

E U R O P E A N C E N T R E
F O R M E D I U M - R A N G E
W E A T H E R
F O R E C A S T S - H Q



**Condition 12-Construction
Environmental Management Plan
Version 2.0**

ECMWF-MAC-MB-ZZ-PL-X-000111

ECMWF Headquarters Building, Whiteknights Campus, University
of Reading, Whiteknights Road, Reading, RG6 6BZ

OFFICIAL



Condition wording:

Before the development hereby permitted is commenced a Construction Environmental Management Plan (CEMP) which shall include details including construction access(es) has been submitted to and approved in writing by the Local Planning Authority shall have been submitted to and approved in writing by the Local Planning Authority. Construction shall not be carried out otherwise than in accordance with each approved CEMP. The CEMP shall include the following matters:

- a) a construction travel protocol or Green Travel plan for the construction phase including details of parking and turning for vehicles of site personnel, operatives and visitors;*
- b) loading and unloading of plant and materials.*
- c) storage of plant and materials.*
- d) programme of works (including measures for traffic management and operating hours);*
- e) piling techniques.*
- f) provision of boundary hoarding.*
- g) protection of the aquatic environment in terms of water quantity and quality.*
- h) details of proposed means of dust suppression and noise mitigation;*
- i) details of measures to prevent mud from vehicles leaving the site during construction.*
- j) details of any site construction office, compound and ancillary facility buildings. These facilities shall be sited away from woodland areas.*
- k) lighting on site during construction.*
- l) measures to ensure no on-site fires during construction*
- m) monitoring and review mechanisms.*
- n) implementation of the CEMP through an environmental management system.*
- o) details of the haul routes to be used to access the development; and*
- p) details of the temporary surface water management measures to be provided during the construction phase*
- q) details of the excavation of materials and the subsurface construction methodology*
- r) Details of mitigation measures for protected species to be applied*
- s) appointment of a Construction Liaison Officer.*
- t) measures to limit the impact of the construction process [REDACTED] as set out in section 5.2.6 of the submitted Ecological Assessment (RPS Group, ref: ECMWF-RPS-ZZ-WS-RP-X-01939 Ecological Assessment 06, June 2023)*

Reason: In the interests of highway safety & convenience and neighbour amenities. Relevant policy: Core Strategy policies CP3 & CP6 and policy TB23 of the MDD DPD Local Plan and to protect species of principal importance.'

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A. Construction Travel Protocol

The proposed site address is ECMWF Headquarters Building, Whiteknights Campus, University of Reading, Whiteknights Road, Reading, RG6 6BZ.

The site is accessed via the University of Reading Earley Gate, Whiteknights Road with road links to the A329 and M4. Primarily, vehicles will be directed to access the site via the A329 from the M4 to the East of the site. These routes have been identified as suitable for HGVs. The alternative route for vehicles, is via the A33 and A329 from the North and West

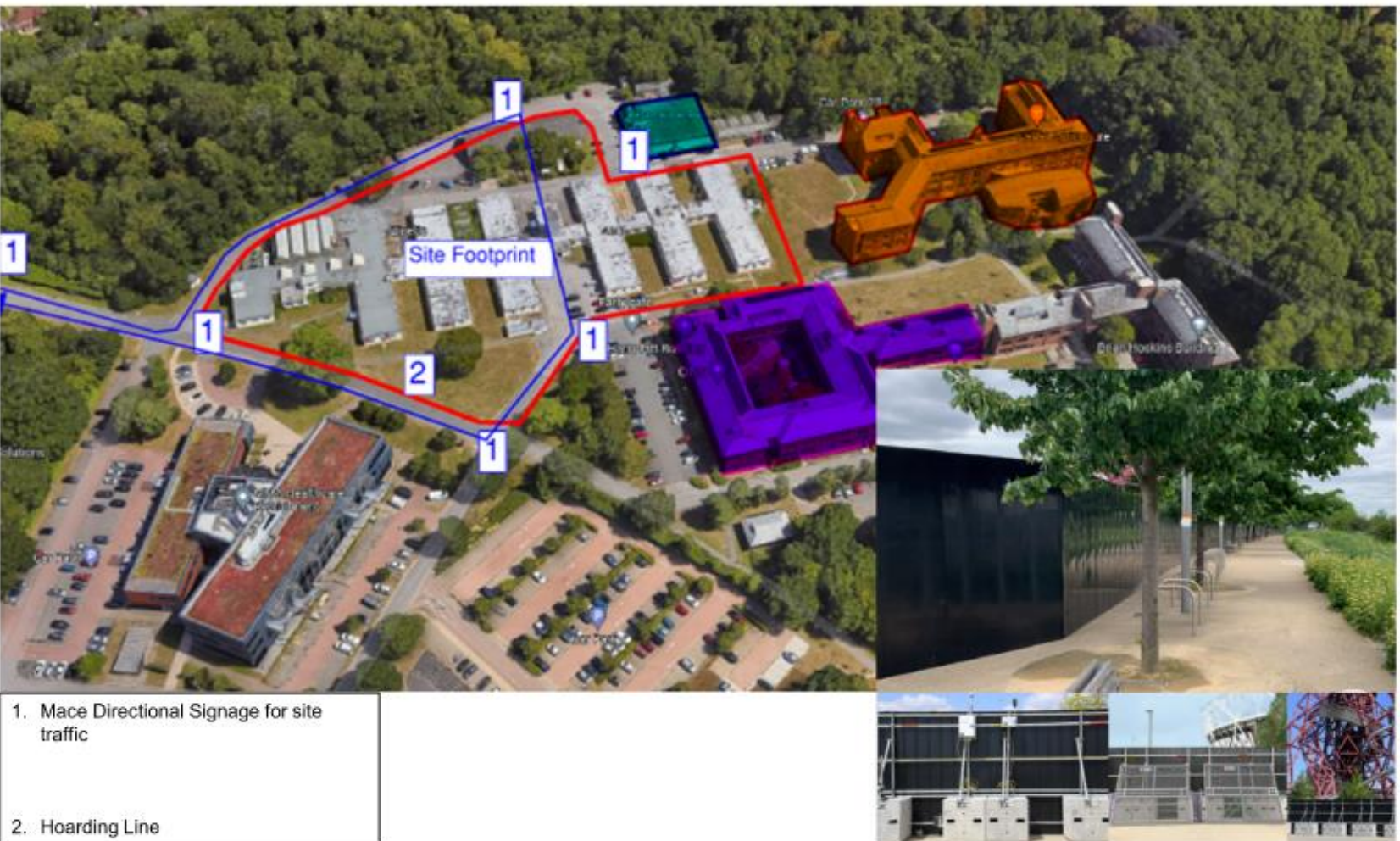
The below designated route to site will be shared with all visitors, work personal and suppliers prior to attending on site.



