried out between 0800 hours to 1800 hours Monday to Friday, and 0800 hours to 1300 hours on Saturday and at no time on Sundays, Bank or Public Holidays, unless in accordance with agreed emergency procedures for deviation.
- d) Prior notice and agreement procedures for works outside agreed limits and hours.
- e) Delivery and collection times for construction purposes.
- f) Outline Waste Management Plan (OWMP), providing a statement of site specific reuse and recycling objectives with appropriate targets, compliance training for sub-Principal Contractors, construction code of conduct together with regular auditing and reporting on target achievements and quantities disposed, ensuring that such materials are only consigned to authorised treatment/recovery or disposal facilities, including consideration of participation in a Materials Re-use and Recycling Forum.
- g) Soil Management Plan/Strategy, including the reuse of potentially contaminated recycled building materials onsite and any importation and storage.
- h) Noise and Vibration (including piling) impact / prediction assessment, monitoring, recording protocols and consideration of mitigation measures in accordance with BS 5528, 2009 - Code of Practice for Noise and Vibration Control on Construction and Open Sites Parts 1 - Noise and 2 -Vibration (or as superseded) including the use of best practical means to minimise noise and vibration disturbance from construction works.
- i) Confirmation on whether a concrete crusher will be used
- j) Dust suppression management and wheel washing measures, including the deposition of all debris on the highway
- k) Site lighting details.
- l) Drainage control measures including the use of settling tanks, oil interceptors and bunds.
- m) Screening and hoarding details.
- n) Access and protection arrangements around the site for pedestrians, cyclists and other road users.
- o) Procedures for interference with public highways, (including public rights of way), permanent and temporary realignment, diversions and road closures.
- p) External safety and information signing and notices.
- q) Liaison, consultation and publicity arrangements including dedicated points of contact.
- r) Consideration of ecological and other sensitive receptors.
- s) Membership of the Considerate Principal Contractors Scheme.
- t) Complaints procedures, including complaints response procedures.

- u) Location of Principal Contractors compound and method of moving materials, plant and equipment around the site.

The detail requested above shall include and expand on, where necessary, the Construction Management Plan dated May 2012. Development shall be carried out in accordance with approved details.

**REASON** To ensure the environmental impact of the construction of the development is adequately mitigated and in the interests of the amenity of nearby residents/occupiers. North West Cambridge Area Action Plan Policies NW2 and NW28.

### **1.3**

#### **Planning Condition 53**

Prior to the commencement of development of any reserved matters approval, a Construction Method Statement (CMS) shall be submitted to and approved in writing by the local planning authority. The CMS shall demonstrate how the construction of the reserved matters approval accords with the details of construction criteria A-R (except criteria F) of the Construction Environmental Management Plan (CEMP). In addition to criteria A-U, the CMS shall also provide a specific construction programme and a plan identifying: the Principal Contractor site storage area/compound; screening and hoarding locations; site lighting; wheel washing and dust suppression measures; the need or otherwise for a concrete crushing machine on site; access arrangements for vehicles, plant and personnel; building material, plant and equipment storage areas; Principal Contractor parking arrangements for construction and personnel vehicles; and the location of Principal Contractor offices. Thereafter the development shall be undertaken in accordance with the agreed details.

**REASON** To ensure the environmental impact of the construction of the development is adequately mitigated and in the interests of the amenity of nearby residents/occupiers. North West Cambridge Area Action Plan Policies NW2 and NW28.

## **2. WORKS-SPECIFIC CONSTRUCTION METHOD STATEMENTS**

### **2.1 Introduction**

Works-specific Construction Method Statements (CMS) will be prepared for each principal component of the works in accordance with Condition 53. They will be consistent with the site wide CEMP and will describe any environmental obligations pertaining to that part of the Site and phase of the Development which are not already covered in this CEMP.

### **2.2 General documentation**

The works-specific CMS will include the following general documentation:

- a construction programme
- a management structure including an organisational chart showing staff responsible for environmental work, setting out roles and responsibilities
- site plan with details of the storage area/compound, screening and hoarding locations, site lighting, wheel washing and dust suppression measures, need or otherwise of concrete crushing machine, access arrangements for vehicles, plant and personnel, parking arrangements and office locations.
- details of the nominated environmental manager
- an internal environmental audit programme, for example ISO 14001
- an Environmental Risk Register and procedures showing how environmental risks will be addressed
- procedures for environmental training of site staff
- procedures for programming, managing and documenting communication of environmental matters
- procedures for handling external communications, liaison and complaints including the development and maintenance of a clear audit trail
- procedures for monitoring, recording and disseminating environmental information and performance
- procedures for addressing non-compliance and corrective actions
- procedures for managing major incidents, unexpected occurrences or finds during construction, particularly related to: air quality, cultural heritage (including archaeological finds), ecology, ground quality, noise and vibration and water resources.

### **2.3 Construction works**

The works-specific CMS will include the following documentation in respect of Construction Works:

- site location and site plan showing site boundaries, position of plant and sensitive receptors

- description of the works
- programme of principal construction activities
- proposed normal working hours
- outline of works which may require construction activities outside normal working hours
- equipment and plant to be used
- vehicular access routes/points including location plan and list of activities for which each access point is to be used
- method of delivery/removal of materials and plant
- details of proposed site accommodation
- personnel access routes/points including location plan and list of activities for which each access point is to be used
- details of how public right of way and access to property will be retained and managed
- construction travel plans
- location of secure storage facilities for tools and equipment

## **2.4 Legal requirements**

Works-specific CMS will include the following documentation in respect of Legal Requirements:

- schedule of appropriate environmental legislation and good practice that will be adhered to
- list of specific objectives and targets that have been imposed by planning conditions and agreed in consultation with third parties
- register of permissions and consents required, with responsibilities allocated and programme for obtaining them

## **2.5 Environmental requirements**

Works-specific CMS will include the following documentation in respect of Environmental Requirements:

- procedures for monitoring construction processes against project environmental objectives and for appropriate action if thresholds have been breached
- procedures for reporting spillages/pollution incidents to the relevant authorities
- procedures for co-ordinating monitoring results to ensure the combined effect of the works in different locations does not trigger threshold levels

- schedule of potential significant environmental effects relating to each activity (this should draw upon the definitions of significant effects used in the Environmental Statement and relate to those effects identified)
- specific Environmental Risk Register relating to each activity
- monitoring proposals including: receptors for which monitoring will be undertaken; frequency; factors against which monitoring results will be analysed; threshold levels
- speed of analysis; results distribution list; and actions if thresholds are breached.

### **3. ENVIRONMENTAL MONITORING**

#### **3.1 Introduction**

Environmental monitoring will be undertaken to evaluate the environmental effects of the construction process.

#### **3.2 Environmental Management during Construction [Planning Condition 52(s)]**

The contracts awarded for NWC will include a requirement on the Principal Contractor to comply with this CEMP. Principal Contractors will be required to sign up to the 'Considerate Principal Contractors Scheme' (CCS) run by Cambridge City Council, in association with the Cambridge Forum for the Construction Industry, as required by item (s) of Planning Condition 52 and the UK's "Considerate Constructors Scheme". For further information refer to section 2.4.

##### **3.2.1 *Management of the Environmental Performance of the Principal Contractor***

The Principal Contractor will be required to comply with all relevant environmental legislation and to take account of published standards, accepted industry practice, national guidelines and codes of practice appropriate to the scheme. For the duration of the contract, the environmental performance of the Principal Contractor will be monitored through site inspections and audits.

Principal Contractors will be required to operate an induction scheme to ensure all employees are aware of the site rules and their environmental responsibilities, to identify training needs for personnel and to provide appropriate training. The training will include toolbox talks for site operatives to maintain an appropriate level of awareness of environmental issues.

## 4. BREEAM AND THE CODE FOR SUSTAINABLE HOMES

### 4.1 Introduction

Pre-assessments have been conducted to demonstrate how BREEAM Excellent and Code for Sustainable Homes across the entire site can be achieved. These pre-assessments identify a number of credits which are required as part of the construction process. The Principal Contractor must achieve the following credits as a minimum.

#### 4.1.1 **Considerate Constructors**

*BREEAM Man 02: 2 credits minimum*

*Code for Sustainable Homes Man 2: 2 credits minimum*

The Principal Contractor will be required to manage construction areas in an environmentally and socially considerate, responsible and accountable manner. This means that they will be required to sign up to a good site practice scheme such as Considerate Constructors. If the Principal Contractor undertakes site clearance activities in advance of the main construction works, registration is required for the site clearance activities.

#### 4.1.2 **Construction site impacts**

*BREEAM Man 03: 5 credits minimum*

*Code for Sustainable Homes Man 3: 2 credits minimum*

The Principal Contractor will be required to manage construction areas in an environmentally sound manner in terms of resource use, energy consumption and pollution. This means assigning responsibility to an individual(s) for monitoring, recording and reporting energy, water and transport consumption data resulting from all construction processes. The Principal Contractor will require an Environmental Management System (EMS).

#### 4.1.3 **Responsible sourcing of materials**

*BREEAM Mat 03: 1 credits minimum*

*Code for Sustainable Homes Mat 2: 4 credits minimum*

*Code for Sustainable Homes Mat 3: 2 credits minimum*

The Principal Contractor will be required to specify responsibly sourced materials for basic and finishing building elements including hard landscaping.

#### 4.1.4 **Construction waste management**

*BREEAM Wst 01: 3 credits minimum*

*Code for Sustainable Homes Was 2: 3 credits minimum*

The Principal Contractor will be required to promote resource efficiency via the effective management and reduction of construction waste.



**4.1.5 Recycled aggregates**

*BREEAM Wst 02: 0 credits minimum*

The Principal Contractor will be required where practicable and specification compliant to use recycled and secondary aggregates, thereby reducing the demand for virgin material and optimising material efficiency in construction. No credits have been targeted in BREEAM, but The Principal Contractor will be required to investigate the opportunities for incorporating recycled aggregates, including identifying suitable sources, and incorporating where feasible.

**4.1.6 Ecological value of site and protection of ecological features**

*BREEAM LE 02: 0 credits minimum*

*Code for Sustainable Homes Eco 3: 0 credits minimum*

An ecology assessment is being conducted on a site wide basis. Given that some items of ecological value will be removed or damaged within the site it will not be possible for these credits to be achieved. However the Principal Contractor will be required to protect existing and retained ecological features from substantial damage during site preparation and completion of construction works, and should follow the guidance in the site wide Biodiversity Strategy and BREEAM Ecology Report.

**4.1.7 Long term impact on biodiversity**

*BREEAM LE 05: 2 credits minimum*

In order to manage the long term impact of the Development on the Site and the surrounding area's biodiversity the Principal Contractor will be required to nominate a 'Biodiversity Champion' with the authority to influence site activities and ensure that detrimental impacts on site biodiversity are minimised in line with the recommendations of the Project Ecologist, as set out in the site wide Biodiversity Strategy and BREEAM Ecology Report.

The Principal Contractor will also be required to train the site workforce on how to protect site ecology during the project. Specific training will be carried out for the entire site workforce to ensure they are aware of how to avoid damaging site ecology during operations on site. Training will be based on the findings and recommendations for protection of ecological features highlighted within the site wide Biodiversity Strategy and BREEAM Ecology Report.

The Principal Contractor will record actions taken to protect biodiversity and monitor their effectiveness throughout key stages of the construction process.

## **5. GENERAL SITE INFORMATION**

### **5.1 Introduction**

This section provides general information which will be taken forwards into works-specific CMS.

Chapter 6 of this document provides further information which will form base requirements for works-specific CMS.

### **5.2 Construction and Phasing Programme [Planning Condition 52(a)]**

This section is in response to item (a) of Planning Condition 52. The construction and phasing programme will be as described in the North West Cambridge Site Wide Phasing Strategy prepared in response to Planning Condition 5. In summary:

- 26 Development Parcels: Land in the built-area of the site, including roads and secondary/tertiary open spaces, but excluding primary open space.
- 8 Phases of Development that each comprise 1-7 parcels.
- Phases generally expected to be developed in order, though there may be exceptions, particularly where related to different land uses. Phases may run in parallel. Phases and parcels may be delivered through a series of reserved matters applications. Reserved matters applications may include land in more than one phase.

### **5.3 Working Hours [Planning Condition 52(c) & 52(d)]**

The Planning Condition referenced above states the agreed working hours.

Start-up and close-down periods of up to an hour before and after core working hours may be used for activities such as arrival of workforce and staff on site; deliveries and unloading; maintenance and checking of plant and machinery; general refuelling; site inspections, and safety checks prior to commencing work; site meetings; and general site clean up and departure.

Certain activities will need to take place outside these core times to enable safe working, minimum disruption to road users or restrictions placed by 3<sup>rd</sup> parties such as utility companies or the Highway Authority. These out of hours activities will be notified to the Local Authority Environmental Health Officers (see item (d) of Planning Condition 52) detailing full justification of why the works outside the permitted hours are required and where appropriate advance notice provided to both the Local Authority Environmental Health Officers and nearby residential properties.

