
Island Road, Reading

Environmental Impact Assessment Screening Report

September 2020

Island Road, Reading

Environmental Impact Assessment Screening Report

Prepared on behalf of SEGRO

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CONTENTS

1 INTRODUCTION 1

2 SITE AND PROPOSED DEVELOPMENT.....3

3 SCREENING ASSESSMENT 6

4 CONCLUSION 24

APPENDICES

APPENDIX 1: SITE LOCATION PLAN

APPENDIX 2: GROUND CONDITIONS TECHNICAL NOTE

APPENDIX 3: PRELIMINARY ECOLOGICAL APPRAISAL

APPENDIX 4: ENVIRONMENTAL DNA ANALYSIS ASSESSMENT

1 INTRODUCTION

- 1.1 This report has been prepared by Barton Willmore, Institute of Environmental Management and Assessment (IEMA) qualified assessors and Environmental Impact Assessment (EIA) Quality Mark registrants, on behalf of SEGRO. This report accompanies a request to Reading Borough Council (RBC) to adopt a Screening Opinion to determine whether the proposed development of Island Road, Reading, constitutes EIA development. The proposed development will include Class B8 (storage or distribution) uses, associated landscaping, parking and servicing areas and improvements to the vehicular access to the site from Island Road and the A33.
- 1.2 This report reflects the requirements of the *Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended)*¹ (the "EIA Regulations") and in accordance with Regulation 6 of the EIA Regulations, this report contains:
- (a) A plan sufficient to identify the land;
 - (b) A description of the development, including in particular:
 - (i) a description of the physical characteristics of the development and, where relevant, of demolition works;
 - (ii) a description of the location of the development, with particular regard to the environmental sensitivity of geographical areas likely to be affected;
 - (c) A description of the aspects of the environment likely to be significantly affected by the development;
 - (d) To the extent the information is available, a description of any likely significant effects of the proposed development on the environment resulting from—
 - (i) the expected residues and emissions and the production of waste, where relevant; and
 - (ii) the use of natural resources, in particular soil, land, water and biodiversity; and
 - (e) Such other information or representations as the person making the request may wish to provide or make, including any features of the proposed development or any measures envisaged to avoid or prevent what might otherwise have been significant adverse effects on the environment.

Requirement for EIA

- 1.3 In order to determine whether the proposed development is 'EIA development', regard must

¹ SI 2017/571 as amended by SI 2018/695 and SI 2020/505.

be had for the EIA Regulations and supporting Planning Practice Guidance (PPG)².

1.4 EIA development is defined by the EIA Regulations as development:

"Likely to have significant effects on the environment by virtue of factors such as its nature, size or location".

1.5 EIA development falls into two Schedules of the EIA Regulations. EIA is mandatory for developments listed within Schedule 1. Schedule 2 developments require EIA if they would lead to likely significant effects on the environment.

1.6 In deciding whether a Schedule 2 development is EIA development, Regulation 5(4) states:

"Where a relevant planning authority ... has to decide under these Regulations whether Schedule 2 development is EIA development, the relevant planning authority ... must take into account in making that decision-

- (a) Any information provided by the applicant;*
- (b) The results of any relevant EU environmental assessment which are reasonably available to relevant planning authority...; and*
- (c) Such of the selection criteria set out in Schedule 3 as are relevant to the development."*

1.7 In order to allow RBC to determine the need for EIA this report provides a description of the site and proposed development, a review of the EIA Screening Criteria based on the EIA Regulations and the PPG, a completed EIA Screening Checklist, and a site location plan at Appendix 1.

² DCLG, 2015, online access: <http://planningguidance.planningportal.gov.uk/blog/guidance/environmental-impact-assessment/>