On arrival at the UoR Earley Gate, there will be clear Mace signage directing all construction related traffic in line with the Mace traffic logistics plan. Below is an extract of the logistics plan highlighting the direction of travel for all vehicles for the site.

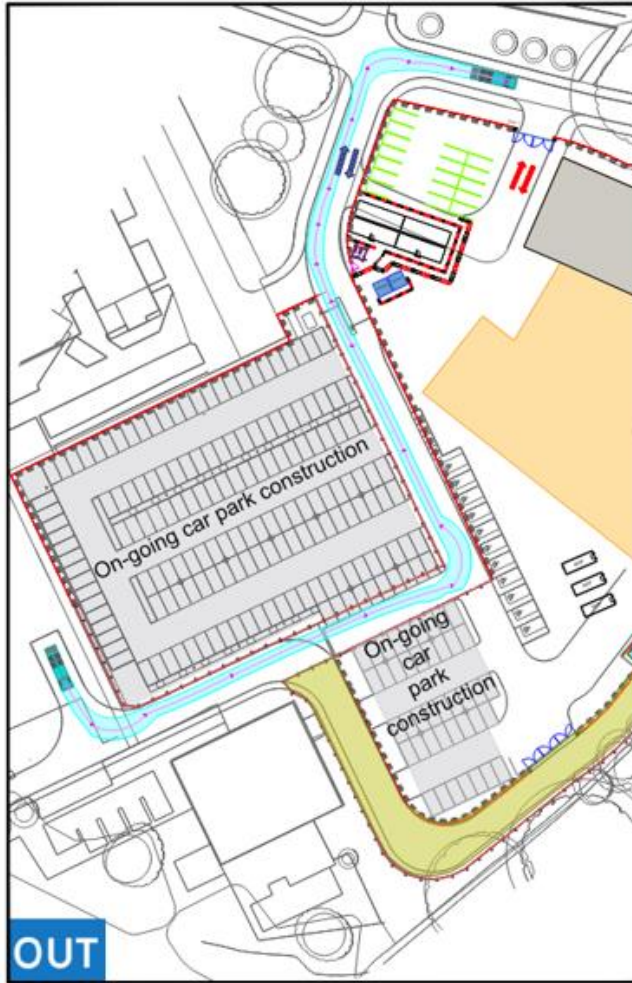
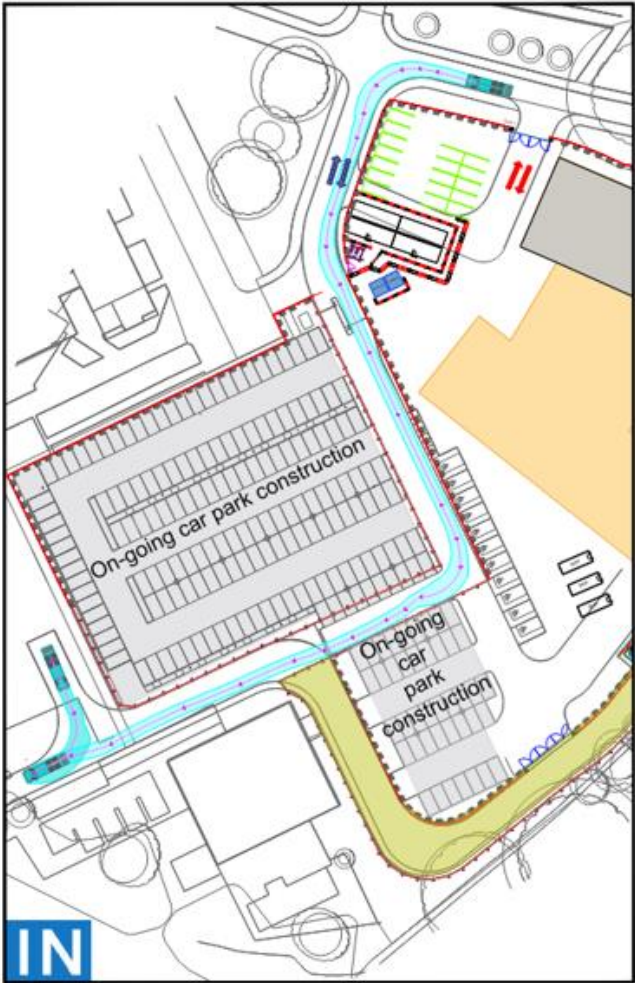
Construction traffic is taken through proprietary vehicle gates, manned by traffic marshals while site operative's and visitors are directed to a separate entrance with access to the site car park. The car park will be completed in the enabling works phase of the project to ease the parking requirements on the surrounding areas and provide a defined safe area for site operatives and visitors to park.

One the following page is an overview of the route for construction traffic through the campus. This is then followed by our swept path analysis plans based on the various stages of the site set up. The site layout phasing is shown under the programme section. Note that for clarity, the TOB1 & Marsden Shed demolition has been completed down to ground floor slab by the University of Reading.

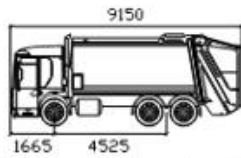
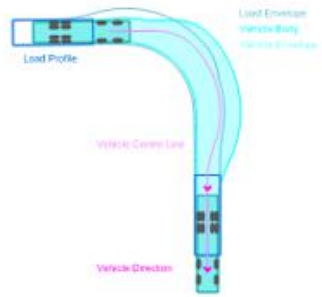


(Extract from attached Project Logistics Strategy)