Certain activities may be required to extend beyond core working hours due to unforeseen events during the working day. Such activities will only be permitted to continue where sound engineering or safety concerns dictate.

### **5.4 Layout**

As far as reasonably practicable and appropriate, the site layout and appearance will be designed by the Principal Contractor using the following principles:

- a) Sites at prominent locations from Maddingley Road and Huntingdon Road will be screened.
- b) All sites will be fully secured.

- c) Existing features will screen the sites where appropriate.
- d) Storage sites, fixed plant and machinery equipment and temporary offices will be located to limit environmental impacts, as far as reasonably practicable, and having due regard to neighbouring accommodation, as far as allowed by the constraints of each site.
- e) Site lighting will be located and directed so as to minimise intrusion into occupied residential properties, on sensitive areas or constitute a road hazard.
- f) Security cameras will be sited and directed so that they do not intrude into occupied residential properties.
- g) Site plant and facilities will be powered from mains electrical sources where practicable.

## 5.5 Hoardings & Fencing [Planning Condition 52(m)]

As far as reasonably practicable the visual intrusion of construction sites on nearby residents and users of local facilities and amenities will be contained and limited by the Principal Contractor. The detailed arrangements with regards to the site hoardings and/or fencing will be subject to further approval from Cambridge City Council (see item (m) of Planning Condition 52).

The hoarding/fencing will accord with the following principles:

- a) The standard hoarding/fencing will be of suitable height, plywood faced, timber framed hoarding suitably painted. Any advertising would be subject to traditional planning approval routes.
- b) The hoarding/fencing will be increased in height and possibly altered in form to enhance acoustic and dust suppression performance for specific locations.
- c) Suitable measures will be used for tree protection.
- d) Where reasonably practicable existing walls, fences, hedges and earth banks will be retained.
- e) Notices will be displayed on all site boundaries, to warn of hazards on site such as deep excavations, construction access, etc.
- f) Appropriate sight lines/visibility splays will be maintained to ensure safety of both vehicles and pedestrians is preserved.
- g) Temporary fences may be used in certain areas, such as for short term occupation of sites.
- h) All timber used in temporary site works must be procured in line with the UK Government's Timber Procurement Policy as outlined in BREEAM Mat 03.

## 5.6 Site Access [Planning Condition 52(b)]

This section is in response to item (b) of Planning Condition 52.

A planning application will be made by the University to form a temporary access point between the Madingley Road park and ride and the M11. This involves construction of a 400 metre long temporary road serving the Neighbourhood Centre. It is unlikely this could be

complete before summer 2013. There will be extensive security and logistics facilities associated with this route.

To minimise the impact of the construction traffic movements on the surrounding highway network – particularly the M11 Off Slip Road - the proposed access will be a priority junction form.

The junction form shown on URS drawing D127313-SK-P1-107A has been assessed for capacity using the TRL's PICADY program. A typical daily worktime movement profile has been assumed, along with the predicted maximum number of construction trips generated by the Development. This assessment confirms that the junction would operate within capacity throughout the day.

## **5.7 Haul Roads**

The location of temporary haul routes proposed by the Principal Contractor will be identified in works-specific CMS. Their location will be considered in terms of impact with regard to noise and disturbance of the local community and the impact on the soils and geology of the Site.

They will avoid the Traveller's Rest Pit SSSI.

Haul routes will be required for the main earthworks operations. Areas will be certified as clear of ecological and archaeological features prior to the start of the main construction works, including the construction of haul routes.

Wheel washing facilities will be provided for HGVs and site vehicles at the main exits from the site onto the public highway.

Plant crossings will be regularly maintained by a mechanical road sweeper or other means to clean the road surface and where necessary, will be manned to ensure that roads are maintained in a safe condition.

Dust from haul routes during dry and dusty conditions will be managed by using tractor drawn water bowsters, fitted with a sprinkler to dampen the routes or by other agreed means.

## **5.8 Traffic Routes [Planning Condition 52(b)]**

Details of the routing of construction vehicles and visitors to the site to be proposed by the Principal Contractor will be agreed with the Highway Authority, Cambridgeshire County Council and the Highways Agency. It is assumed that all Heavy Vehicles and other large construction vehicles will be routed between the M11 and Madingley Road construction access. No HGV movements associated with the Development will use residential streets.

Sections 6.13 and 6.14 outline the requirements of the Construction Traffic Routeing Strategy and the Pedestrian and Cyclist Routeing Strategy.

## **5.9 Enforcement Measures [Planning Condition 52(b)]**

The Principal Contractor will be notified of all discussions leading to the agreed route to the Development for heavy vehicles and other large construction vehicles, and why this route was adopted.

All Principal Contractors will be required to

- a) notify in writing all their suppliers, sub-contractors, staff and anyone who is to travel to the site in such vehicles of these arrangements;

- b) seek clarification from each organisation regarding how they intend to police this arrangement;
- c) seek clarification from each organisation through the provision of details of the penalties they will impose upon their drivers who breach these arrangements. This is likely to include a substantial financial penalty for initial transgressions, through to removal from site of the driver for repeated violation;
- d) provide the University with details of any punishment handed out to their staff.

The University will overview this process, and to protect their reputation, will consider their future employment on site should there be repeated transgressions.

#### **5.10 Parking [Planning Condition 52(b)]**

Providing an appropriate level of car parking on-site is essential – over-provision would result in attracting too many vehicle trips, whilst under-provision could lead to inappropriate parking in the surrounding streets as well as less productive working.

As part of the involvement with the Principal Contractor to minimise the movements onto site, the available levels of car parking will be monitored by the University and amended if required to reflect the change in on-site activity.

Construction traffic and construction personnel vehicular access to the NWCD site will be from the temporary construction access from Madingley Road, west of the Park & Ride. Some parking on site will be provided for operatives use on a permit basis but with priority given to crew buses to maximise numbers. Parking off-site in nearby residential areas will be strongly discouraged to minimise the impact on local residents. Required standards of behaviour will be established across the site and included in contract documents between UoC and construction contractors.

Site rules will emphasise the need for consideration for local residents. Car sharing and use of public transport will be strongly encouraged. Furthermore, the Considerate Constructors scheme will be compulsory on the NWCD Site with contractors monitored for compliance regarding: "Respecting the Community" & "Protecting the Environment."

Construction sites and companies that register with the Scheme and who work on the NWCD are monitored against a "Code of Considerate Practice", designed to encourage best practice beyond statutory requirements. Any issues that are raised by local residents will be reviewed by the University and directed to contractors for responses and action as appropriate. If contractor parking continues to occur in residential areas, the UoC will undertake to monitor why this is happening and by whom, and take positive steps to resolve the issue with the contractor and address the issue internally within the site.

Following the assessment of the proposed junction form during the peak site construction generation (anticipated as being in January 2015), it is thought that a peak of around 350 temporary car parking spaces would be provided.

#### **5.11 Signing and Monitoring [Planning Condition 52(b)]**

To reduce the possibility of heavy construction vehicles travelling through the City, the Principal Contractor will be required to:

- i) stipulate the approved construction movement route in all of their tenders and contracts to all material suppliers, sub-contractors and labour;

- ii) require their suppliers and sub-contractors to provide method statements regarding how this will be relayed to their workforce.

The Principal Contractor will discuss with the Joint Authorities the possibility of providing temporary advance directional signage on the approach strategic roads to guide incoming vehicles along the agreed route.

The University will monitor and observe movements passing into site on a monthly basis throughout the duration of the construction of the Development, and offer this information to the Joint Authorities. This will provide information of the number, time, and type of vehicle moving into the site, as well as providing an independent check on the observance of the agreed vehicle routes.

#### **5.12 Deliveries/compounds [Planning Condition 52 (e and u)]**

Items (e) and (u) of Planning Condition 52 require further information on delivery and collection times for construction purposes and the location of the Principal Contractor's compound and the methods of moving materials, plant and equipment around the site.

The peak generators of heavy vehicle movements to the site would be of concrete, carriageway construction aggregate and bitumen. Practically, these would need to be made on a regular basis throughout the day between 0700 and 1500, so that the operatives can deal with the material as it arrives, and to avoid a log-jam of delivery vehicles awaiting discharge.

The construction processes would be programmed to avoid reliance on deliveries of concrete and bituminous materials during the more congested periods and delivery drivers will themselves wish to avoid being on the network at congested times of the day when drivable hours are disproportionate to quantities of goods delivered.

Other deliveries are assumed to occur regularly throughout the day. Because of the relatively limited on-site storage, these too would occur on a reasonably regular basis between 0700 and 1500. Deliveries later than this would be rare, as the operatives would not be able to process the material after that time of day.

All construction traffic entering and leaving the Site will be closely controlled. Vehicles making deliveries to the Site or removing material will travel via designated routes, which will have been previously agreed with CCC/SCDC and the Highways Agency.

Measures will be taken to review and reduce where possible the numbers of construction vehicles accessing the site during peak hours, by adopting such measures as 'just in time' deliveries.

The works-specific CMS will present details of the Principal Contractor's compound, storage areas and car parking arrangements for the Principal Contractor's employees and visitors. The CMS will also present details of how materials, plant and equipment will be moved around the site.

#### **5.13 Use of Concrete Crusher [Planning Condition 52(i)]**

This section is in response to item (i) of Planning Condition 52. Should a concrete crusher be required, its location, anticipated date of arrival and expected time period on site will be specified in the CMS produced in support of the reserved matters application.

It is anticipated that a 47t tracked crusher would have an A-weighted sound pressure level of 82 db  $L_{AEQ}$ .

**5.14 Site Reinstatement**

On the completion of works, the Principal Contractor will agree reinstatement plans with Cambridge City Council within six months of the completion of the relevant works.

**5.15 Contaminated Land (Planning Condition 52 (g))**

A phase 1 Contaminated Land Assessment at the Site has been carried out. It is apparent that the previous and recent land use has resulted in only very low levels of contamination present on the Site in either soil or groundwater and hence in accordance with the assessment methodology it is assessed that there are unlikely to be any significant effects from the identified sources.

The contamination assessment has indicated only low levels of contaminant concentrations present on the Site and therefore the potential for excavated materials to be chemically acceptable for re-use, both on-site and off-site is considered high.

The gravels within the Mineral Safeguarding Area (MSA) that are excavated by the Principal Contractor for road construction, building foundations or utility trenches will be used as fill on site. Any excavated material from this area will be stockpiled for re-use.

Similarly, topsoil arising will be stockpiled for re-use.

Further ground investigations are planned to be undertaken by the University at the worksite and the results will be reviewed to confirm the contamination status of the Site. Further soil quality tests may be undertaken as works progress for material and waste management purposes.

In accordance with Condition 49, prior to the commencement of development on any land parcel, a contaminated land assessment and associated remedial strategy shall be submitted to and approved in writing by the local planning authority.

Prior to any demolition taking place, a pre-refurbishment/demolition asbestos survey will be undertaken. If asbestos is found, it will be removed and disposed of in accordance with UK best practice.

**5.15.1 Measures in the event of unknown contamination being encountered**

In accordance with Condition 52 (g) and to address the potential risk from encountering unexpected contamination a watching brief would be maintained by the Principal Contractor during excavation works. The person assigned will be suitably qualified in identifying indicators of contamination.

In accordance with best practice where unexpected contamination is encountered, work in the area of concern should be halted until an assessment can be made by a suitably qualified specialist.

Where materials that are contaminated are to be disturbed then the following measures should be implemented:

- a) measures to minimise dust generation;
- b) provision of personal protective equipment (PPE) to construction personnel, such as gloves, barrier cream, overalls, dust masks, respirators etc. to minimise direct contact with



soils. The precise requirements should be determined following an appropriate hazard assessment;

- c) provision of adequate hygiene facilities and clean welfare facilities for all construction site workers; and
- d) monitoring of confined spaces for potential ground gas accumulations, restricting access to confined spaces, i.e. by suitably trained personnel, and use of specialist PPE, where necessary.

Any temporary onsite storage of contaminated material should be on impermeable sheeting, covered and with adequate perimeter leachate collection drains to minimise the potential for leachate and run off from the stockpile being generated.

The disposal of soil waste, contaminated or otherwise to landfill sites would be best avoided or reduced by minimisation of the overall quantities of waste generated during construction and by ensuring that excavated material consigned to landfill cannot, as an alternative, be put to use on the Site or at an alternative off site location.

The following measures will be adopted by the Principal Contractor for the handling and disposal (if required) of contaminated materials:

- a) Adherence to Site Waste Management Plan;
- b) Follow best practice to minimise the likelihood of accidental release of contaminated soils during handling and transportation; and
- c) Selection of the most appropriate disposal route for waste materials, e.g. by avoiding traffic routes that go through residential areas.