2 SITE AND PROPOSED DEVELOPMENT

Site Context

- 2.1 The site (as shown at Appendix 1) is located to the south of Reading, approximately 3.6km to the east of Calcot and approximately 4.6km to the west of Earley. The site is located in an existing commercial setting with office space situated in Green Park Business Park located approximately 200m to the south of the site, Reading Gate Retail Park located approximately 550m to the south east of the site, and further warehouse development located approximately 1.1km to the south east of the site which includes a Tesco regional distribution centre.
- 2.2 The site is bound to the north by fields, which extend approximately 50m to the north of the site, to where the River Kennet and Fobney Island Local Wildlife Site (LWS) are located. The most north western corner of the site lies adjacent to the River Kennet. The residential area of Southcote lies approximately 1.8km to the north of the site, and Kennet and Avon Canal and Fobney Pumping Station is located approximately 250m to the north east of the site. A commercial site including a DHL facility and office space lies approximately 150m to the north east of the site, adjacent to the north of Island Road. Adjacent to the site's eastern boundary lies the RE3 recycling centre and a sewage works operated by Thames Water. Beyond this lies the A33, a Hilton Hotel, commercial estates and residential dwellings in Whitley, to the south of Reading.
- 2.3 A tree belt forms the southern boundary of the site, with the new residential development of Green Park Village adjacent to the south of the site. The Madejski Stadium is located approximately 600m to the south east of the site. The A33 corridor is located approximately 530m to the east of the site and the M4 motorway is located approximately 1.1km to the south of the site. Junction 11 of the M4 is located approximately 2km to the south west of the site.
- 2.4 The Reading to Basingstoke railway line lies adjacent to the west of the north west of the site and approximately 350m to the west of the south of the site, with pylons and large areas of standing water and tree planting beyond that and Burghfield Road further to the west.

Site Description

- 2.5 The site red line boundary area is approximately 42 hectares (ha). The red line boundary includes an area of approximately 0.5 ha to undertake improvements to the vehicular access from Island Road and the junction with the A33. The site comprises undeveloped fields, which

have been restored following the site's use as a landfill site for household waste during the 1990s. Prior to this the site was used as a quarry. Island Road travels from the north east of the site towards the west of the site. The site includes grassed areas, internal field boundaries of hedgerows crossing the site and is bordered by vegetation and a larger tree belt in the south of the site. There is a Leachate Treatment Plant located within the north western corner of the site which forms part of the ongoing management of the landfill. There is a drain running through the north west of the site which connects with the River Kennet, approximately 50m to the north of the site at this point. The most north western corner of the site extends northwards so that it is adjacent to the River Kennet. Approximately 0.36 ha of the Fobney Island LWS is located within the site boundary.

Proposed Development

- 2.6 The proposed development for which a Screening Opinion is requested is as follows:

"Full planning application for the erection of up to 100,000sqm Gross External Area (GEA) of commercial floorspace, comprising Class B8 (storage or distribution) uses, associated landscaping, parking and servicing areas and improvements to the vehicular access to the site from Island Road and the A33."

- 2.7 The development will be accessed by Island Road in the north east of the site. The development includes for improvements to the vehicular access from Island Road and the junction with the A33. The development includes for 197 Heavy Goods Vehicle (HGV) parking spaces and 2,000 car parking spaces. An area is reserved in the north east corner of the site in order to accommodate a plant area for use by Cemex.
- 2.8 The development includes four new commercial units, which would be a maximum of 19.5m above ground level (up to three storeys).
- 2.9 The hedgerows which form internal field boundaries will be removed and those trees around the perimeter of the site will be preserved where feasible within the design of the scheme and new planting will be incorporated as part of the landscaping proposals. Approximately 0.36 ha of the Fobney Island LWS is located within the site boundary. This will be fully retained, with the provision of a suitable buffer habitat adjacent to the LWS boundary. A surface water attenuation pond is proposed in the north of the site and the attenuation area can be used for ecological enhancements, if required.

Mitigation

- 2.10 A number of mitigation measures have been considered to be part of the proposed development. This includes adherence to best practice measures during the construction phases, such as through implementation of a Construction Environmental Management Plan (CEMP), which will be secured via an appropriate planning condition. In addition, the design of the development is being informed by numerous specialist technical consultants. These consultants have identified the mitigation measures in Table 1 below that will be delivered as part of the development.

Table 1: Mitigation Measures

Environmental Topic	Proposed Mitigation
Biodiversity	Any potential impacts are anticipated to be dealt with through standard measures, following the mitigation hierarchy. Until surveys are completed, full guidance on specific measures is not possible. More general measures will, as a minimum, include a sensitive lighting strategy with regards to retained and boundary features, standoffs around sensitive ecological receptors, habitat enhancements for impacted species and the inclusion of targeted guidance within a CEMP to ensure best practices are adhered to with regards to ecology; including both temporal and spatial limitations.
Arboriculture	Trees to be retained in proximity to areas of development activity, including areas for new surfacing, services, work site compounds and storage will be protected to ensure they are not damaged. This will be achieved with the use of temporary tree protection fencing, to prevent access within the RPZ or canopy spread of trees. Where access is unavoidable, alternative protection arrangements such as ground protection (sufficient to protect the structure of the soil from compaction), and /or access facilitation pruning (to ensure a reasonable clearance for operations is provided) will be required.
Transport	The construction phase of the development would involve changes to traffic movements (e.g. use of Heavy Goods Vehicles (HGVs)). A Construction Traffic Management Plan (CTMP) will be prepared and implemented during works to minimise congestion.