Swept Path Analysis – Temporary set up



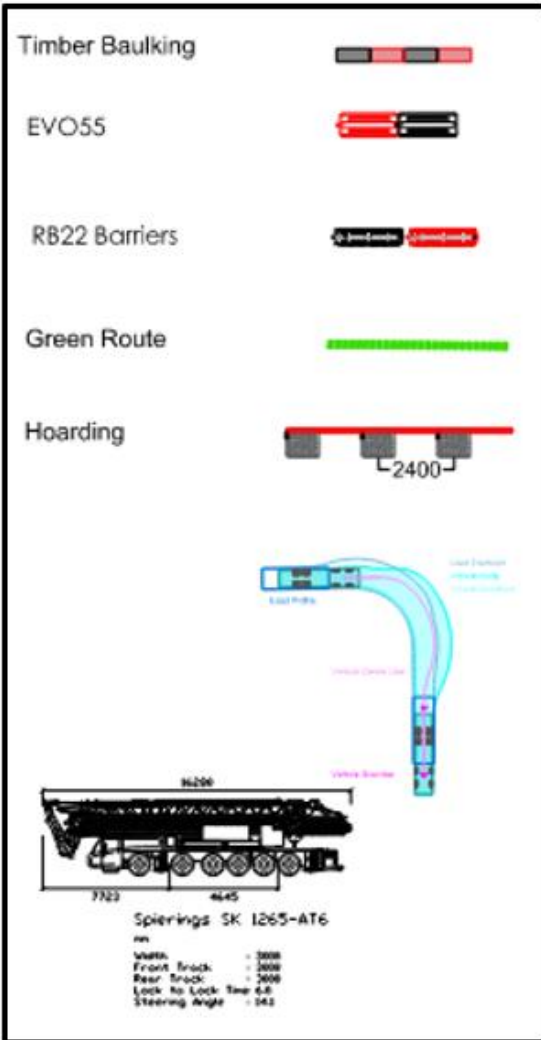
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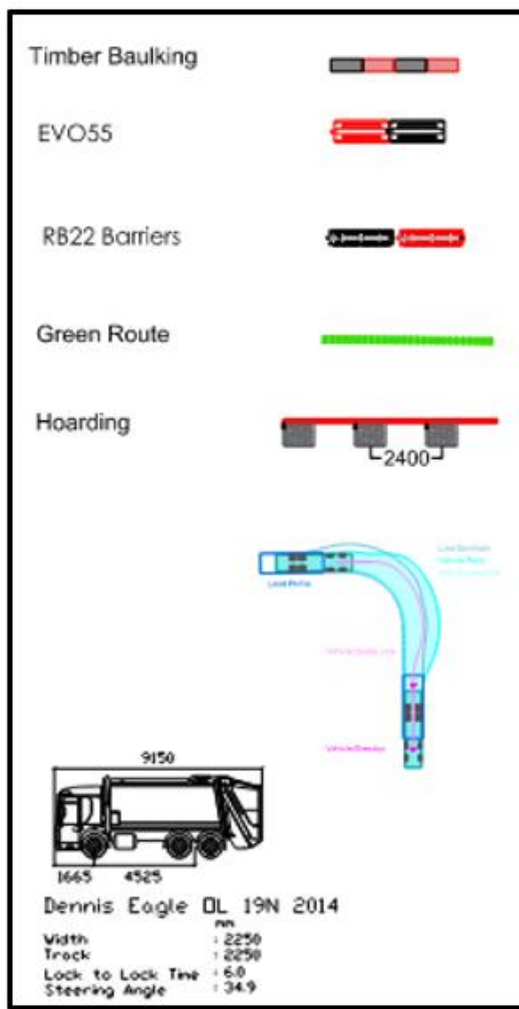
Dennis Eagle DL 19N 2014

Width	: 2250
Track	: 2250
Lock to Lock Time	: 6.0
Steering Angle	: 34.9

Swept Path Analysis – Permanent Site set up – Site Deliveries



Swept Path Analysis – Permanent Site set up – Car park



B. Loading & unloading of plant and materials

The site logistics plan is in place with designated entrance and exit managed by traffic marshals.

There are designated segregated vehicle routes on site and designated areas of loading and unloading. These areas are identified on the previous page identified as pick points or drop off points. Note no loading or unloading to be undertaken outside of the site under any circumstances.

The traffic routes evolve through the construction phase and however the principles or minimising number of turns and segregation and control by traffic marshal remains throughout. Further details on the sequence of the site establishment under Section D for programme of works. The logistics plan to be reviewed regularly to ensure it captures any required updates.

Routes to be followed strictly and deliveries to be booked in through the delivery management system to manage traffic flow. Pedestrian/vehicle interfaces will be minimised by way of segregation and defined access routes for pedestrians. Members of the public will be directed/diverted from site entrance locations. Vehicle gates will be managed by traffic marshals on site

- Pedestrian footways to be protected as appropriate (e.g. bollards and fencing) and pedestrians diverted away from areas of risk
- Vehicle and pedestrian warning signage
- Delivery vehicles to be banked at all times
- Scheduling of particularly large / hazardous loads to avoid peak pedestrian hours
- Segregation and protection of public footway
- Unloading operations to be banked at all times
- Forklift to operate within the site at all times

C. Storage of plant & Materials

Regarding storage, there are defined storage areas on site, with defined loading and unloading zones. Materials will be brought to site “just in time” to minimise congestion and maintain site tidiness and access.

Flammable or hazardous materials will be stored in line with the COSHH assessments and environmental management plan



(Example of COSHH storage container)

With hazardous substances that may be used, MSDS and COSHH assessments will be provided by each subcontractor as part of the RAMS review process. Suitable storage space will be provided by Mace, and it is the requirement of the Subcontractor to provide suitable storage facilities, e.g. flameboxes. COSHH waste vessels and removal are the responsibility of each subcontractor. Reduction in the use of COSHH materials and substances will be a priority.

D. Programme of works (including measures for traffic management and operating hours)

The project is expected to commence Q4 2024 and complete in Q3 2026.

The site working hours will be between 08:00 - 18:00 Monday to Friday and 08:00 – 13:00 on Saturdays. No noisy work to commence until after 08:00.

On the following pages the phased site establishment is sequentially laid out.



Site Possession

Site Logistics Phasing

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Site Logistics Phasing

Enabling Works Removal of Existing Hardstanding



Notes :

UoR Access Route	
Construction Access	
Hoarding	
Hera's Fencing	
Timber Baulking	
EVO55	
RB22 Barriers	

Site Logistics Phasing

Enabling Works-Eastern Access Road Possession



Notes :

UoR Access Route	
Construction Access	
Hoarding	
Heras Fencing	
Timber Baulking	
EVO55	
RB22 Barriers	

Site Logistics Phasing

Enabling Works Removal of All Hardstanding + Utilities EA Rd



Notes :