#### **5.16 Considerate Principal Contractor Scheme / Code of Construction Practice [Planning Condition 52(s)]**

In accordance with item (s) of Condition 52, the Site will be registered by the Principal Contractor with the UK's "Considerate Constructors Scheme" and Cambridge City Council's "Considerate Principal Contractors Scheme." The national scheme's code of practice seeks to:

- Minimise any disturbance or negative impact (in terms of noise, dirt and inconvenience) sometimes caused by construction sites to the immediate neighbourhood;
- Eradicate offensive behaviour and language from construction sites; and
- Recognise and reward the Principal Contractor's commitment to raise standards of site management, safety and environmental awareness beyond statutory duties.





The scheme requires Principal Contractors and trade Principal Contractors to adhere to a code of practice that includes:

- Be considerate to the needs of all those who are affected by the construction process and of its impact to the environment. Special attention to be given to the needs of those with sight, hearing or mobility difficulties;
- Be environmentally aware in the selection and use of resources. Pay particular attention to pollution avoidance and waste management. Use local resources wherever possible and keep to a minimum at all times noise from construction activities;
- Keep the site clean and tidy and well presented to give a positive impression of the industry
- Be a good neighbour by undertaking full and regular consultation with neighbours regarding site activities from prestart to final handover. Provide site information and viewing facilities where practical;
- Promote respectable and safe standards of behaviour and dress. Derogatory behaviour will not be tolerated under threat of disciplinary action;
- Be safe. All construction and vehicle operations and vehicle movements to be carried out with care for health and safety of passers by, neighbours and site personnel; and
- Be a responsible employer to the operatives on site and the general public. Support staff health and wellbeing and contribute to progressing the industry; and
- Be accountable to the public by providing site contact details and be available to deal with their concerns and develop good local relations.

In addition to this national scheme, a Code of Construction Practice will also be compiled by the Principal Contractor.

All Principal Contractors must commit to achieving 2 credits: BREEAM Man 02 and Code for Sustainable Homes Man 2.

#### **5.17 Highway and utility works - Huntingdon Road and Madingley Road and interference with Public Highway [Planning Condition 52(o)]**

In addition to the more general measures described above and below, measures will be employed by the Principal Contractor to ensure that traffic is carefully managed to avoid significant disruption to the local highway network which will be agreed with Cambridgeshire County Council, the Highway Authority and the police.

Measures will be employed to protect pedestrians and minimise the creation of dust and noise.

It is unlikely that short term road closures are required, however, consent will be obtained from the Highway Authority, Cambridgeshire County Council should they be required.

Notice regarding planned closures and diversions of existing and/or new roads and footpaths will be given by the Principal Contractor to CCC/SCDC, the police, the fire brigade and other emergency services sufficiently in advance of the required closure or diversion dates.

There is the potential for the highways and utilities work along Madingley Road and Huntingdon Road to affect the existing traffic flows. To control and manage disruption to traffic flows on the surrounding road network, all Principal Contractors (including service utility companies' Principal Contractors working for the University) would be required to plan their works in accordance with the agreed Construction Environment Management Plan. The basic measures as summarised below would be included:

- a) design – consideration of alternative service routes to minimise construction work in the local highways;
- b) co-ordination of development-related works – to undertake all necessary works (such as installing more than one utility company's apparatus simultaneously in one section) to avoid having to re-install the traffic management at any one location;
- c) co-ordination of these development-related works with works elsewhere on the network being undertaken by other developers and organisations, to prevent two parallel routes being affected simultaneously;
- d) consideration of working anti-social hours where the number of sensitive receptors is limited (such as to the west of the proposed Site Accesses adjacent the motorway), to reduce the overall duration of the works;
- e) possible means of removing traffic management during the peak hours, to re-open the road and manage any effects upon the surrounding highway network;
- f) installing intelligent traffic light controllers or using manually controlled light controllers to minimise any inefficient use of green time.

To undertake the highways and utilities work along Madingley Road and Huntingdon Road in a safe manner, the operatives would need a working space free from passing vehicles. This working space would be provided with temporary traffic management regimes which could include single direction running controlled with temporary traffic signals to enable traffic to pass the works area.

In response to item (o), it is not considered necessary to introduce road closures and provide diversion routes for motorists. All public rights of way will be maintained and on occasion, may require a temporary realignment.

#### **5.18 External safety and information signing and notices [Planning Condition 52(p)]**

In accordance with Item (p) of Planning Condition 52, notices will be displayed by the Principal Contractor on all site boundaries, to warn of hazards on site such as deep excavations, construction access, etc.

#### **5.19 Communication with the workforce**

Throughout the duration of the project, the Principal Contractor will ensure that there is regular communication with the workforce, providing information about the progress of the construction works, milestones achieved, upcoming challenges, safety incidents and local activities. This information will be shared via newsletters, town hall meetings led by senior management, video presentations and poster campaigns.

All Principal Contractors working on the project must recognise the challenge presented by the need to communicate with workers for whom English is not their first language. This is particularly important when ensuring that safety-related instructions are being transmitted.

Whenever possible pictorial signage will be used which will be complemented by written instructions. Written instructions will be developed in languages other than English - the range of languages will be appropriate to the workforce demographic.

Arrangements must be put in place to ensure that all work crews are able to understand written and verbal safety instructions.

Further information on liaison, consultation and publicity is available in section 2.8 below.

## **5.20 Liaison, Consultation & Publicity [Planning Condition 52(q)]**

Communication with the local community and Local Planning Authority will be undertaken by the Principal Contractor at an appropriate level and frequency. This will include distribution of information relating to relevant aspects of construction.

The works- specific Construction Method Statements will include up to date records of those notified about the works (including the date) and arrangements for proposed notifications and dates.

### **5.20.1 Liaison with Statutory Authorities**

In accordance with Item (q) of Planning Condition 52, the Principal Contractor's Environmental Manager will be responsible for communication with statutory authorities, non-statutory authorities and interest groups. Environmental specialists will liaise directly with statutory authorities where appropriate and as directed by the Environmental Manager.

### **5.20.2 Liaison with the public**

The University will communicate with the public following liaison with the Environmental Manager. Information will be distributed to residents within the information corridor as the works progress. The University will organise letters or leaflets to notify residents of certain activities that may have an effect and where appropriate, will be reinforced with a Public Consultation day/evening.

The Development wants to be a good and responsible neighbour and active participant in the community. All Principal Contractors must be respectful of the needs of the local community and act accordingly.

The University is will be notifying local residents of the works being carried out according to the following methodology:

- Weekly and monthly check on forthcoming work on site
- Decision taken as to the level of notification required for each new piece of work.
- All work on-site is entered on the new website section for "up-coming on-site activity" <http://www.nwcambridge.co.uk/activity.php> All local residents were notified of this new section on the website in August 2012. As at October 2012, 53 have signed-up for automatic alerts.
- If the work is considered major, then a notification will be delivered to all relevant neighbours.

Appropriate arrangements will be made for monitoring and responding to complaints relating to demolition and construction, which are set out in section 5.21 below.

**5.21 Complaints procedures [Planning Condition 52(t)]**

In accordance with Item (t) of Planning Condition 52, all queries and complaints received by the Principal Contractor will be directed to the University in the first instance. The University will maintain a register of complaints and will ensure complaints are forwarded to the Principal Contractor where relevant.

A phone helpline should be clearly displayed at the site giving out of hours contact details and be provided via a letter drop to surrounding properties.

Once the complaint has been investigated, a formal response to the issue will be made that will copy in the Local Environmental Health and Planning officers.

The University will establish a system to:

- Receive, record, track and respond to complaints.
- Ensure that a verbal response is provided to the complainant within two hours (unless the complainant agrees otherwise).
- Provide written response within seven calendar days if the complaint cannot be resolved verbally.
- Ensure information on all complaints received and response times is available to the Environment Manager daily.

Once the complaint has been investigated, a formal response to the issue will be made that will copy in the Local Environmental Health and Planning officers.

## **6. MEASURES TO BE PROVIDED FOR IN WORKS-SPECIFIC CONSTRUCTION METHOD STATEMENTS**

### **6.1 Introduction**

This section includes a variety of minimum requirements to be incorporated into works-specific Construction Method Statements by the Principal Contractor.

As mentioned in 3.2.1 above, Principal Contractors will be required to operate an induction scheme to ensure all employees are aware of the site rules and their environmental responsibilities, to identify training needs for personnel and to provide appropriate training. The training will include toolbox talks for site operatives to maintain an appropriate level of awareness of environmental issues.

The training will include each of the following subjects, which are covered in more detail on the following pages:

- Waste Management
- Soil Management
- Emission Control
- Archaeology and Built Heritage
- Geological Site Management Plan
- Biodiversity
- Lighting
- Noise and Vibration
- Water Management
- Landscape and Visual
- Arboricultural Method Statement
- Construction Traffic Movements and Routeing Strategy
- Pedestrian and Cyclist Routeing Strategy
- Emergency

Appendix A presents a list of legislation, codes of practice and guidance relevant to the CEMP and each CMS.

## 6.2 Waste Management [Planning Condition 52(f)]

### 6.2.1 Objectives

A site wide Detailed Waste Management Plan (DWMP) (see item (f) of Planning Condition 52 and Planning Condition 54) will commit the project to sustainability through appropriate management of the excavation, demolition and construction phase. Challenging waste minimisation and landfill diversion targets will be set in the DWMP with the aim of reducing the waste arising by approximately 45%.

The following aspirations for waste management activities should be achieved:

- Recover at least 85% of waste construction materials (by volume), and aim to exceed 90%;
- Achieve a Waste Recovery (Diversion from landfill) of 100% for all non-hazardous excavation waste;
- Ensure that at least 15% (by volume) of construction material derives from reused and recycled materials, select the top opportunities to exceed this figure without increasing the cost of materials, and report actual performance;
- Ensure that at least 35% of total high grade aggregate used in the Development is recycled or secondary and locally sourced (within 30km); and
- No transfer of materials to or from the site as a result of ground works; excluding materials that may be required for the formation of road bases and working areas / piling mats on building footprints.

### 6.2.2 General

Surplus or waste materials may arise from either materials imported to site or from those generated on site. However, there are other considerations to waste management such as waste reduction, segregation of waste, disposal of waste, financial impacts of waste disposal and recording, monitoring, education and reviewing. This plan will outline the procedures that will be put into place and demonstrates how they will benefit the environment, how the effects can be measured and how these procedures and practices are sustainable.

A draft site wide Outline Waste Management Plan (OWMP) accompanied the Outline Planning Application for the Development. This document will be developed further as the project progresses. It provides a framework for the management of site waste generated by the NWC project and covers the following topics:

#### *Site inductions*

Surplus or waste materials may arise from either materials imported to site or from those generated on site.

However, there are other considerations to waste management such as waste reduction, segregation of waste, disposal of waste, financial impacts of waste disposal and recording, monitoring, education and reviewing. This plan outlines the procedures that have been put in to place and demonstrate how they benefit the environment, how we can measure the effects and how these procedures and practices are sustainable.

Relevant waste and resource management procedures will be communicated to all operatives during the site induction.

#### *Segregation*

A specific area shall be laid out and labelled to facilitate the separation of materials for potential recycling, salvage, reuse and return. Recycling and waste receptacles are to be kept clean and should be clearly marked in order to avoid contamination of materials. The labelling system shall be clear and simple. If the relevant receptacles are clearly identified this will aid the bulk of the workforce in depositing the correct materials into the appropriate receptacle.

#### *Site security*

Both Client and Principal Contractor must take reasonable steps to ensure site security measures are in place to prevent the illegal disposal of waste at the site.

#### *Training & Communication*

The Principal Contractor will provide on-site instruction of appropriate separation, handling, recycling, reuse and return methods to be used by all parties at all appropriate stages of the Project. Toolbox talks will be carried out every month on waste issues and all sub contractors will be expected to attend. The SWMP will also be mentioned in the site induction process. This will ensure that everyone feels they are included and that their participation is meaningful.

#### *Monitoring*

A log will be maintained of all materials that come on to site, and details will be obtained from the waste disposal company of the exact amount of waste materials removed from site. Details will also be provided outlining the recovery/disposal actions for the specific waste streams

Waste receptacles will be monitored by the Principal Contractor to ensure that contamination has not occurred, results will be recorded

The Principal Contractor will continually review the type of surplus materials being produced and change the site set up to maximise reuse or recycling and the use of landfill will be the last option.


The Principal Contractor will also visit any waste transfer facility to ensure that we are effectively discharging 'Duty of Care'. They will also periodically follow waste transfer vehicles to their final point of disposal to monitor compliance. Details of these visits will be recorded for audit purposes.

#### *Forecasting of Waste Volumes*

In line with Paragraph 6 of the SWMP Regulations, projected waste arising have been estimated by the design team. These Estimates are included herein. Forecast estimates are based upon details provided by the design team using waste benchmark data for specific building types as produced by the Building Research Establishment (BRE) for consultation with industry.