3 SCREENING ASSESSMENT

Introduction

- 3.1 In determining whether the proposed development constitutes EIA development, consideration should be had to the following:
- If the proposed development is of a type listed in Schedule 1;
 - If not, whether it is listed in Schedule 2;
 - Is it located within a sensitive area;
 - It meets any of the relevant thresholds and criteria set out in Schedule 2; and/or
 - Would it lead to likely significant effects on the environment.
- 3.2 These points are explored further in this section with reference to the EIA Regulations and supporting PPG.

Schedule 1 Projects

- 3.3 EIA is mandatory for projects listed in Schedule 1 of the EIA Regulations. Schedule 1 developments are large scale projects for which significant effects would be expected and comprise developments such as new airports and power stations. The proposed development is not of a type listed in Schedule 1.

Schedule 2 Projects

- 3.4 EIA is discretionary for projects listed in Schedule 2. If the development proposed is of a type listed in Schedule 2 then it may be classified as EIA development depending on the location of the development (i.e. if it is within a sensitive area) and/or whether it meets any of the relevant thresholds or criteria in Column 2.
- 3.5 Sensitive Areas are defined in the EIA Regulations as:
- SSSI and European Sites;
 - National Parks, the Broads, and Areas of Outstanding Natural Beauty (AONB); and
 - World Heritage Sites and Scheduled Monuments.
- 3.6 In certain cases, local designations which are not included in the definition of sensitive areas, but which are nonetheless environmentally sensitive, may also be relevant in determining

whether an assessment is required. Furthermore, in considering the sensitivity of a particular location, regard should also be had to whether any national or internationally agreed environmental standards (e.g. air quality) are already being approached or exceeded.

- 3.7 The proposed development falls within Category 10 of Schedule 2, 'Infrastructure Projects', sub-section (a) 'Industrial Estate Development Projects' of the EIA Regulations. The site is not located in a sensitive area as defined by the EIA Regulations and therefore the Screening thresholds should be applied. The relevant thresholds for such developments as set out in Schedule 2 relate to developments that 'exceed 5 hectares'. At 42 hectares, the proposed development exceeds the 5 hectares threshold. Accordingly, the Applicant has prepared a Screening Report to confirm that the proposed development would not be likely to result in significant environmental effects. In order to achieve this, Schedule 3 of the EIA Regulations and the PPG need to be taken into account. Information on these are set out below.

Schedule 3

- 3.8 Schedule 3 of the EIA Regulations sets out selection criteria which relate to specific matters including: the characteristics of the development; the location of the development; and the characteristics of the potential impact. These factors should be taken into account as part of the screening process and are set out below:

Characteristics:

- The size and design of the whole development;
- Cumulation with other existing development and/or approved development;
- The use of natural resources, in particular land, soil, water and biodiversity;
- The production of waste;
- Pollution and nuisances;
- The risk of major accidents and/or disasters relevant to the development concerned, including those caused by climate change, in accordance with scientific knowledge; and
- The risks to human health (for example, due to water contamination or air pollution).

Location:

- The existing and approved land use;
- the relative abundance, availability, quality and regenerative capacity of natural resources (including soil, land, water and biodiversity) in the area and its underground; and
- The absorption capacity of the natural environment.

Potential Impact:

- The magnitude and spatial extent of the impact (for example geographical area and size of the population likely to be affected);
- The nature of the impact;
- The transboundary nature of the impact;
- The intensity and complexity of the impact;
- The probability of the impact;
- The expected onset, duration, frequency and reversibility of the impact;
- The cumulation of the impact with the impact of other existing and/or approved development;
- The possibility of effectively reducing the impact.