UoR Access Route



Construction Access



Hoarding



Heras Fencing



Timber Baulking



EVO55

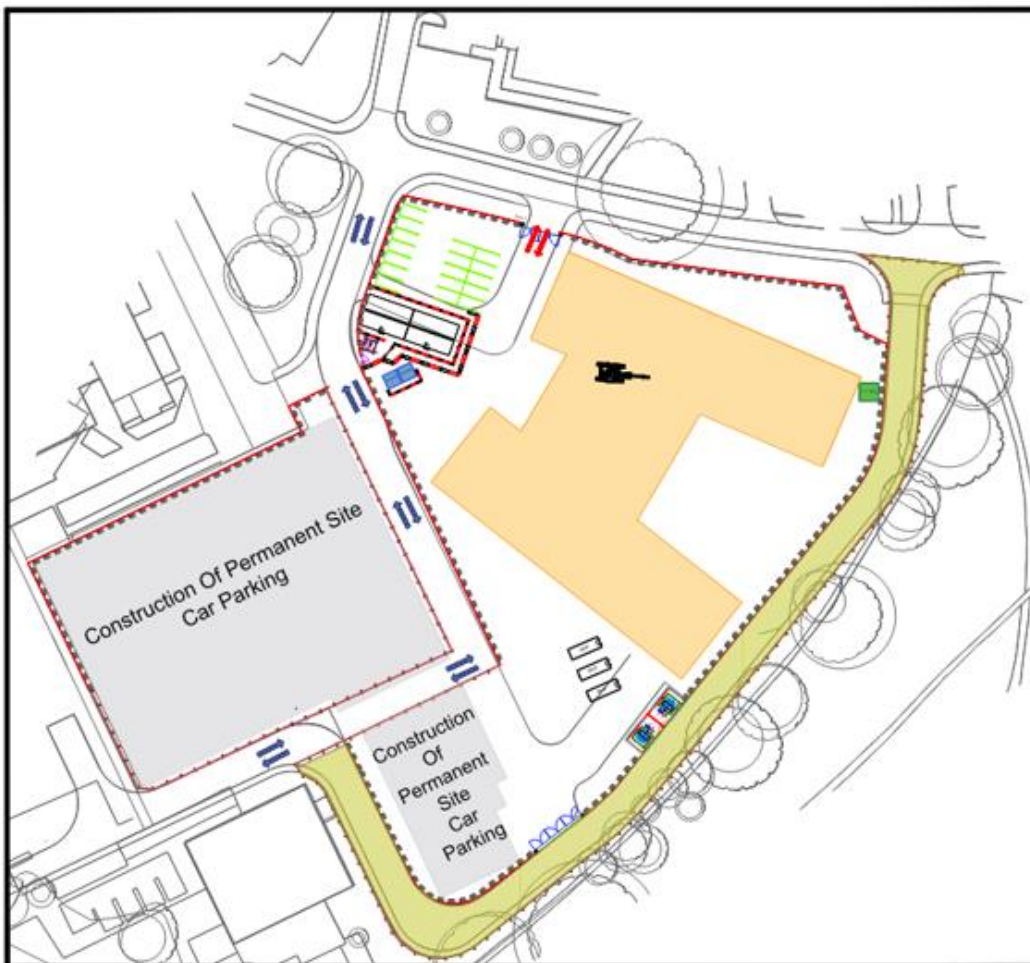


RB22 Barriers



Site Logistics Phasing

Substructure Works + Car Park formation P1



Notes :