### **6.2.3 *Planning the reduction, reuse and recycling of waste***

Indicative methods of improving resource efficiency in the construction works are outlined in the table below. Wherever possible it is proposed to comply with best practice techniques, only disposing through landfill as a last resort.

Waste type	Waste Materials	Trade Principal Contractor Package	BEST PRACTICE 			
			Waste Minimisation Opportunities	On Site Reuse/Recycling/Recovery	Off Site Reuse/Recycling/Recovery	Disposal
Inert	Concrete	Construction	Retention of concrete on site where possible. Only order what is required.	Use as secondary aggregate on site.	Segregate for reprocessing and reuse as recycled secondary aggregate.	Landfill and cover
	Rubble (hard core)	Construction	Only order what is required.	Opportunities to reuse 'cut' material as 'fill' in proposed noise bund.	Segregate for reprocessing and reuse as recycled secondary aggregate.	Landfill and cover
Non-hazardous	Soils/ Green waste/ vegetation	Construction		Opportunities to reuse 'cut' material as 'fill' in proposed noise bund.		Landfill and cover
	Mixed waste	Construction	Use of standard sizes. Arrange take back of unused materials with the supplier.	N/A	Segregate materials to maximise potential for recycling.	Landfill/ incineration
	Metal	Construction	Made to measure, correct ordering, just in time delivery, store correctly. Arrange take back of unused materials with the supplier.		Segregate waste and send to metal recycler.	Landfill
	Timber	Construction	Avoid over-ordering. Provision of suitable storage to avoid damage. Arrange take back of unused materials with the supplier.		Re-use / Recycle if feasible.	Landfill/ incineration
	Plasterboard	Construction	Avoid over-ordering. Provision of suitable storage to avoid damage. Procure to design specifications. Arrange take back of unused	Cannot reuse.	Recycle if feasible.	Landfill



			materials with the supplier.			
	<b>Packaging</b>	Construction	Ask suppliers to send product with minimal packaging / reusable containers, buy bulk not individually wrapped products. Return pallet to supplier or use plastic pallets.	N/A	Segregate materials to maximise potential for recycling.	Landfill/ incineration
	<b>Cable &amp; wiring</b>	Construction	Avoid over-ordering. Arrange take back of unused materials with the suppliers.	Reuse on site if appropriate.	Segregate and recycle to reclaim plastics and metals.	Landfill
	<b>General Office waste</b>	Site management.	Print double sided, send documents electronically, reusable crockery and cutlery.	Reuse paper, cartridges, plastic cups, tins and cardboard.	Segregate and recycle white paper. Send for composting (food waste only).	Landfill
	<b>Glass</b>	Construction	Avoid over-ordering, appropriate storage to avoid accidents. Arrange take back of unused materials with the supplier.	N/A	Segregate and send for recycling.	Landfill and cover
	<b>WEEE</b>	Construction	N/A	Re-use elsewhere on site.	Send to dedicated recycling facility for recovery and recycling.	Landfill
<b>Hazardous</b>	<b>Asbestos</b>	Construction	N/A	N/A	N/A	Landfill
	<b>Contaminated land</b>	Construction	Avoid excavation where unnecessary.	Consider on-site treatment methods.	Treatment at contaminated land hubs.	Landfill
	<b>Paint tins, line markers, mastic</b>	Construction	Use solvent free paints that are not disposed off as hazardous waste, maximise use of mechanical fitting rather	Use a lockable COSHH container for storage.	N/A	Landfill

			than adhesives. Arrange take back of unused materials with the supplier.			
	WEEE	Construction	N/A	Re-use elsewhere on site.	Send to dedicated recycling facility for recovery and recycling.	Landfill

**6.3 Soil Management Plan [Planning Condition 52(g)]**

Soil Management Plans (SMP) (see item (g) of Planning Condition 52) will be required for each reserved matters application. Each SMP will be required to include:

- A strict chain of evidence for any material recycled on site. It should demonstrate where the material originated from and where it was subsequently placed. Depending on the source of the material further chemical testing may be required. Contaminated material will not be recycled around the proposed landscaped/private garden areas.
- Any material imported on site should be tested for a full suite of contaminants including metals and petroleum hydrocarbons. The results of the chemical testing should be forwarded to the Local Authority for review **prior** to soil importation.
- Any material imported for landscaping should be tested at a frequency of one sample every 20m<sup>3</sup> or one per lorryload, whichever is the greater. Material imported for other purposes can be tested at lower frequencies subject to prior approval being given by the Local Authority. If the material originates from a clean source the contractor should contact the Environmental Quality and Growth team for further advice.

**6.4 Emission Control****6.4.1 Objectives**

The objectives will be:

- As far as is reasonably practicable, to control and limit emissions to the atmosphere in terms of gaseous and particulate pollutants from vehicles and plant used on the Site and dust from construction activities.
- To identify potential sources of emissions to the atmosphere and apply appropriate control techniques.
- To implement measures to reduce the impact of dust in a timely manner.

**6.4.2 General**

Activities with the potential to emit particulate matter or oxides of nitrogen to air will be monitored and managed by the Principal Contractor. Liaison meetings will be held with the local authority and local community.

The application of standard dust control measures included in the British Research Establishment guidance (Building Research Establishment, 2003) are normal working practice on all well managed construction sites in the UK. Standard measures will be applied to the construction areas within the Site and will be agreed with the local authority air quality/pollution control officer in advance of works starting on site.

**6.4.3 Vehicle and plant emissions**

Vehicle and plant emissions will be controlled by implementing the following measures, where practical:

- a) Engines of all vehicles, mobile and fixed plant on site are not left running unnecessarily.
- b) Using low emission vehicles and plant fitted with catalytic converters, diesel particulate filters or similar devices.
- c) Using ultra low sulphur fuels in plant and vehicles.
- d) Plant will be well maintained, with routine servicing of plant and vehicles to be completed in accordance with the manufacturer's recommendations and records maintained for the work undertaken.
- e) All project vehicles, including off-road vehicles, will hold current MOT certificates, where required due to the age of the vehicle, (or to be tested to an equivalent standard) and that they will comply with exhaust emission regulations for their class.
- f) Siting haul routes and operating plant away from potential receptors such as houses, schools and hospitals.
- g) Avoiding the use of diesel or petrol powered generators and using mains electricity or battery powered equipment.
- h) Maximising energy efficiency (this may include using alternative modes of transport, maximising vehicle utilisation by ensuring full loading and efficient routing).

- i) All commercial road vehicles used in construction must meet the European Emission Standards pursuant to the EC Directive 98/69/EC (commonly known as Euro standards) of Euro 3 during any works.

#### 6.4.4 ***Dust management and monitoring [Planning Condition 52(j)]***

Dust control procedures will be implemented by the Principal Contractor to avoid as far as is reasonably practicable the emission of dust and other particulates that would adversely affect the air quality to ensure there is no significant deterioration of current air quality as a result of the works (Item (j) of Planning Condition 52). Such dust monitoring procedures and methodology should be agreed with the authorities prior to the commencement of works.

Dust monitoring will comprise passive deposition monitoring techniques (glass slides/Frisbee gauges/sticky pads) at locations on site boundaries or near to local receptors. Results will be filed and available for inspection upon request.

The emission of dust and other particulates will be controlled by implementing the following measures:

##### **Measures controlling the emissions from dust from worksites**

- ensure no burning of waste materials takes place on site
- ensure an adequate water supply on the site
- ensure disposal of run-off water from dust suppression activities, in accordance with the appropriate legal requirements
- maintain all dust control equipment in good condition and record maintenance activities
- keep site fencing, barriers and scaffolding clean using wet methods
- provide easily cleaned hardstanding for vehicles
- ensure regular cleaning of hardstandings using wet sweeping methods
- not allow dry sweeping of large areas
- provide and ensure the use of wheel-wash facilities near the site exit wherever there is a potential for carrying dust or mud off the Site
- fit wheel-washes with rumble grids to dislodge accumulated dust and mud prior to leaving the Site wherever there is a potential for carrying dust or mud off the Site and where reasonably practicable
- ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits
- install hard surfaced long term haul routes, which are regularly damped down with fixed or mobile sprinkler systems and regularly cleaned
- inspect haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable

- record all inspections of haul routes and any subsequent action in a site log book which may be in hard or electronic format
- ensure that un-surfaced haul routes and work areas are regularly damped down in dry conditions
- routinely clean public roads and access routes using wet sweeping methods
- ensure vehicles working on site have exhausts positioned such that the risk of re-suspension of ground dust is minimised (exhausts should preferably point upwards), where reasonably practicable
- impose and signpost maximum speed limits of 5 mph on un-surfaced haul routes and work areas and 10 mph on surfaced haul routes and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided with the agreement of the local authority, where appropriate)
- ensure all vehicles carrying loose or potentially dusty material to or from the Site are fully sheeted
- ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery
- mix large quantities of cement, bentonite, grouts and other similar materials in designated areas which will be enclosed or shielded
- store materials with the potential to produce dust away from site boundaries where reasonably practicable
- ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out
- sheet, seal or damp down unavoidable stockpiles of excavated material held on site, where required
- avoid double handling of material wherever reasonably practicable
- ensure water suppression is used during demolition operations
- ensure that any crushing or grinding plant used on the Site, which falls within the definition in Section 3.5 Chapter 3 of the Pollution Prevention and Control (England and Wales) Regulations 2000 SI 1973, has an appropriate permit issued and is maintained according to the procedures set out in the Pollution, Prevention and Control Act 1999
- considerate location of grinding and cutting activities
- ensure that any plant, identified above, is operated in accordance with the conditions set out in the permit and a copy of the permit is held on site
- use enclosed rubble chutes and conveyors where reasonably practicable or use water to suppress dust emissions from such equipment
- always use enclosed conveyors where crossing roads, other public areas and property which is not in the ownership or control of the University of Cambridge

- sheet or otherwise enclose loaded bins and skips
- minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate
- seal or re-vegetate completed earthworks as soon as reasonably practicable after completion
- use design/prefabrication to reduce the need for grinding, sawing and cutting on site wherever reasonably practicable
- only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction
- carry out site inspections regularly to monitor compliance with dust control procedures set out above and record the results of the inspections, including nil returns, in the log book detailed
- increase the frequency of site inspections when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions
- record any exceptional incidents causing dust episodes on or off the site and the action taken to resolve the situation in the log book
- use Just in time deliveries outside of peak periods when possible
- strip insides of buildings, as far as reasonably practicable, before demolition
- bag and remove biological debris (such as birds nests and droppings) or damp down such material prior to demolition
- wherever reasonably practicable, retain walls and windows while the rest of the building is demolished to provide a screen against dust
- screen buildings, where dust producing activities are taking place, with debris screens or sheeting
- avoid carrying out earthworks during dry weather if reasonably practicable having regard to programme and contracting arrangements for the relevant works or provide and ensure appropriate use of water sprays to control dust
- seed or seal medium or long term excavated material and soil stockpiles
- subsoil and topsoil stockpiles to be located as far as reasonably practicable from sensitive receptors. They will be consolidated to “seal” the surface and allowed to vegetate.
- ensure slopes on stockpiles are no steeper than the natural angle of repose of the material and maintain a smooth profile
- ensure equipment is readily available on site to clean any spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods
- ensure mixing of cement, bentonite, grout and other similar materials takes place in enclosed areas remote from site boundaries and potential receptors

- where appropriate use increased hoarding height to protect receptors
- consider full enclosure of sites or specific operations where there is a high potential for dust production and the site is active for an extensive period.



## **6.5 Archaeology and Built Heritage [Planning Condition 52(r)]**

### **6.5.1 Objectives**

The objective is to ensure that works are carried out in such a way as to avoid or minimise, as far as reasonably practicable, potential damage and disturbance to scheduled monuments, archaeological sites and deposits, and buildings of historic interest (both listed buildings and important non-listed above ground features and structural elements).

### **6.5.2 General**

The effects of construction activity on listed buildings and their settings and on conservation areas and locally listed buildings will be indirect and temporary. There will be no direct physical effects on any built heritage assets but indirect and temporary effects on them and their settings may arise from construction noise and dust.

### **6.5.3 Measures to be implemented**

These resources will be managed in accordance with accepted industry practice guidance and relevant standards. Emission Control and Noise and Vibration management measures described above and below will be implemented to reduce dust, noise and other irritants. The following measures will be employed at the Site:

- Full excavation with separately agreed Written Statements of Investigation (WSI) to precede development within any designated site-area.
- Should landscaping (e.g. tree-planting) and/or services (including temporary haul roads) occur within any site-area prior to their full excavation then these will require either due protection and/or separate excavation beforehand (again, requiring WSIs).
- There will be no machine movements across, landscaping of or service-related construction within preserved designated site-areas without WSIs (these will all also required agreed long-term management plans).
- Any development-related service construction occurring upon undisturbed land beyond the border of the Site will requires WSIs prior to their commencement (e.g. length of the option 1 water main extension within the West Cambridge land and the field south thereof).
- As will be formally agreed with the County Council's Heritage Team, the developer will agree to fully fund all necessary archaeological fieldwork (and associated public outreach), post-excavation assessment, analysis and publication, plus long-term artefact and archival storage, arising from the construction programme.
- In order to potentially investigate the area's renowned Palaeolithic finds, there will be watching brief monitoring of any deep basement-reductions down into the gravels (i.e. not piling).