Consideration of Cumulative Effects

- 3.9 Schedule 4 of the EIA Regulations requires consideration of a proposed development cumulatively with other existing and/or approved development. Guidance on the consideration of cumulative effects in the EIA Screening process is set out in the PPG, which echoes the requirements of the EIA Regulations:

"each application (or request for a screening opinion) should be considered on its own merits. There are occasions where other existing or approved development may be relevant in determining whether significant effects are likely as a consequence of a proposed development. The local planning authorities should always have regard to the possible cumulative effects arising from any existing or approved development."

- 3.10 Table 2 identifies the schemes to be considered under the assessment of cumulative effects. Schemes which are within a 2km radius of the proposed development were included in the cumulative developments to be assessed, as this distance is considered appropriate in which to identify those developments which may result in significant cumulative effects. RBC will take the potential for likely significant cumulative effects on the environment into consideration when adopting its Screening Opinion.
- 3.11 It is anticipated the construction of the development would be completed in 2023 at the earliest. As such, consideration has been given to whether it is reasonably foreseeable that the approved developments would be built out at the same time as the development.

Table 2: Identified Cumulative Schemes

Name and Application Reference	Description	Distance from the site	Status
Land west of Longwater Avenue (RBC ref: 150254)	Construction of a new railway station including 5- car platforms and associated works.	Approximately 460m to the south west of the site.	Planning permission granted on 6th May 2015. Currently under construction.
Land at Madejski Stadium, Shooters Way (RBC ref: 160199)	Outline proposal for housing (up to 430 units) and detailed proposal for housing (203 units), convention centre, ice rink, 246-bedroom hotel, 102 serviced apartments and ancillary retail space; and associated access, parking, transport interchange, landscaping and public open space.	Approximately 530m to the south east of the site.	The planning application was permitted on 29 November 2018.
Reading International Business Park Land to the South of A33 Relief Rd Reading RG2 6DA (RBC ref: 192054)	Demolition and redevelopment to provide 15,045 sqm area of class B1(c), B2 and B8 floor space in four buildings, with associated external yards, car and cycle parking, landscaping, and all related and ancillary works.	Approximately 1.4km to the south east of the site.	The planning application was validated on 09 January 2020 but has yet to be determined.

Planning Practice Guidance

- 3.12 Paragraphs 057 and 058 of PPG provide guidance to help determine whether significant effects are likely. In general, the more environmentally sensitive the location, the lower the threshold will be at which significant effects are likely. Table 3 below sets out indicative criteria and thresholds identified in the PPG along with some of the issues that are most likely to need to be considered in determining whether a development is likely to be EIA development.

Table 3: Planning Practice Guidance Indicative Screening Criteria

Development type	Indicative criteria and threshold	Key issues to consider
10 (a) Industrial Estate Development Projects	Site area of the new development is more than 20ha.	Potential increase in traffic emissions and noise.

- 3.13 Table 4 sets out a review of all off the above criteria and requirements and specifically addresses the proposed development at the site.

Table 4: Screening Assessment

SCREENING CRITERIA	PROPOSED DEVELOPMENT
1. CHARACTERISTICS OF THE DEVELOPMENT	
(a) Size of the development	
Will the development as a whole be out of scale with the existing environment?	No. The site extends to approximately 42 ha and comprises an undeveloped, unused site located on restored landfill land to the south of Reading. The site lies within the context of an existing sewages treatment works and commercial uses to the east beyond the A33. The proposed development would provide up to 100,000sqm GEA of commercial floorspace, comprising Class B8 (storage or distribution) uses, associated landscaping, parking and servicing areas and improvements to the vehicular access to the site from Island Road and the A33. Existing industrial and commercial uses are located in close proximity to the site, with office space situated in Green Park Business Park located approximately 200m to the south of the site, Reading Gate Retail Park located approximately 550m to the south east of the site, and further warehouse development located approximately 1.1km to the south east of the site including a Tesco regional distribution centre. The Madejski Stadium is located approximately 600m to the south east of the site. The A33 corridor is located approximately 530m to the east of the site and the M4 motorway is located approximately 1.1km to the south of the site. The Reading to Basingstoke railway line lies adjacent to the west of the site.
Will the design of the development as a whole fit in with the existing environment?	Yes. The design is evolving to carefully ensure that the development fits in with the existing buildings and environment. The design is being informed by a Flood Risk Assessment (FRA), Surface Water Drainage Strategy, Phase 1 Land Contamination Report, Transport Assessment, Landscape Assessment and a Preliminary Ecological Appraisal, which will be submitted with the planning application.
Will it lead to further consequential development or works?	No. The proposed development is a discrete proposal and includes all necessary works, including access.
(b) Accumulation with other development	
Are there potential cumulative impacts with other existing development or development not yet begun but for which planning permission exists?	For EIA purposes, a total of three approved applications have been identified as potential cumulative schemes (as provided in Table 2). However, it is considered unlikely that there would be potentially significant cumulative impacts during construction when mitigation measures, implemented through a CEMP are in place. It is also considered unlikely that there would be significant cumulative impacts once the developments are operational within the industrial and commercial setting. The PPG lists the key issues for Industrial Estate Development Projects being a potential increase in traffic emissions and noise. The site is surrounded by a network of Public Rights of Way (PRoW) and bus stops located to the south and east of the site,