UoR Access Route



Construction Access



Hoarding



Heras Fencing



Timber Baulking



EVO55

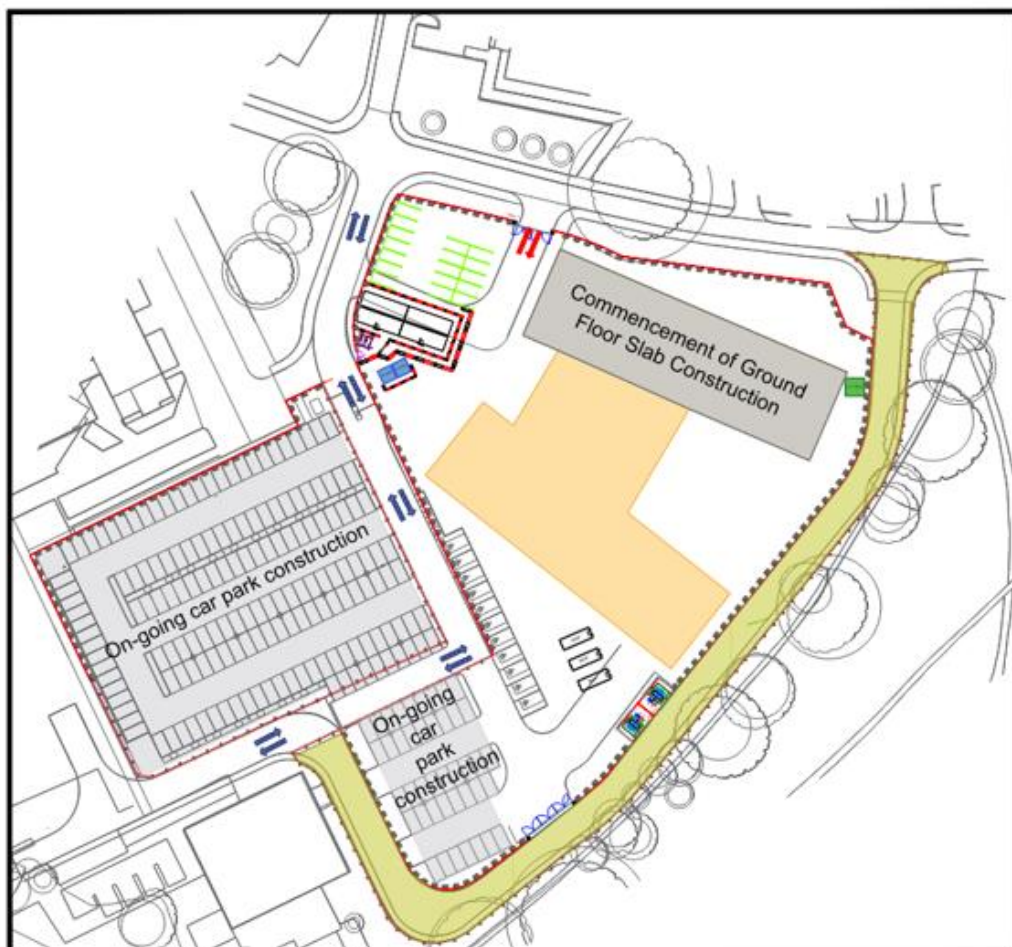


RB22 Barriers



Site Logistics Phasing

Substructure Works + Car Park formation P2

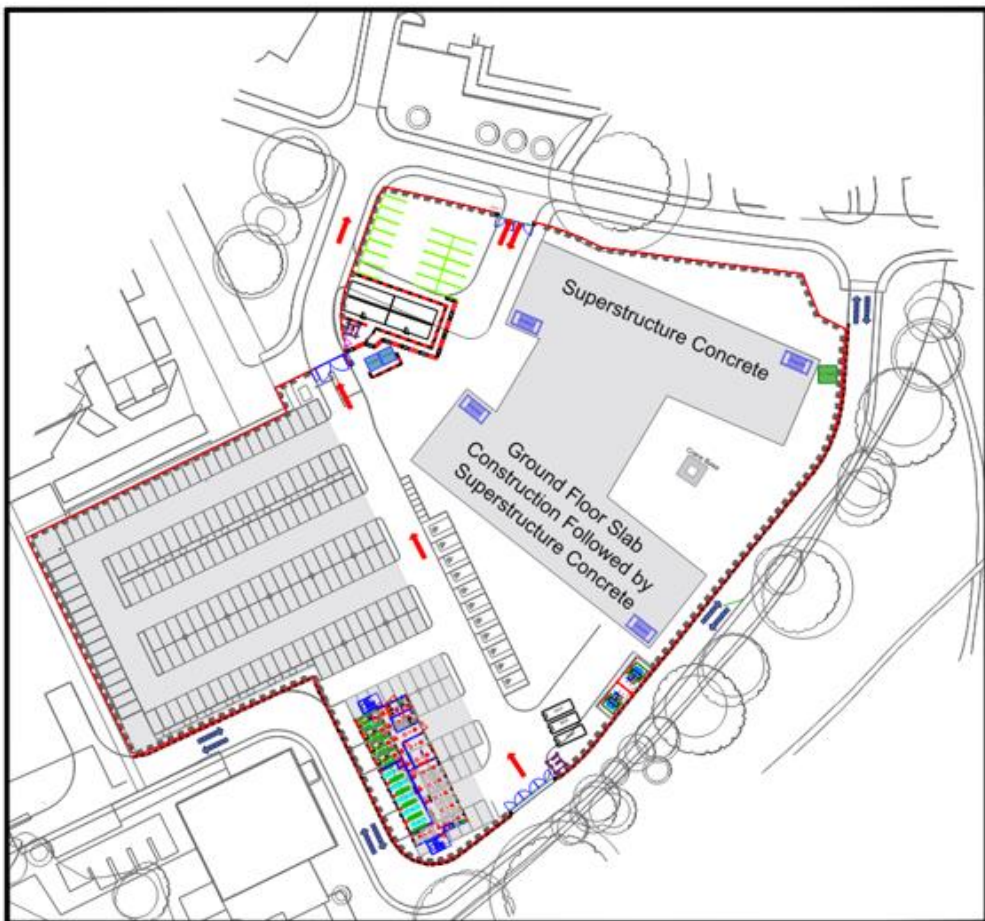


Notes :

UoR Access Route	
Construction Access	
Hoarding	
Heras Fencing	
Timber Baulking	
EVO55	
RB22 Barriers	

Site Logistics Phasing

Superstructure+Primary Welfare Install



Notes :

UoR Access Route



Construction Access



Hoarding



Heras Fencing



Timber Baulking



EVO55



RB22 Barriers



Superstructure State(Hoist,Mewp Zone)



Notes :

UoR Access Route



Construction Access



Hoarding



Heras Fencing



Timber Baulking



EVO55



RB22 Barriers



Site Logistics Phasing

Fit Out(Removal of Hoist,MEWP Zone)



Notes :