## 6.6 Geological Site Management Plan

### 6.6.1 Objectives

The Traveller's Rest Pit is a SSSI site. The objective of the Geological Site Management Plan is to document the proposals for the SSSI, including the future management regime, on which Natural England will be consulted. A Geological Site Management Plan (version 9 May 2012) accompanied the application for planning permission.

### 6.6.2 General

The operations listed below are extracted from the Traveller's Rest Pit SSSI OLDs list (Operations Likely to Damage the special interest of the site). Before any of these operations are undertaken within the Traveller's Rest Pit SSSI, Natural England must be consulted by the Principal Contractor as their consent will be required in advance of any operation commencing:

- Cultivation, including ploughing, rotovating, harrowing, and re-seeding.
- Dumping, spreading or discharging of any materials.
- Tree and/or woodland management and alterations to tree and/or woodland management (including planting, felling, pruning and tree surgery, thinning, coppicing, changes in species composition, removal of fallen timber).
- Draining (including the use of mole, tile, tunnel or other artificial drains).
- Infilling or digging of ditches, dykes, drains, ponds or pits.
- Extraction of minerals, including hard rock, sand, gravel, silt, clay, topsoil, subsoil, chalk and spoil.
- Destruction, construction, removal, rerouting or regarding of roads, tracks, walls, fences, hardstands, banks, ditches or other earthworks, including soil and soft rock exposures or the laying, maintenance or removal of pipelines and cables, above or below ground.
- Storage of materials.
- Erection of permanent or temporary structures, or the undertaking of engineering works, including drilling.
- Modification of natural or man-made features, (including cave entrances) and clearance of boulders, large stones, loose rock or scree.
- Battering, buttressing or grading of geological exposures and cuttings (rock and soil) and infilling of pits and quarries.
- Removal of geological specimens, including rock samples, minerals and fossils.
- Recreational or other activities likely to damage or disturb the features of special interest.
- i. This is a list of operations appearing to Natural England to be likely to damage the special features of the SSSI, as required under section 28 (4) (b) of the Wildlife and Countryside Act 1981 substituted by Schedule 9 to the Countryside and Rights of Way Act 2000.

- ii. Where an operation has been granted a consent, licence or permission from another authority separate consent will not be required from Natural England. However, other authorities are required to consult Natural England before such consents, licences or permissions are issued.
- iii. Any reference to 'animal' in this list shall be taken to include any mammal, reptile, amphibian, bird, fish, or invertebrate.

All final proposals for or affecting the SSSI containing activities referenced in the OLDs list must be consented by Natural England, even if the proposals have been discussed with Natural England at an earlier stage. Any changes made after the final proposals are given consent must go back to Natural England for further consent before work commences.

### **6.6.3 Measures to be implemented**

The following list of measures is to be implemented at the SSSI site (reference ES section 8.17.8). Everything listed within section 3.5.2 of this document requires the consent of Natural England. No work requiring Natural England's consent will commence within the SSSI without the consent of Natural England, unless it has been established that such consent is not needed. Consent cannot be assumed because Natural England have seen or commented upon earlier versions of any proposal.

Removal of existing fences and concrete surfaces.

Demarcation of the Traveller's Rest Pit SSSI with boundary posts.

Monitoring of burrowing animals in accordance with guidance provided in the Biodiversity Strategy.

Improved access to the public by installing a path which can be easily removed to facilitate access to the strata for research purposes.

As much as possible access will be made in areas outside the 2010 notified SSSI boundary. Ramps for disabled access will be formed outside the 2010 notified SSSI boundary.

Where it is necessary for paths to cross the SSSI, the form of path chosen should enable it to be moveable and/or demountable ('roll-up') to allow future access for research. Paths shall be raised to ensure that they do not introduce a requirement for the Observatory Gravels to be removed during their construction. Concrete or bituminous paths will not be permitted as they would effectively sterilise the ground below and thereby preclude future research.

The design of any steps down the quarry slopes (if required), within the Traveller's Rest Pit SSSI boundary, will be discussed and agreed with local planning authorities and relevant consultees, including Natural England, at the detailed planning stage. The use of steps formed by cutting into the slope will not be permitted as they could potentially destroy the local geology. Natural England will not permit Observatory Gravels to be re-used. Before the steps are installed, mitigation measures will be required, including a survey of the geology. Steps down the quarry slopes, within the Traveller's Rest Pit SSSI boundary, will be created by using structures such as wooden steps or localised earthworks which will be designed to ensure that:

- disturbance to the geology will be minimised and
- access to the underlying geology is not permanently prevented.

The details of any steps and path proposed would be discussed and agreed with local planning authorities and relevant consultees, including Natural England, at the detailed planning stage.

Planting of deep rooting shrubs, plants and trees will not be permitted on areas within the Traveller's Rest Pit SSSI or the buffer zone to the Traveller's Rest Pit SSSI underlain by Observatory Gravels. Roots penetrating into the Observatory Gravels within the SSSI and buffer zone could have the potential to disturb the sedimentary structures within the geological sequence and encourage burrowing animals and toppling trees could significantly disturb the sequence of strata within the root zone. Existing trees and shrubs will be left to die naturally, if they are not removed, and action will be taken to make sure that no more establish. Species outside the Traveller's Rest Pit SSSI and the buffer, will be selected and positioned to ensure that their roots are unlikely to penetrate the buffer.

Where it is necessary to remove trees, the roots and a stump will be left in place so that the Observatory Gravels within the SSSI are not disturbed. Stumps will be treated to prevent re-growth. Topsoiling and grassing over exposed areas of gravel and where farmland and concrete surfaces are currently present. Maintenance to encourage grass growth and discourage the return of trees, shrubs and undergrowth.

Any planting must not prevent access to the Observatory Gravels within the Traveller's Rest Pit SSSI. Planting and landscaping in the Traveller's Rest Pit SSSI or the Traveller's Rest Pit SSSI buffer must be agreed with Natural England.

Improved public awareness of the importance of the site and its geology through installation of public information points outside of the Traveller's Rest Pit SSSI.

No structures including lighting and street furniture will be constructed within the Traveller's Rest Pit SSSI. Information boards could be located within the buffer to the Traveller's Rest Pit SSSI.

Children's play areas and hard surface sports facilities will not be located within the Traveller's Rest Pit SSSI boundary as they would effectively sterilise an area of ground because of the need to break out, and later reinstate, the working areas during geological research.

Ponds will not be located within the Traveller's Rest Pit SSSI or in close proximity to the Traveller's Rest Pit SSSI as they have a high probability of disturbing or destroying the geological resource and are likely to restrict access to significant areas of the resource for future research.

Drainage pipes and buried services will not be laid within or over the Traveller's Rest Pit SSSI as they have the potential to damage the geological resource during the trenching operation.

The boundary of the Traveller's Rest Pit SSSI and the associated 10m buffer zone will be established and physically marked on the ground prior to any construction work commencing.

No construction activities (e.g. storage of materials, access for movement of construction traffic) will take place in the Traveller's Rest Pit SSSI without the consent of Natural England.

No storage of fluids, waste, soil, construction materials or vehicles will take place within the Traveller's Rest Pit SSSI or the 10m buffer zone.

A control strategy will be set up in conjunction with University of Cambridge, Natural England and the World Conservation Monitoring Centre to manage access to the Traveller's Rest Pit SSSI for:

- work on mitigation and enhancement measures and
- study and research purposes.

If the Principal Contractor deems it necessary in order to prevent damage or disturbance to the Traveller's Rest Pit SSSI during construction, the Traveller's Rest Pit SSSI will be securely fenced.

Where the Traveller's Rest Pit SSSI is fenced during construction, gates will be provided to ensure access only takes place at designated locations in accordance with the control strategy.

Controlled vehicular access into the base of the pit to carry out mitigation and enhancement measures will be provided using the existing access adjacent to the WCMC and Agronomy Centre. This route does not cross the pit slopes within the Traveller's Rest Pit SSSI. The arrangements for access will be included within the specific consent (from Natural England) for each operation.

Surveying and recording the geology prior to, or during, construction in order to avoid or reduce potential loss of localised areas of the Observatory Gravels within the SSSI, or locally reduced accessibility for future research.

If during enhancement works there is potential to encounter Observatory Gravels within the Traveller's Rest Pit SSSI, a Quaternary Geologist shall be available to survey and record the geology prior to and during this construction. This will help to avoid or reduce risk of potential loss of areas of the Observatory Gravels within the Traveller's Rest Pit SSSI, or to reduce accessibility for future research. The requirements of such surveys shall be agreed with Natural England but are likely to include mapping, sketches, photographs and descriptions of the strata, fossils, sampling, and sedimentary structures.

If during enhancement works sands and gravels are encountered at locations where they are not anticipated, the work shall be stopped until the geology and any archaeological deposits have been assessed by appropriate professionals. Where the soil within the Traveller's Rest Pit SSSI is Observatory Gravels it shall be recorded as outlined above. Archaeological deposits should be recorded as outlined in the Archaeology and Built Heritage Management Plan.

Where Observatory Gravels are encountered unexpectedly within the Traveller's Rest Pit SSSI, type and locations of the enhancement works will be reviewed.

Bona fide scientific access for further research and survey work (e.g. via excavating faces, trenching, trial pits, borehole survey, non destructive survey such as ground penetrating radar) along with any necessary remediation/reinstatement works will be accommodated at the Traveller's Rest Pit SSSI. Consent will be required from Natural England in order for research/survey work to be undertaken.

Vegetation on the SSSI will be managed, in particular removal of trees and shrubs in poor condition from the degraded quarry slopes and regular maintenance of grass and trees/shrubs to ensure that the geological resource is not damaged. Exposed gravels on the slopes will be covered with topsoil and seeded to reduce erosion and help stabilise the slopes.

Ongoing maintenance will be required to maintain the grassed surface established during the Development. Undergrowth, trees and shrubs will not be allowed to re-establish after removal during the Development.

## **6.7 Biodiversity [Planning Condition 52(r)]**

### **6.7.1 Objectives**

The objectives are to control and limit disturbance to areas of nature conservation interest and protected species in accordance with relevant legislative requirements and accepted industry practice (Item (o) of Planning Condition 52).

Measures from the Biodiversity Strategy for the Development (required under condition 34) which relate to the construction period will be implemented.

### **6.7.2 Ecological Resources**

The habitats present on site of particular ecological value include the Washpit Brook, several small woodlands and orchards, hedgerows, ponds and veteran / mature trees. Significant amphibian populations (of great crested newts and common toads) have been identified breeding in ponds immediately adjacent to the site and are therefore likely to be present on site during terrestrial phases of their lifecycle. The site also supports notable species of invertebrate, bats, badger setts, a range of breeding birds, brown hares, and a small population of water voles may still be present on the Washpit Brook. Further details are provided in the Biodiversity Strategy.

### **6.7.3 Ecological Management**

The measures required to protect biodiversity resources during construction are described in detail in the Biodiversity Strategy and are summarised below. Further details in relation to these measures are set-out in the Biodiversity Strategy. The Project Ecologist will oversee the implementation of the measures required to protect biodiversity during construction, as described in the Biodiversity Strategy (Item (o) of Planning Condition 52).

Section 6.12 provides the measures to be implemented from the Arboricultural Method Statement in respect of Planning Conditions 12, 13, 14 and 15.

Appropriate pollution control measures will be implemented by the Principal Contractor to avoid pollution or increased turbidity in the Washpit Brook during construction operations, to protect adjacent and downstream habitats. This will be of particular importance during the re-modelling works in this part of the Site. The Washpit Brook will be protected within a buffer zone throughout the remainder of the construction phase of the Development. The buffer zone will be fenced off using netlon-type fencing to prevent accidental damage, and to restrict access during the works.

Construction site drainage will be designed to include treatment and attenuation of run-off from infrastructure roads and hard surfaces through the use of balancing and pollution control mechanisms to avoid pollution of the Washpit Brook

The retained and new ponds, and the habitat within the open lands, will be managed in accordance with the Biodiversity Strategy.

Areas of woodland and orchards, and the retained and new hedgerows will be managed in accordance with the Biodiversity Strategy. Protective fencing will be provided around retained features during construction. In general, 5m wide buffer zones will be provided alongside retained hedgerows and 10m buffer zones around woodlands and orchards, where works are located in close proximity, unless otherwise agreed with the Project Ecologist. Greater buffer zones will be required to protect the veteran oak tree and other retained mature trees (further details are provided in 3.12).



Safe crossings for amphibians will be constructed at key locations within the site (see Biodiversity Strategy for further details).