SCREENING CRITERIA	PROPOSED DEVELOPMENT
	which could be used by employees/ visitors to access the site. In addition, Green Park train station currently under construction (anticipated to be completed by the end of 2020), and is located adjacent to the south west of the site. The accessibility of pedestrian and cycling routes and public transport will encourage future users of the site towards alternative, more sustainable means of transport to access the development, limiting traffic related effects.
Should the application for this development be regarded as an integral part of a more substantial project? If so, can related developments which are subject to separate applications proceed independently?	No. The proposed development is a discrete project and could proceed independently.
(c) Use of natural resources	
Will construction or operation of the development use natural resources such as land, water, material or energy, especially any resources which are non-renewable or in short supply?	The proposed construction and operational phases of the development will use resources in terms of land, water and energy as would be expected for a new commercial development. Some would be non-renewable (e.g. energy). None are anticipated to be in short supply.
(d) Production of waste	
Will the development produce wastes during construction or operation or decommissioning?	Construction waste would be sorted, reused and recycled where possible in accordance with all applicable legislation. Operational waste would be disposed of in line with RBC's requirements and managed in accordance with all applicable legislation.
(e) Pollution and nuisances	
Will the development release any pollutants or any hazardous, toxic or noxious substances to air?	During the construction phase of the proposed development, dust and emissions would be generated in association with plant and vehicles. Dust and emissions would be managed in accordance with standard best practice mitigation measures, implemented through a CEMP, in accordance with all relevant legislation, and is not anticipated to generate significant adverse effects. During the operation of the proposed development, there would be emissions from vehicles travelling to and from the site associated with up to 100,000sqm of commercial floorspace. The development will be accessed by Island Road in the north east of the site. The development includes for improvements to the vehicular access from Island Road and the junction with the A33. The development includes for 197 Heavy Goods Vehicle (HGV) parking spaces and 2,000 car parking spaces. As above, the site has access to PRoW and public transport and the accessibility will encourage sustainable travel to the site, thereby mitigating significant impacts on emissions to air. The operational development will be for employment use and is not associated with hazardous substances or toxic

SCREENING CRITERIA	PROPOSED DEVELOPMENT
	emissions to air. Any such materials would be stored and handled in accordance with relevant legislation. Any fuel will be stored and handled in accordance with the relevant legislation to minimise risk of contamination of surface water on site.
Is there a potential risk from leachates or escape of wastes of other products/by-products that may constitute a contaminant in the environment?	The site was previously used as landfill for domestic waste over a period of 10 years, starting in the late 1980s, in a former sand quarry. The maximum thickness of waste is approximately 12m and below that is a variable thickness of Reading Formation (5 – 16m thick below the site), followed by Seaford Chalk (Upper Chalk). The waste was tipped in linear cells separated by bunds and brought up to ground level. The bunds are thought to be composed of inert cohesive material including overburden. In the later stages of tipping, permission was later granted to deposit additional waste above ground level to form a dome shape. The bunds were extended to accommodate this additional tipping but their location may not be entirely coincident with the originals. There is no engineered lining or cap. A technical note³ (see Appendix 2) has been prepared which concludes that ongoing monitoring of the landfill site indicates no leachate escape and no evidence of off-site gas migration. The Reading Formation acts as a confining layer to groundwater in the Chalk and suggests that downward leakage of leachate from the landfill to the Chalk is prevented. The technical note sets out site investigation proposals which will enable conditions to be established in more detail including the relationship of the landfill with the surrounding ground. The development will be constructed to avoid disturbing the former landfill. The landfill site has an existing Environmental Permit and the conditions of this, especially landfill gas extraction and monitoring, will continue to be complied with. A Phase 1 Land Contamination Report would be submitted in support of the planning application. As above, the CEMP would be used to prevent accidental spillages of contaminants during the construction and operational phases of the development, in accordance with all relevant legislation. The land uses proposed are not highly contaminative and it is not expected that there is a high risk of contaminants being released into the environment.
Will the development cause noise and vibration or release of light, heat, energy or electromagnetic radiation?	Noise effects may result during construction. Any noise generated would be in the context of the surrounding existing built development mentioned above, so is unlikely to cause significant effects. The nearest sensitive receptors include existing residential properties in Green Park Village, located adjacent to the south of the site. The River Kennet is located adjacent to the north western corner of the site and is located approximately 50m to the north of