UoR Access Route



Construction Access



Hoarding



Heras Fencing



Timber Baulking



EVO55

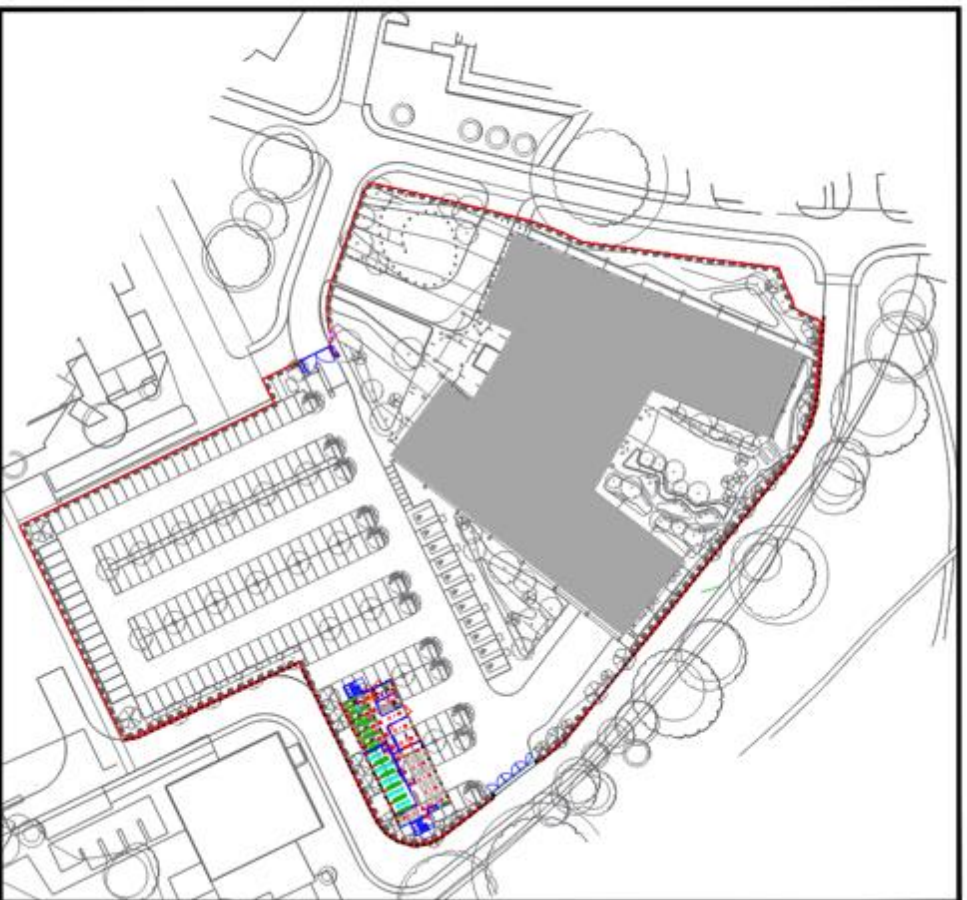


RB22 Barriers



Site Logistics Phasing

Demobilisation

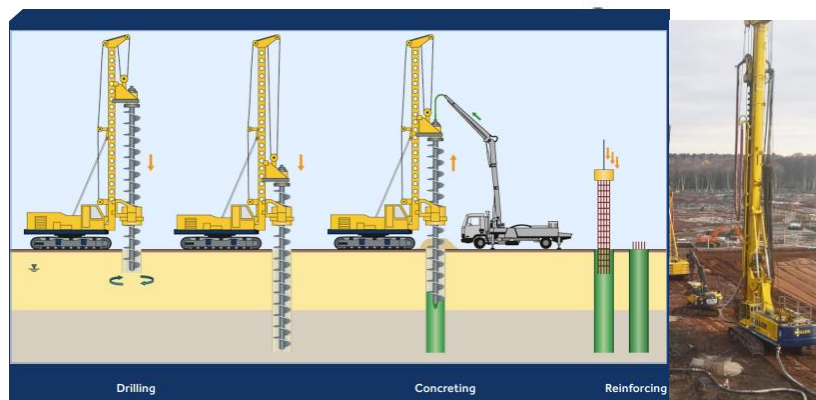
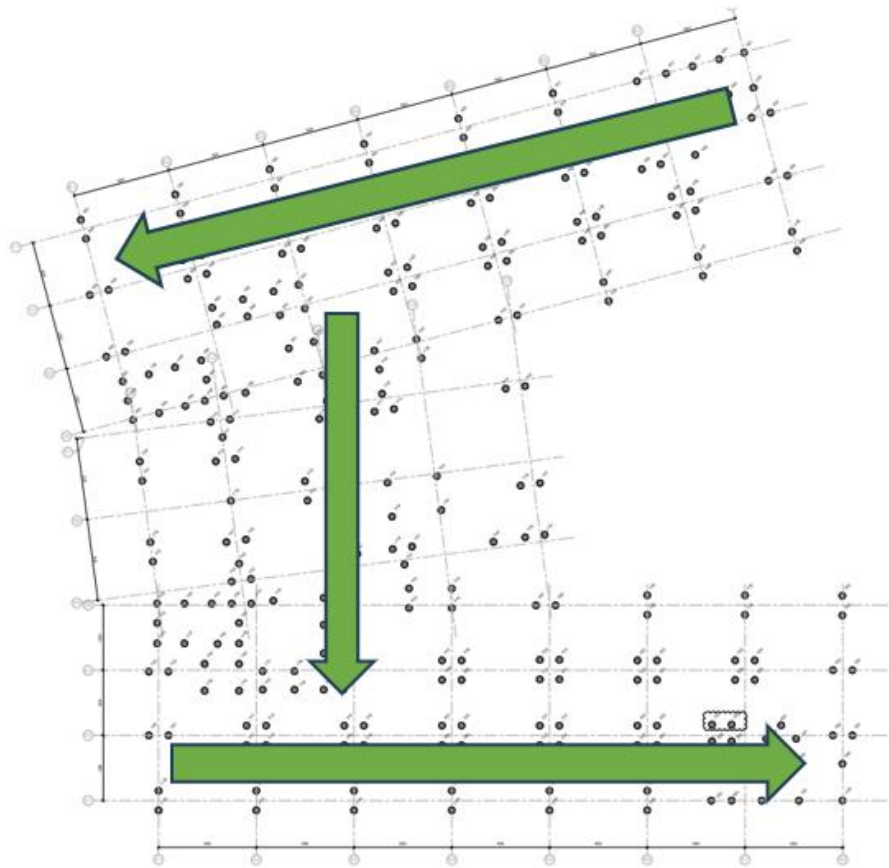


E. Piling Sequence

The intended piling technique is Continuous Flight Auger or CFA Piling.

Below is expected sequence with a lay out of the pile locations. In addition to the piling rig undertaking the primary works, there will be excavators handling the arising from the ground that will be removed from site via muck away vehicles. There will also be concrete deliveries regularly made to feed the operation.

Piling Sequence



(Example image of piling rig and process)

F. Provision of Boundary Hoarding

On possession of the site, it will initially be secured with Heras type fencing which will be erected in line with the manufacturer's recommendations, receiving regular monitoring to ensure security is maintained. As the works progress, Mace will install a proprietary 2.4m hoarding with, propriety pedestrian and vehicle gates.

The hoarding will have been through a mace temporary works design check to ensure it is capable of handling wind loads. It will include a kentledge, no dig solution where possible or posts dug into the ground.

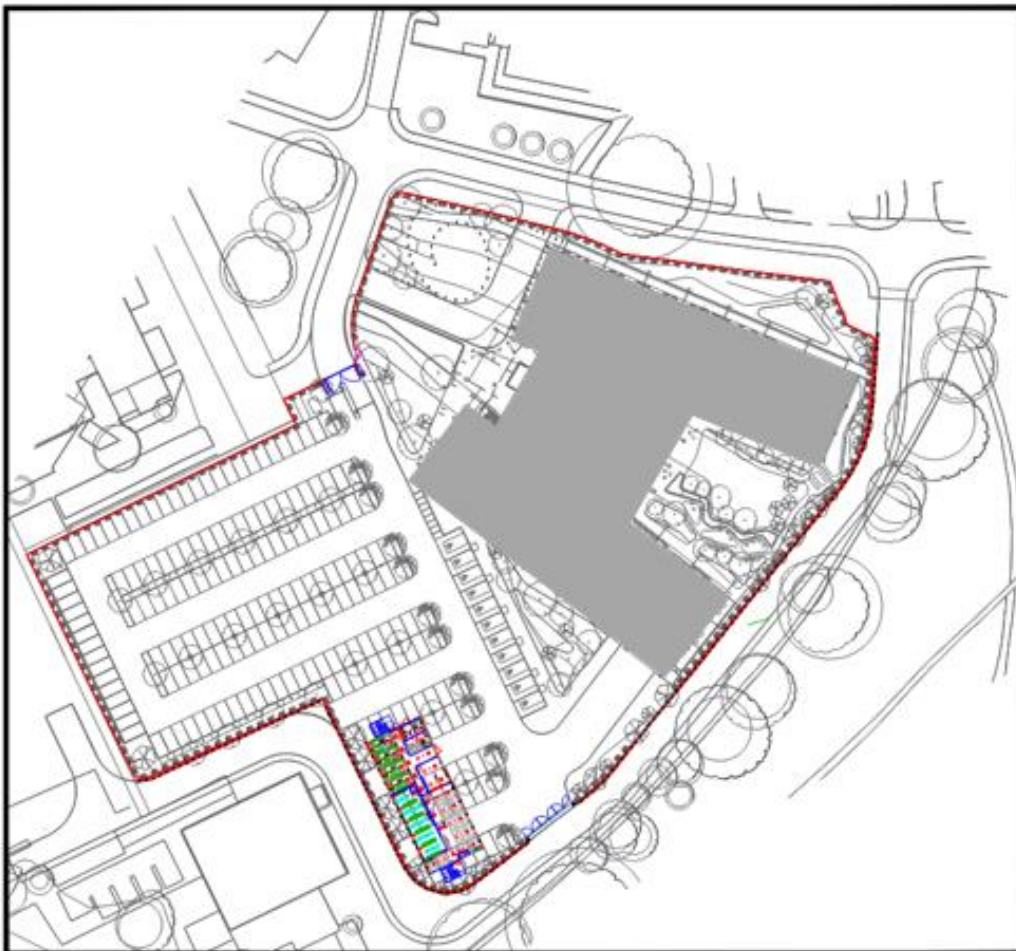
Also included with in the hoarding are vision panels for interested members of the public to safely view the progress.

Example of hoarding to be used on project on the next page:



On the following page is an extract showing our permanent site set up which will be fully encapsulated in solid hoarding.