Site clearance within 500m of the Park and Ride pond and Bird Sanctuary ponds which affect areas of suitable habitat for newts, will need to take place under licence to Natural England. The following operations will be implemented for newts: temporary one-way newt fencing combined with capture of newts from affected areas by pitfall trapping and artificial refuges, followed by a destructive search. Captured animals will be relocated to appropriate release sites. Site clearance within this area will take place outside the hibernation period (October to March). In some cases works may need to be restricted to the months of April and May. Further details of the measures to be implemented and the parts of the site where works are constrained in relation to great crested newts are provided in the Biodiversity Strategy. Common toads and any reptiles present will also be rescued and appropriately relocated during site clearance operations.

Where ponds are affected, amphibians, invertebrates and wetland vegetation will be relocated into new and retained ponds within the Site during site clearance.

A small number of outlying badger setts will need to be closed (which will need to take place under licence to Natural England) unless a prolonged period of disuse can be shown. There may be a need for the partial closure or temporary closure of other setts, which would also need to take place under licence to Natural England. In general, licences are only issued for works affecting badger setts during the period July to November inclusive. Areas of dense scrub where the absence of badger setts cannot be confirmed will be cleared carefully under ecological supervision. Further details are provided in the Biodiversity Strategy.

An artificial badger sett will be provided, as described in the Biodiversity Strategy.

Site clearance (trees/hedgerows and arable fields in particular) should take place outside the nesting bird period where possible (i.e. not during end-Feb to mid-August). Similarly building demolition should take place outside the nesting bird period. Alternatively surveys will take place in advance of clearance to confirm absence of nesting birds (with the associated risk of having to retain areas supporting nests until the chicks have fledged. Ongoing monitoring will be required during construction in relation to nesting birds. Surveys will be undertaken to confirm the absence of bats from buildings/trees prior to building demolition or tree felling/surgery. Further details of the measures required to protect nesting birds are provided in the Biodiversity Strategy.

Demolition of any buildings supporting a bat roost will need to take place under licence to Natural England, and timed to avoid periods when bats are present (given the status of the roost it is likely that a period of absence could be identified at any time of year). The only currently known bat roost is located within Gravel Hill Farmhouse. Lighting of the site is to be minimised particularly in close proximity to known roost sites and areas of retained foraging habitat for bats. Further details are provided in the Biodiversity Strategy.

All works carried out in accordance with 'Construction Code of Practice for the Sustainable Use of Soils on Construction Sites' (2009).

#### **6.7.4 Surveys and Monitoring**

Ecological surveys were undertaken in preparation of the application for planning permission. and a proportion of these have been updated to inform the Biodiversity Strategy. Additional surveys are required, as listed below before construction activities can commence in certain areas.

- Surveys to confirm the absence of bat roosts from buildings to be demolished or trees to be felled/requiring surgery.
- Survey sections of the Washpit Brook to confirm the presence/absence of water voles and otter resting sites.
- Update badger survey prior to each construction phase commencing (survey data should be no more than 12 months old).
- Bait-marking survey to confirm the status of badger setts on the site.
- Update barn owl survey to confirm continued absence of nesting barn owls.

Ecological monitoring surveys will be undertaken, as set-out in the Biodiversity Strategy

#### **6.7.5 Reinstatement**

Reinstatement will be undertaken by the Principal Contractor where required and agreed with suitable consultees in advance



**6.8 Lighting [Planning Condition 52(k)]****6.8.1 Objectives**

The objectives are to provide adequate lighting on construction sites ensuring a safe and secure worksite but avoiding incorrectly positioned site lighting which may cause nuisance or may unnecessarily interfere with local residents or passing motorists (item (k) of Planning Condition 52).

**6.8.2 Lighting Management**

In determining the lighting arrangements for the worksite, the Principal Contractor should adhere to the requirements set out in the Institute of Lighting Professionals 'Guidance Notes for the Reduction of Obtrusive Light GN01:2011' and recommendations listed in the Clean Neighbourhoods and Environment Act 2005.

Reference to and consideration of the Bat Conservation Trust's best practice guide shall be made (Bats and Lighting in the UK, Bats and the Built Environment Series).

Where possible, a daylight only construction schedule will be adopted to minimise adverse lighting effects as different phases are completed. It is unavoidable that construction work will require work during the hours of darkness in consideration of shorter daylight availability during winter months and priority must be given to ensuring the safety of construction operatives during these periods

Where appropriate the following measures will be considered for implementation:

- do not "over" light
- dim or switch off lights
- use specifically designed equipment
- keep glare & spillage to a minimum, and
- position lights sensibly.

Each specific CMS submitted in support of a reserved matters application will detail site lighting with location plans, heights and luminaire types and orientation.

## **6.9 Noise and Vibration [Planning Condition 52(h)]**

### **6.9.1 Objectives**

The objectives are, as far as reasonably practicable, to control and limit noise and vibration levels so that affected properties and other sensitive receptors are protected from excessive noise and vibration levels associated with construction activities (item (h) of Planning Condition 52).

As part of each CMS submitted in support of a reserved matters application, a specific impact/prediction assessment will be required. The assessment will provide a method statement including method of works, programme, predicted noise/vibration levels and manufacturers' specifications for equipment and plant prior to the construction of any construction works.

In preparing the assessment the Principal Contractor should have due regard to BS 5228 – 2009 Parts 1 and 2.

### **6.9.2 Context**

There are numerous existing residential properties in the vicinity of the site pre-development who's amenity needs protecting. It is noted that as each phase of the development is constructed, the number of properties likely to be affected by the works would increase and that their amenity would need to be protected.

### **6.9.3 Noise Management**

Consents under Section 61 of the Control of Pollution Act 1974 will be obtained for the construction works. The works will be carried out in accordance with the conditions of the consent.

The Principal Contractor may agree with the local authority that for certain activities not anticipated to be noise sensitive such as site investigation and site set up, a Section 61 will not be necessary.

In any event Best Practicable Means (BPM) as defined under Section 72 of the Control of Pollution Act (CoPA) 1974 will be applied to all activities.

Noise from the site when measured 3 metres from the façade (free field) of any noise sensitive property, such as residential, shall not exceed the following levels:

- $LA_{eq}$  (1 hour) 67 dB between 0700 and 1900 (including in the normal working hours);
- $LA_{eq}$  (1 hour) 57 dB between 1900 and 2200; and
- $LA_{eq}$  (5 minutes) 37 dB between 2200 and 0700.

If noise at a sensitive receptor, such as residential, is likely to exceed the levels stated above, the sensitive receptor and the Local Planning Authority must be pre-notified, in writing, at least 5 full working days prior to work commencing, with the following information:

- Site location;
- Duration of site operation, including schedule of operations likely to cause noise and their hours of work;

- Noise Characteristics; and
- Details of community liaison (see section 5.20).

Principal Contractors are to control construction noise and vibration emission in accordance with the recommendations established in BS5228-1:2009 and BS5228-2:2009. Additional reference should be made to BS4142 entitled "Methods of Rating Industrial Noise affecting Mixed Residential and Industrial Areas", which provides useful guidance on assessing potential noise nuisance.

Prior to the commencement of any construction work, Principal Contractors are to submit a 'Noise Management Scheme' for approval which covers their area of work. This management scheme must refer specifically to the area of development work concerned, the plant to be used, the control measures to be used and monitoring requirements.

Specific noisy operations involving earthmoving equipment and the timing of the operations will be assessed and noise levels will not exceed standards agreed with the Local Planning Authority. Noise is to be controlled at source where practicable.

Prior to commencement of noisy construction works, a method statement detailing the method of works, programme of work, predicted noise levels and manufacturers' specifications for equipment and plant will be submitted to the Local Planning Authority for approval prior to works commencing.

#### 6.9.4 **Vibration Management**

All available techniques will be used to minimise, as far as is appropriate, the level of vibration to which operators and others in the neighbourhood of site operations will be exposed. The priority will be to avoid the generation of vibration, and where vibration is unavoidable, to control vibration at source. Measures which should be taken include the following.

- All activities with the potential to cause vibration levels greater than or equal to  $1.0 \text{ mm s}^{-1}$  PPV, eg piling, will be identified in the CMS prior to works commencing;
- Compaction will be via vibrating rollers wherever possible;
- A mitigation plan will be set out, including justification for siting of plant, types of plant selected, periods of use, working hours, access points, schedule of works likely to cause complaints (if not pre-notified).

In accordance with BS6472-1:2008, vibration levels should not exceed  $0.4 \text{ m.s}^{-1.75}$  in neighbouring properties. If vibration at a sensitive receptor, such as residential, is likely to exceed  $0.4 \text{ m.s}^{-1.75}$ , the sensitive receptor and the Local Planning Authority must be pre-notified, in writing, at least 5 full working days prior to work commencing, with the following information:

- Site location - the location of a site in relation to the sensitive receptor;
- Duration of site operations, including schedule of operations likely to cause vibration and their hours of work;
- Vibration characteristics - e.g. whether it is continuous, intermittent or impulsive;
- Effect on buildings;

- Details of community liaison (see section 5.20).
- Vibration levels which have the potential to cause building damage will not be tolerated.

#### **6.9.5      *Monitoring Activities***

Principal Contractors must demonstrate that noise levels are maintained at acceptable levels and comply with the agreed maximum levels, throughout the duration of the project. This will require a pre-start noise assessment to be undertaken by the Principal Contractor. If elevated levels are encountered, the source of noise or vibration is to be identified and alternative methods or additional control measures are to be implemented, if required. Noise monitoring will be carried out in accordance with BS 5228:2009 Part 1.

Where construction activities will potentially give rise to significant levels of vibration, monitoring will be carried out by a suitable qualified individual appointed by the Principal Contractor. Vibration measurement will be conducted in accordance with Clause 9 of BS 5228:2009 Part 2, to a schedule to be agreed with the Local Planning Authority.

The Principal Contractor will undertake noise monitoring to a schedule to be agreed with the Local Planning Authority. Copies of the monitoring results will be made available to the Local Planning Authority upon request. Monitoring equipment will be operated only by suitably trained/qualified personnel, to a minimum of Institute of Acoustics (IOA) certificate of competency level.

Monitoring of noise to minimise disturbance to the local community and comply with the agreed noise control limits, will be required during the works. Monitoring shall be undertaken in accordance with a schedule agreed with the Local Planning Authority in accordance with the following noise monitoring strategy. Additional noise monitoring will also be required in response to complaints, and/or at the request of the Local Authority.

#### **6.9.6      *Monitoring***

Noise and vibration monitoring will be agreed by the Principal Contractor in advance with the local authority. The results of any noise and vibration monitoring will be made available, as required, to the local authority. Access to the Site will be facilitated at all reasonable times for inspection and/or noise measurements by the local authority environmental health personnel, following appropriate site specific induction and/or health and safety training.

Principal Contractors shall ensure that a portable Type 1 integrating sound level meter (as specified in BS EN 60806) is available on site for the entire duration of the works. This is to be used for short-term monitoring of noise sources and at potentially noise sensitive locations off-site to detect any actual or potential breach of the agreed control limits.

The microphone for each measurement system shall be suitably weather protected without compromising the Type 1 performance requirements of the measurement system.

All sound measurement systems will be calibrated on-site using a sound level calibrator which itself has, within the previous 12 months, been tested for compliance with BS 7189 or tested against a reference set that has been so tested. The tests for compliance with BS 7189 shall be carried out by a calibration laboratory that holds UKAS accreditation.

All operators of noise monitoring equipment shall be suitably trained to at least the Institute of Acoustics (IOA) Certificate of Competency Level.

Principal Contractors are to keep records of all environmental monitoring. Details of incidents associated with noise and/or vibration and remedial action taken are to be kept by the Principal Contractor in an environmental incident log book. Complaints received will also be recorded and investigated. Principal Contractors are required to maintain records of all correspondence with the Local Planning Authority and neighbours regarding noise and vibration nuisance for the duration of the project. Principal Contractors will maintain records of construction plant and equipment maintenance and these will be made available to the Local Planning Authority as required.

Longer term continuous monitoring of noise and vibration will be required if the following occurs:

- Agreed target levels are likely to be exceeded by the prediction;
- Upon receipt of substantiated complaints; and
- At the request of the Local Planning Authority/Environmental Health officer following any justified complaints.

#### **6.9.7 Selection and Use of Equipment**

With regards to general construction activities, it is assumed that the Principal Contractor will follow best practicable means to reduce the noise effect on the local community, including some [or all of the following]:

- Each item of plant used on the worksites will comply with the noise limits quoted in the relevant European Commission Directive 2000/14/EC/United Kingdom Statutory Instrument (SI) 2001/1701.
- The recommendations set out in Annex B of Part 1 of BS 5228 and Sections 7.3 and 9.2 of Part 4 of BS 5228 with regard to noise and vibration options will be adopted unless agreed in advance with the relevant local authority.
- Materials will be handled with care e.g. material such as scaffolding and steelwork will be placed rather than dropped.
- Drop heights of materials from lorries and other plant will be kept to a minimum.
- With regards to the piling of foundations, if this is required for any of the proposed buildings, the avoidance of driven piling, for example by using rotary bored piling where practical, will ensure noise and vibration effects during these works will be reduced.
- Fixed and semi-fixed ancillary plant such as generators, compressors and pumps liable to create noise and/or vibration whilst in operation will, as far as reasonably practicable, be located away from sensitive receptors.
- The use of barriers to absorb and/or deflect noise away from noise sensitive areas will be employed where required and reasonably practicable.
- All plant used on site, paying particular attention to the integrity of silencers and acoustic enclosures will be maintained in good and efficient working order and operated such that noise emissions are minimised as far as reasonably practicable.
- As far as reasonably practicable, any plant, equipment or items fitted with noise control equipment found to be defective will not be operated until repaired.

- Where reasonably practicable, fixed items of construction plant should be electrically powered in preference to diesel or petrol driven.
- Vehicles and mechanical plant employed for any activity associated with the construction works will, where reasonably practicable, be fitted with effective exhaust silencers and will be maintained in good working order and operated in a manner such that noise emissions are controlled and limited as far as reasonably practicable.
- Machines in intermittent use should be shut down or throttled down to a minimum during periods between work.
- Static noise emitting equipment operating continuously will be housed within suitable acoustic enclosure.
- As the various phases of the Development are completed and occupied, ongoing construction works may affect future residents. Some construction works will be carried out in close proximity to occupied buildings. For each phase, and sub-phase, of the Development, detailed method statements will be developed to demonstrate how these impacts will be managed and disturbance kept to a minimum.

#### **6.9.8      *Notifications***

Occupiers of nearby properties will be informed in advance of the works taking place, including the duration and likely noise and vibration impacts. In the case of work required in response to an emergency, the local authority and local residents will be advised as soon as reasonably practicable that emergency work is taking place.

#### **6.9.9      *Reversing Alarms***

As far as reasonably practicable the noise from reversing alarms will be controlled and limited. This will be managed by the principal Contractor through the following hierarchy of techniques:

- a) The site layout will be designed to limit and where reasonably practicable, avoid the need for the reversing of vehicles. Drivers will be familiar with the worksite layout.
- b) Banksman will be utilised to avoid, as far as reasonably practicable, the use of reversing alarms.
- c) Reversing alarms incorporating one or more of the features listed below or any other comparable system will be used where reasonably practicable; i) highly directional sounders; ii) use of broadband signals; iii) self adjusting output sounders; and iv) flashing warning lights.
- d) Reversing alarms will be set to the minimum output noise level required for health and safety compliance.

## **6.10 Water Management [Planning Condition 52(l)]**

### **6.10.1 Objectives**

This section has been produced in response to item (l) of Planning Condition 52. The objectives are to implement working methods to protect surface and groundwater from pollution and other adverse impacts including change to flow volume, water levels and quality.

### **6.10.2 Site Drainage**

Site drainage is composed of foul sewer and surface water/storm drains and the Washpit Brook. A site plan will be developed for construction which clearly identify the foul and surface water drains on the worksite. The drain covers will be colour coded or labelled so that they are clear and unambiguous to site staff (common colour coding is blue for storm and red for foul sewer). It is a requirement that the site drainage plan also includes the locations of spill kits and drain covers and that it is displayed in prominent key locations on the worksite.

Site drainage, including surface runoff and dewatering effluents, will be discharged to sewers where reasonably practicable and relevant permissions will be obtained from the sewerage or statutory undertaker. Site drainage will meet the requirements for effluent and flood risk standards required by the sewerage undertaker.

The relevant sections of BS6031: Code of Practice for Earthworks for the general control of site drainage will be followed.

Reference should be made to SUDS best practice during construction, especially Site handbook for the construction of SUDS (C698).

### **6.10.3 Protection of Watercourses**

As the Washpit Brook watercourse runs through the proposed works, care must be taken to prevent surface water drains discharging pollutants and contaminants to the brook without prior treatment. Consequently to prevent pollution to controlled waters, it is vital that contaminated run-off is not discharged to the surface water system.

The control mechanisms identified in the Pollution Control Strategy (prepared in response to Condition 33) for pollution prevention must be adopted. If however, in an emergency situation, it is necessary to discharge contaminated surface water to a drain, then it will be discharged to foul sewer in preference to the surface water drainage system.

Drain covers must be kept in close proximity to any surface water drain which is considered to be close to a potential source of pollution and therefore at risk e.g. any surface water drains located near to bulk fuel/chemical storage.

During construction protection measures to control the risk of pollution to surface water will be adopted. These will include:

- Any containers of contaminating substances on site will be leakproof and kept in a safe and secure building or compound from which they cannot leak, spill or be open to vandalism. The containers will be protected by temporary impermeable bunds with a capacity of 110% of the maximum stored volume. Areas for transfer of contaminating substances will be similarly protected.
- All refuelling, oiling and greasing will take place above drip trays or on an impermeable surface which provides protection to underground strata and watercourses and away from



drains as far as reasonably practicable. Vehicles will not be left unattended during refuelling.

- Only construction equipment and vehicles free of oil/fuel leaks which could cause material contamination will be permitted on site. Drip trays will be placed below static mechanical plant.
- All wash down of vehicles and equipment will take place in designated areas and washwater will be prevented from passing untreated into watercourses and will comply with EA's Pollution Prevention Guidance (PPG) note PPG13.
- EA note PPG 23 will be followed when carrying out maintenance of structures over water. As far as reasonably practicable, only biodegradable hydraulic oils will be used in equipment working in or over watercourses.
- Appropriate measures to be taken to protect erodable earthwork surfaces.

#### **6.10.4 Protection of Groundwater**

Protection measures to control the risk of pollution to groundwater will be consistent with the Groundwater Regulations 1998. Where reasonably practicable, the use of materials that could pollute groundwater will be avoided. This will include special consideration of the use of substances contained within List I and II of the Groundwater Regulations SI 1998/2746 (Groundwater Directive: 80/68/EEC).

The aforementioned Pollution Prevention Measures and good construction practices will ensure that any oils, hydrocarbons or hazardous materials stored on site will not leak onto the ground surface and thereby ensure that there is no pathway for contaminants to affect the aquifer contained within the Head and Observatory Gravels and Chalk Marl that underlie the eastern and northern portions of the Site. These techniques will also ensure that surface water bodies and associated ecosystems are protected as there is a hydraulic connectivity between these bodies and the groundwater.

#### **6.10.5 Dewatering**

The potential presence of a local perched water table within the Terrace Gravel will be confirmed through geotechnical investigations. If present the perched water table may require some dewatering and approval from the Environment Agency for the arrangements to manage and monitor the dewatering process.

#### **6.10.6 Pollution Control**

Measures from the Pollution Control Strategy prepared in response to Condition 33 will be implemented.

Works will be undertaken by the Principal Contractor in accordance with approvals from the Environment Agency where appropriate.

All Contractors will adhere to Environment Agency Pollution Prevention Guidelines.

All hazardous substances (including liquids and solids) will be stored within impermeable, bunded areas, to remove the risk of migration to groundwater or a nearby watercourse to the satisfaction of the Environment Agency. The measures proposed will assist in avoiding or minimising the potential for contaminants and suspended solids to migrate to surface and



groundwater, reduce localised flood risk, and protect water quality and the ecosystems the water resources support.

The following list shows measures that will be put in place to prevent pollution and would conform to the best practice policy proposed by the Environment Agency (EA) via the Pollution Prevention Guidelines (PPGs):

- the handling, use and storage of hazardous materials to be undertaken in line with the EA's Pollution Prevention Guidelines (e.g. PPG2 Above Ground Oil Storage Tanks);
- hazardous substances will be stored within impermeable, bunded areas to remove the risk of migration to groundwater or a nearby watercourse;
- adequately bunded and secure areas with impervious walls and floor for the temporary storage of fuel, oil and chemicals on site during construction;
- drip trays to collect leaks from diesel pumps or from standing plant;
- oil interceptor(s) fitted to all temporary discharge points and for discharge from any temporary oil storage/ refuelling areas;
- development of pollution control procedures in line with the EA's Pollution Prevention Guidelines, and appropriate training for all construction staff;
- provision of spill containment equipment such as absorbent material on site;
- restrictions on use of machinery near adjacent water bodies;
- the treatment of any runoff from Development areas with elevated suspended solids prior to discharge. Approval will be obtained from the EA for any discharges to controlled waters. Treatment measures could include perimeter cut-off ditches, settlement lagoons, overland flow and/or settlement tanks;
- wheel wash facilities must be provided for vehicles moving to and from the Site at all entry and exit points. Silty water from wheel-washes will require appropriate disposal to prevent unacceptable levels of suspended solids entering any nearby surface water bodies;
- any disposal of surface water generated on site during construction to controlled waters will require consent from the EA. Wheel washing facilities must be located as far from surface waters as possible;
- temporary structures/crossings over the Washpit Brook will be designed to the appropriate standard; thereby ensuring flood risk is not exacerbated on site or to downstream areas;
- if dewatering is required along any part of the construction corridor, pumped groundwater must be disposed of appropriately according to EA Pollution Prevention Guidelines;
- the reseeded of cleared land as soon as practicable, to minimise exposed land and the entrainment of sediment by overland flow; and this can be managed by ensuring construction plant/ materials are stored on hardstanding surfaces where possible. Where this is unavoidable, the Principal Contractor will ensure any compacted soil is loosened as soon as possible following completion of the works;
- best practice during construction as defined within CIRIA C698 site handbook for the construction of SuDS to ensure that construction works do not adversely affect the

subsequent performance of SuDS that are provided to attenuate and improve the quality of surface runoff from the proposed development;

- appropriate construction management practices and provision of sediment traps and pollution control interceptors to remove suspended solids and hydrocarbons;
- attenuation ponds within each sub-catchment will be constructed in advance of the associated development to control the discharge rates of surface runoff;
- temporary pollution control structures will be introduced upstream of the ponds to ensure that elevated levels of suspended solids will not be conveyed to local surface water bodies;
- rainfall runoff from haul roads will be intercepted and conveyed to appropriate temporary pollution control structures before being conveyed to attenuation ponds that will be capable of restricting the rate and volume of discharge to greenfield runoff rates;
- SuDS features within each catchment/phase of the development will be installed in advance of the associated development to ensure that flood risk will not be increased downstream nor to the development itself; the discharge to the watercourse will be controlled to greenfield runoff rates.
-

**6.11 Landscape and Visual****6.11.1 General**

Visual effects on external receptors may arise from construction operations and associated components such as the installation of visible plant, temporary site lighting, temporary screening and security fencing, visible security measures, and the erection of temporary buildings on site.

**6.11.2 Measures**

Measures will be employed during the construction period to limit night time working, stipulate working hours, consider appropriate visual screening of the operations and ensure the careful siting of construction compounds away from the most sensitive visual receptors.

Phasing the implementation of the landscape framework in advance of, or concurrently with, the Development as far as practicable / viable.

Where the proposal includes the retention of existing trees, the provisions in BS5837: 2005 (Trees in Relation to Construction) will be followed during construction.

All temporary material storage will be located wherever practical at adequate distances from tree cover to avoid physical damage. Where tree roots may be subject to potential vehicle compaction, additional temporary protection of the ground surface may be introduced.

## 6.12 Arboricultural Method Statement [Planning Condition 52(r)]

The principal protection for the retained trees (above and below ground) and associated soils within the site is through the maintenance of a Construction Exclusion Zone (CEZ) in the vicinity of such trees. The CEZ will be sacrosanct throughout development and no access will be allowed to the area other than operations specified in this Arboricultural Method Statement (AMS) document or those agreed with the Local Planning Authority (LPA) at a later date.

The positioning of each CEZ should be on the edge of a defined Root Protection Area (RPA). The shape of the RPA and their exact location will depend upon arboricultural considerations and ground conditions. In the majority of cases they are adjusted to include tree crowns to prevent damage by construction machinery.

Prior to any onsite demolition or construction in the vicinity of any retained tree protective measures and the CEZ for that tree must be in place. The installation of tree protection will be undertaken before work commences.

The tree protection fence/barrier once erected will not be moved or relocated without written approval.

The location of protective fencing will be confirmed once detailed plans are finalised.

At the end of the project the fence will be removed only after approval.

To guarantee the protection that the CEZ provides to retained trees and soils, Principal Contractors will be required to adhere to the following:

- The protective tree fencing shall be maintained throughout the construction phase.
- No materials, machinery, temporary structures, chemicals or fuel shall be stored within the CEZ.
- No excavations or increases in soil level within the CEZ should be permitted without prior written approval.
- Care should be taken to ensure that wide or tall loads or plant with booms, jibs and counterweights come into contact with retained trees. Any transit or traverse of plant in close proximity to trees should be conducted under the supervision of a banks person to ensure that adequate clearance from trees is maintained at all times.
- Material which will contaminate the soil such as concrete mixing, diesel oil and vehicle washing must not be discharged within 10m of the tree stems.
- Fires must not be lit in a position where their flames can extend to within 5m of foliage, branches or trunk. This will depend on the size of the fire and the wind direction.
- Any landscaping within the CEZ must avoid soil disturbance. Therefore re-grading and rotavators are not permitted. Any agreed soil re-profiling to facilitate final agreed levels must be carried out by hand with topsoil.