Extent of Hoarding



Notes :

UoR Access Route



Construction Access



Hoarding



Heras Fencing



Timber Baulking



EVO55



RB22 Barriers



G. Protection of the aquatic environment in terms of water quantity and quality

Water quality monitoring will be put in place for the duration for the construction phase to demonstrate compliance with the planned Thames water discharge licence required for disposal of water from site until the SUDS drainage system is established later in the programme. This will include both storm water runoff from the roof and foul water. A silt buster will be in place for the duration for the groundworks to dispose of the groundwater in line with the Thames Water discharge licence once in place. This will capture any suspended particles within the water to prevent contamination.

Mace understand that we must carry out our works ensuring that there is no impact on the existing Whiteknights Lake water quality and lake water levels.

It is important to note that storm drains discharge into the Whiteknights Lake, which in turn discharges into larger water bodies such as the river Thames.

Potential pollution sources from the specific construction methods and programme are:

- Demolition of existing structures and buildings;
- Excavated material;
- Piling;
- Construction plant/equipment failure;
- Refuelling activities;
- Storage of hazardous substances, and
- Deliveries to and from site.

Mace will implement the following pollution prevention and control mitigation measures to ensure there is no impact to Whiteknights Lake during construction:

- Contractors should ensure that their activities which affect water comply with any relevant legislation (discharge consents) and follow environmental best practice.
- This may include (but is not limited to) preventing water contaminated with chemicals, fuels, oil, concrete washings, wheel washings, silt or sediment from entering drainage systems, the Whiteknights Lake, or any other waterbody.
- Mace intend to initially use a Siltbuster type system to discharge into the existing combined sewer within the western access road with an existing manhole. This is subject to obtaining a discharge licence from Thames Water. Mace will ensure compliance with any conditions, for example, relating to the quantity and quality of effluent.
- Contractors should also not discharge other effluents of any type to the drainage system without consent from the appropriate authority, ensuring suitable spill kits/containment measures are in place and ensuring that equipment using water is fit for purpose and does not leak.

- A proactive approach is key to preventing spills and ongoing checks will be carried out during environmental site inspections to ensure that spill kits are fully stocked, and the workforce are adequately trained in the spillage procedure.
- A site-specific drainage plan is available which shows the location of all the surface and foul water drains. Mace implements working practices to ensure that contaminated water does not impact upon controlled water. Staff will be made aware of the existing drainage network.
- Hazardous substance stores (including fuel and chemical stores) and areas at risk of spillage/leakage of polluting materials are bunded above ground where possible. There should be no storage of hazardous substances near open drains, and they will be located as far as practicable from the lake. Special waste shall be stored separately from other waste, and be adequately stored, labelled and covered.
- Dust suppression techniques are implemented, including water spraying in dry weather, wheel washing facilities for vehicles leaving the site and covering stockpiled material.
- Drip trays should be used when filling smaller containers from tanks or drums to avoid drips and spills from entering the ground or drainage system.
- When not in use, vehicles, equipment and plant - or other source of fumes - noise or dust, are switched off.
- Any concrete washout water will be contained in an impermeable area such as a concrete washout skip or a specifically lined excavation to stop the water from contaminating water systems. Once concrete waste from the washout has hardened, it can be broken out and reused on site as hardcore or sent off site as waste.
- Any containers of contaminating substances onsite are leak-proof and kept in a safe and secure building or compound from which they cannot leak, spill or be open to vandalism. The containers are protected by temporary impermeable bunds (or drip trays for small containers) with a capacity of 110% of the maximum stored volume. Areas for transfer of contaminating substances (including refuelling areas) will be similarly protected.
- All oil storage tanks, drums and mobile bowsters, as well as ancillary pipe work, valve, filters, sight gauges and equipment, require secondary containment e.g., bunding or drip trays.
- Any water leaks should be reported as a priority to the construction team.
- Consideration of this must be ensured and any contamination and subsequent works/legal action will be the responsibility of the contractor deemed responsible.
- If a pollution incident occurs, the procedures in the Environmental Emergency Preparedness Response Plan (CN-RB-FM-0004) should be followed.

The following measures will be put in place for Oil, Fuel and Chemicals:

- Storage to be positioned to avoid damage
- Drums and containers must be kept on a bund and covered to prevent accumulation of rainwater
- Bowsers must be locked when not in use
- COSHH containers to be kept in COSHH storage area when not in use
- Put lids back on containers properly to prevent spoiling or spillage
- Spill kits should be readily available at fuelling stations
- All hydrocarbon fuelled plant should be placed on a plant nappy
- Preference to electric machinery on site.

H. Details of proposed means of dust suppression & Noise Mitigation

Works are taking place within a live university campus. Students and staff will be around the site throughout the works. Therefore, noise and dust need to be appropriately managed on site not only for the health and wellbeing of the operatives working, but residents and building users in the vicinity of the site.

Dust will be targeted at source. The high-risk activities for the members of the public outside of the site will arise from dust from spoil heaps, crushing/breaking of concrete slabs, plant movements over dry subbase type surfaces or stockpiles of material that is susceptible to wind. To minimise the risks of the above we will implement the following:

- Damping down of trafficked routes to minimise dust.
- Covering stockpiles susceptible to wind
- Damping down concrete being crushed or broken
- Enforcement of site speed limit
- Regular road sweeping
- Wheel wash to prevent mud on roads
- Tarmacked haul road to minimise road vehicles interface with mud.

Works to be carried out within the agreed site working hours. Noise & vibration monitoring will be established on the hoarding line around the project, allowing for project wide monitoring. Noise & vibration assessments will be in place for all required tools and equipment, by each responsible trade.

Noise and vibration monitoring will be in place with the agreed thresholds set prior to commencement. The thresholds are based on the pre-construction vibration monitoring and the noise limits are in line with the section 61 Notice.

When not in use, vehicles, equipment and plant - or other source of fumes - noise or dust, are switched off.

Low noise alternative methods to be employed where practicable.

I. Details of measures to prevent mud from leaving the site during construction

The same measures referenced under section (h) will be employed to reduce the risk of mud leaving the site.

- Regular road sweeping
- Wheel wash to prevent mud on roads
- Tarmacked haul road to minimise road vehicles interface with mud. Extract from logistics plan below.

Consideration must also be made to the size and material of stockpiles on site and proximity to hoarding. Where there is likely to be risk of run off, silt screens will be added as an additional measure to covering the stockpiles to prevent material being washed through the site perimeter.



(Example image of wheel washing system)

J. Details of any site construction office, compound and ancillary facility buildings. These facilities shall be sited away from woodland areas

The planned location of the welfare and offices is as the layout below. The edge of the building will be circa 17m away from the wilderness area.

The officers will be formed of 10no. modular units, then triple stacked with metal staircases at each end.



Example of modular of double stacked office arrangement

The site will be secured with 3m solid hoarding. There will be a small security hut at each the gates where there is construction traffic shown.



(Extract from attached Project Logistics Strategy)

K. Lighting on site during Construction

There will be perimeter hoarding bulkhead lighting every 3m. Typically, floodlights will be directed away from the site perimeter and internally towards the site. These will be used to light the compound areas, site access and egress routes, the construction car park and building area.

All lights both internally and externally will be with on a timer switch, based on the working hours above.



Example of hoarding lighting

L. Measure to ensure no on-site fire during construction

- Electrical installations to be undertaken by suitably qualified personnel only
- Pre construction fire plan & construction phase fire plan which are regularly reviewed.
- Risk assessment carried out by 3rd party with regular reviews.
- No smoking in site accommodation. There will be designated smoking areas.
- Suitable firefighting equipment properly maintained
- Escape plan to be in place and properly communicated
- Fire drills
- All work on/adjacent to live electrical services to be subject to permit.
- Hot Works Permits
 - Screens

- Create exclusion zones around bottom of cores
- Fire extinguishers

M. Monitoring & review mechanisms

Mace use an online platform called “Yellowjacket” for our audits. It is accessible by Mace’s subcontractors and houses the templates for the various inspection types. If actions are raised for an individual or company, the details will be assigned on the platform and issued accordingly. The process to close out the observation is to complete the action on site and document and evidence the action to close it out.

Near misses are also reported via this platform and taken seriously so that we can avoid them happening again in the future. Any learning events are shared within the business for continual improvement.

As a minimum, daily safe start briefings are undertaken for each element as well as weekly safety inspection which pick up the fire and environmental categories.

In addition to the audits reference above, there are inspection carried out by our subcontractors as well as principal designers.

N. Implementation of the CEMP through and environmental management system

There will be a designated environmental manager on the project ensuring the project team are working in accordance with our procedures.

The environment management plan is a component of the Project Delivery Plan which is regularly updated and formally reviewed once a month.

The following Mace documents will be provided to all suppliers;

- The Project Delivery Plan
- Method Statement Company Guidance (MG-H&S-GD-2679)
- Logistics & Traffic Management Plan
- The Air Quality Action Plan
- Site Waste and Resource Management Plan
- Emergency Preparedness and Response Plan (CN-RB-FM-0004)

These documents help shape the environment management plan and show how it is implemented.

Within the Mace Environmental Management Plan, there will be separate sections which address the following:

- Arrangements for identifying and controlling site risks -
- Noise and Vibration monitoring Procedures.
- Control of emissions to air
- Noise monitoring – these will comply with the Section 61 restrictions and monitoring regime.
- Waste Minimisation and Management – Detailing
- Responsible Sourcing
- Biodiversity requirements
- Environmental Connections

O. Details of the haul routes to be used to access the development

The site is accessed via the University of Reading Earley Gate, Whiteknights Road with road links to the A329 and M4. Primarily, vehicles will be directed to access the site via the A329 from the M4 to the East of the site. These routes have been identified as suitable for HGVs. The alternative route for vehicles, is via the A33 and A329 from the North and West

The designated route to site will be shared with all visitors, work personal and suppliers prior to attending on site.

P. Details of temporary surface water management measures to be provided during the construction phase

Below are extracts summarising where both the storm and foul water from the project will be directed during the construction phase.

The water will be put through either a silt buster or settlement tank dependant on the suspension of fines in the water before it is discharged eventually through the Thames Water network in line with a discharge licence.

The water the early stages of the project from the groundworks operation will be pumped to via temporary sumps through the silt buster.

With regards to the drainage around the new building; once the drainage network is largely completed with the temporary drainage connections, surface water will be diverted via the foul in line with the Thames water network.

The car park will largely be completed up to binder course of tarmac so the main drainage infrastructure will be in place and in use, inclusive of oil interceptor.

Regular testing will be undertaken on the water leaving site to demonstrate compliance with the discharge licence.

Q. Details of the excavation of materials and the subsurface construction methodology

Prior to commencement, a further survey will be undertaken with soil analysis to determine the options for waste removal from site as well as how it is stockpiled and stored.

In addition to the above, the appropriate number of WAC tests will be undertaken to determine the waste classification before removal.

The sequence of works from taking the possession of the site will be as below:

- General Site Strip
- Break up and crush existing slabs and foundations under footprint of new building including reduced level dig
- Break up existing roadways/carpark and footways
- Watching brief (Asbestos in existing substructures)
- Removal of redundant services
- Form Piling mat (example image below)



- Complete piling (example image below)



- Excavate around pile caps and crop (example image below)



- Dig ground beams and drainage
- Complete below slab drainage and concrete foundations concurrently.

These works will largely be completed with 20-30T excavators with attendance from a piling rig.

R. Details of mitigation measures for protected species to be applied

RPS carried out an Ecological Assessment of the site in June 2023 and recommended the following mitigation measures are implemented:

- Adopt a sensitive lighting scheme to avoid illuminating retained habitats;
- Undertake vegetation clearance outside of the bird nesting season (indicatively March to the beginning of September); and
- Precautionary measures to be used to prevent injury [REDACTED]
[REDACTED] This will be achieved by the installation of a solid 3m high hoarding.

In the event of any unanticipated discoveries, work will halt in the area and Mace will be informed. It is worth noting that there was no evidence of any protected species being present in the area in previous surveys.

S. Appointment of a Construction Liaison Officer

Owen Bax, the Mace construction lead for the project will be the main point of contact for the local authority, contact details can be provided to the LPA on request.

Measures to limit the impact of the construction process [REDACTED] as set out in section 5.2.6 of the submitted Ecological Assessment

RPS carried out an Ecological Assessment of the site published in June 2023 and recommended the following mitigation measures which will be implemented:

- *Any pit or hole excavated during the construction phase will be either covered at night with a sealed edge, or a sturdy ramp in the form of a wooden plank will be placed inside the excavation. This will ensure a suitable escape route for any wildlife that might otherwise be trapped in a pit. – Mace will ensure that any excavations have a ramped section to provide access/egress for [REDACTED] that may enter the excavation out of hours.*
- *Any spoil or mixed material piles created during clearance and construction should be removed from site immediately to avoid creating habitat or refuge for any species. Mace will ensure that the materials are removed from site as soon as possible.*
- *Additional fencing installed during the construction phase (such as herring fence) will be installed with a 20 cm gap, to ensure commuting or foraging individuals do not become isolated. The site will initially be fenced off with herring fence. [REDACTED] [REDACTED] During the enabling works, a solid hoarding (as Section R) will be erected which will prevent access in the first instance. Note that during this transition from fencing types, the site will be visually inspected prior to the last sections of hoarding being erected to ensure no animals become trapped within the site.*

A pre-start inspection will be undertaken to ensure no species migrated into the site area. Once the works start the site areas will be inspected daily before work commences as part of Mace safe system of work.

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