## 6.13 Construction Traffic Movements and Routeing Strategy

### 6.13.1 Objective

The objective is to avoid reduce and manage transport effects of construction traffic servicing the Site, and the movements associated with construction waste. It will apply to all the individual construction sites within the Development. The strategy includes the following main elements:

- a) design:
  - minimising the requirement for material to be imported or exported. For example, the movement of earthworks material off-site will be reduced to a minimum by maximising the re-use of material into the landscaping;
  - specifying materials and construction techniques that are resource-friendly.
- b) using locally sourced materials where practical, to reducing haulage lengths;
- c) managing effectively the supply of goods to construction sites - this can significantly reduce both road vehicle mileage and construction costs and wastage;
- d) encouraging the development of sustainable supply chains for construction materials;
- e) managing the movement of workers into the Development - via a Construction Travel Plan for the Development addressing the main means by which the workforce will travel to the Site.

Works-specific Construction Method Statements (CMS) will provide further information on Construction traffic movements over the duration of that site. The works-specific CMS will consider the following elements:

- a) Design;
- b) On-site logistics;
- c) Access Strategy;
- d) Procurement strategy;
- e) Operational Efficiency;
- f) Delivery Practice;
- g) Demand Smoothing;
- h) Managing Construction Traffic;
- i) Targets and Monitoring;
- j) Waste Management

Works-specific CMS will also identify approaches designed to achieve efficient logistics management. This might involve links with and/or exploit construction activity and practices taking place on various parts of the Site at any given time and perhaps even within other parts

of Cambridge. These measures would be designed to reduce site traffic, and the number of movements involving removal of construction-generated waste.

### 6.13.2 **Construction Movements**

The University will work with the Principal Contractors to minimise the number of journey to work vehicle movements onto the site. The North West Cambridge Area Action Plan long-term mode split target, of no more than 40% of trips to work by car, will be used as the target for the construction workforce movements.

Notwithstanding, only a limited number of construction movements usually occur during the peak hours, the working times of most construction operatives would not coincide with the network peak, and construction processes would be programmed to avoid reliance on deliveries of concrete and bituminous materials during the more congested periods and delivery drivers will themselves wish to avoid being on the network at congested times of the day when drivable hours are disproportionate to quantities of goods delivered.

Following the resolution to grant consent, a review has been undertaken of the total daily heavy vehicle construction movements to the Development. These total daily heavy vehicle movements are summarised in Table 6.1.

<b>TABLE 6.1 - PREDICTED DAILY HEAVY VEHICLE CONSTRUCTION MOVEMENTS</b>						
<b>Date</b>	<b>Jan 14</b>	<b>April 14</b>	<b>July 14</b>	<b>Oct 14</b>	<b>Jan 15</b>	<b>April 15</b>
<b>Heavy Vehicles</b>	149	151	146	146	146	124

Practically, these heavy vehicle movement deliveries are assumed to be made on a regular basis throughout the day between 0700 and 1500, so that the operatives can deal with the material as it arrives, and to avoid a log-jam of delivery vehicles awaiting discharge. The construction processes would be programmed to avoid reliance on deliveries of concrete and bituminous materials during the more congested periods and delivery drivers will themselves wish to avoid being on the network at congested times of the day when drivable hours are disproportionate to quantities of goods delivered.

In terms of these construction movements, the largest increase in daily flows would be in terms of HGV flows on Madingley Road between the M11 and the Site Access, where there would be a circa 45% increase in daily Heavy Vehicle movements, but would remain well within the overall capacity of the road. This percentage is less than that considered and reported within the Environmental Statement Transport Chapter.

On all other routes, the increase in general traffic resulting from the construction activity is considered to be negligible.

### 6.13.3 **Practicality of construction traffic movements**

In practice, regardless of any super-imposed controls, only a very limited number of car and HGV construction movements typically occur during the peak hours. The working hours of most operatives would not coincide with the network peak, construction processes would be programmed to avoid reliance on deliveries of concrete and bituminous materials during the more congested periods and delivery drivers would wish to avoid being on the network at congested times of the day when drivable hours used are disproportionate to the quantities of

goods delivered. This could be reinforced by the Development Construction Environmental Management Plan controlling construction movements during the peak hours.

**6.13.4      *2014 Pre Opening***

During this period, trips would be assigned to the Madingley Road Site Access or to the Huntingdon Road West Access to and from the M11, and would be prohibited from passing through Cambridge.

**6.13.5      *2014 Post Opening***

During this period trips would continue to be prohibited from passing through Cambridge, and hence would mainly be concentrated on the link between the Madingley Road Site Access and the M11 & Huntingdon Road West.

**6.13.6      *Construction traffic coordinator***

A construction transport coordinator will be employed by the Principal Contractor during the construction period to monitor heavy goods vehicle deliveries and collections of construction materials to and from the Site to ensure compliance so far as practicable by Principal Contractors with the above requirements.

**6.14 Pedestrian and Cyclist Routeing Strategy [Condition 52(n)]**

Pedestrians, cyclists, the general public, and any on site employees associated with the Site will be segregated from the construction works at all times. Pedestrian and cyclist access points will generally be located close to the main vehicular access gates with separate pedestrian gates and footpaths provided.

It is envisaged that pedestrian and cyclist routes will be maintained for public use around the perimeter of the Site. Where temporary closures may be required for the erection of scaffolds and incoming services connections, permissions and licences will be obtained for the re routing of pedestrian thoroughfares and cycle routes. Where more extensive closures or diversions of the existing footpath / cycleways are required, temporary proposals will be agreed with Cambridgeshire County Council.



## **6.15 Emergency Plan**

### **6.15.1 General Arrangements**

A set of standardised emergency response procedures will govern the management of environmental incidents<sup>1</sup>. Construction Principal Contractors will be required to adhere to and implement these procedures and ensure that site operatives are familiar with the emergency arrangements.

The emergency procedure will contain emergency phone numbers and the method of notifying local authorities and statutory authorities. Contact numbers for key personnel will also be included.

### **6.15.2 Dealing with Spills**

A site drainage plan will be kept on each of the worksites showing the water interests in the vicinity of the Site. This plan will include the location of both foul water drains and surface water drains. Spill kits will be kept on each of the worksites. The precise contents and capacity of the spill kits will depend on the detailed inventory of products that will be stored and handled on the Site, however they are likely to contain:

- Oil-absorbent granules;
- String;
- Floating “booms” or “sausages”;
- Gloves;
- Absorbent mats;
- Knives;
- Drain covers;
- Shovels;
- Polythene sheeting and bags

The spill kits will be clearly marked, sign-posted and held close to the area where materials are stored and handled.

A number of specialist spill Principal Contractors will be identified that can be called upon should this be required to manage a major spill.

In the event a spill occurs the following actions will be taken:

- When a spill occurs the site manager will be informed immediately.
- In dealing with the spillage the personal safety of the site-workers and the general public will not be compromised.

---

<sup>1</sup> An environmental incident is defined as “Any occurrence, including near-miss situations, which has the potential to cause or results in environmental damage”

- Where required to stop or contain the spillage work will be halted.
- The cause of the spillage will be stopped.
- The spill will be contained. Particularly pathways to any drains and water courses will be blocked as soon as possible.
- The spilled materials will be removed and disposed of in accordance with the waste regulations.

In the event of major or complicated spills, the following additional actions will be taken:

- The site manager will assess the incident and if appropriate request a specialist spill Principal Contractor to attend the site.

## **7. CONCLUSION**

The overall objective of this Construction Environmental Management Plan is to ensure that throughout the construction period, the following fundamental goals are all met so far as practicable: exemplary environmental practice; protection of the interests of local residents, amenity, and environmental receptors; and efficient, economic and timely construction practices.

This document will remain live so that as more information and detail becomes available it can be incorporated.

## **APPENDIX A:       LEGISLATION, CODES OF PRACTICE AND GUIDANCE RELEVANT TO THE CEMP**

### **Other Documentation**

- BS EN ISO14001: 2004 Environmental Management Systems
- BS 5837: 2005 Guide for Trees in Relation to Construction
- BS 5228: Noise control on construction and open sites:
  - Part 1 (1997) Code of Practice for basic information and procedures for noise control
  - Part 2 (1997) Guide to legislation for noise control applicable to construction and demolition, including road construction and maintenance
  - Part 4 (1992) Code of Practice for noise and vibration control applicable to piling operations
- BS 6031: Code of Practice for Earthworks
- BS 6472: 1992 Evaluation of human exposure of vibration in buildings (1Hz to 80 Hz)
- BS 7385 Evaluation and measurement for vibration in buildings:
  - Part 1: 1990 Guide for measurements of vibrations and evaluation of their effects on buildings
  - Part 2: 1993 Guide to damage levels from groundborne vibration
- BSI (2001) Investigation of Potentially Contaminated Sites. Code of Practice. 10175
- CIRIA, Control of water pollution from construction sites: Guidance for consultants and Principal Contractors (C532)
- CIRIA/Environment Agency Joint Guidelines: Concrete Bunds for Oil Storage Tanks
- CIRIA/Environment Agency Joint Guidelines: Masonry Bunds for Oil Storage Tanks
- CIRIA (1996) A guide to safe working on Contaminated Sites Report 132
- Guidance Notes for the reduction of obtrusive lighting, 2005 The Institute of Lighting Engineers
- Lighting in the Countryside: Towards Good Practice (1997) HMSO
- Bats and Lighting in the UK. Bats and the Built Environment Series Bat Conservation Trust
- DEFRA (2008) Non-Statutory Guidance for Site Waste Management Plans
- Environment Agency Pollution Prevention Guidance PPG01 General guide to the prevention of water pollution
- Environment Agency Pollution Prevention Guidance PPG02 Above ground oil storage tanks
- Environment Agency Pollution Prevention Guidance PPG05 Works near or liable to affect watercourses

- Environment Agency Pollution Prevention Guidance PPG06 Working at construction or demolition sites
- Environment Agency Pollution Prevention Guidance PPG07 Refuelling Facilities
- Environment Agency Pollution Prevention Guidance PPG21 Pollution incident response planning
- Environment Agency Pollution Prevention Guidance PPG 22 Dealing with Spills
- Environment Agency Pollution Prevention Guidance PPG23 Maintenance of structures over water
- Environment Agency Guidance Note: Piling into Contaminated Sites
- EA Position Statement 7 Concrete Washwaters
- Environment Agency Technical Guidance WM2 Interpretation and Classification of Hazardous Waste provides assistance in classifying wastes.
- Waste Management - The Duty of Care, code of Practice (HMSO 1996).
- Buildings Research Establishment. Controlling particles, vapour and noise pollution from construction sites, Parts 1 to 5, 2003.
- Department for the Environment Food and Rural Affairs: Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2000.
- Control of Pollution Act 1974
- Salmon and Freshwater Fisheries Act 1975
- Wildlife and Countryside Act 1981, as amended
- Environmental Protection Act 1990
- Water Resources Act 1991
- Protection of Badgers Act 1992
- Land Drainage Act 1991
- Clean Air Act 1993
- Conservation (Natural Habitats &c) Regulations 1994, as amended
- Wild Mammals (Protection) Act 1996
- Pollution, Prevention and Control Act 1999
- Pollution Prevention and Control (England and Wales) Regulations 2000
- Countryside and Rights of Way (CROW) Act 2000
- Water Act 2003

- SI 1985/1968: The Construction Plant and Equipment (Harmonisation of Noise Emission Standards) Regulations 1985
- SI 1991/2839: Environmental Protection (Duty of Care) Regulations 1991
- SI 1998/2746: The Groundwater Regulations (EC Groundwater Directive: 80/68/EEC) 1998
- SI 2000/227: Contaminated Land (England) Regulations 2000
- SI 2001/1701: The Noise Emission in the Environment by Equipment for use Outdoors Regulations 2001 (EC Directive 2000/14/EC)
- SI 2001/2954: Control of Pollution (Oil Storage) Regulations 2001
- SI 2002/1559 Landfill (England and Wales) Regulations 2002
- SI 2002/2677: Control of Substances Hazardous to Health Regulations 2000
- SI 2005/894: Hazardous Waste (England and Wales) Regulations 2005
- SI 2008/314: Site Waste Management Plans Regulations 2008
- Planning Policy Statement 23: Planning and Pollution Control
- DEFRA/Environment Agency's Model Procedures for the Management of Contamination (CLR11)
- Principal Contractors and Clients -Voluntary Code of Practice (Department of Trade & Industry - July 2004)
- Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (2009)
- Site handbook for the construction of SUDS (C698)