³ Technical Design Note, Proposal for Preliminary Intrusive Investigations, Hydrock (July 2020).

SCREENING CRITERIA	PROPOSED DEVELOPMENT
	the remainder of the site with Fobney Island LWS also 50m to the north of the site. Approximately 0.36 ha of the Fobney Island LWS is located within the site boundary. This will be fully retained, with the provision of a suitable buffer habitat adjacent to the LWS boundary. As above, construction effects will be managed through the CEMP and are not anticipated to generate significant adverse effects. The operational phase of the proposed development is for employment use and is not anticipated to generate excessive noise and is not sensitive to disturbances. The main source of operational noise would be from traffic from users of the development, however, there will be no significant adverse effects from noise. Lighting would be designed carefully in accordance with relevant British Standards and Institute of Lighting Professionals (ILP) (2011) Guidance Notes for the Reduction of Obtrusive Light. Lighting would also be designed to avoid adverse effects on habitats and species, including the River Kennet, as set out in Table 1. Electromagnetic radiation, heat or energy releases associated with normal commercial development of this type and scale are expected.
Will the development lead to risks of contamination of land or water from releases of pollutants onto the ground or into surface waters, groundwater, coastal waters or the sea?	Hydrocarbons including plant and vehicle fuel and lubricants will be used during the construction phase. These would be stored and used in accordance with all applicable legislation and the CEMP to avoid releases of pollutants. Any fuel will be stored and handled in accordance with the relevant legislation to minimise risk of contamination of surface water on site. There are no significant water courses or bodies within the site. There are two small ponds located in the south west of the site. The River Kennet is located adjacent to the north western corner of the site and is located approximately 50m to the north of the remainder of the site with Fobney Island LWS also 50m to the north of the site, which includes several pools of water. Approximately 0.36 ha of the Fobney Island LWS is located within the site boundary. This will be fully retained, with the provision of a suitable buffer habitat adjacent to the LWS boundary. There is an area of standing water within Green Park Village, located adjacent to the south of the site and large areas of standing water approximately 300m to the west of the site. The site is not located within an area designated as a Principal Aquifer and it is not within a groundwater Source Protection Zone (SPZ).

SCREENING CRITERIA	PROPOSED DEVELOPMENT
	Surface water run-off and foul water drainage will be managed on-site during the construction and operational phases. A surface water attenuation pond is proposed in the north of the site. The onsite sewers are likely to be adopted by Thames Water. A FRA and Surface Water Drainage Strategy will be prepared for the development and submitted with the planning application. No significant adverse effects related to contamination are anticipated.
(f) Risk of major accidents and/or disasters, including those caused by climate change and also having regard in particular to substances or technologies used	
Will there be a risk of accidents during construction or operation of the development which would have effects on people or the environment?	During the construction phase, the contractor(s) would implement measures in accordance with Health and Safety legislation/requirements, and best practice to minimise the risks of accidents that would have effects on people or the environment. Such measures would be included in the CEMP. According to the Environment Agency's Flood Map, the majority of the site is located within Flood Zone 1 and is at low risk of flooding. There are sections within the southern part of the site and the northern part of the site which are located within Flood Zones 2 and 3, and are at medium and high risk of flooding, respectively. Built development can lead to an increased risk of flooding by increasing surface water runoff. Development can often increase the area of impermeable surfaces thereby promoting rapid runoff to surface water sewers and watercourses rather than percolation into the ground. As above, a surface water attenuation pond is proposed in the north of the site and an FRA and Surface Water Drainage Strategy will be prepared and will ensure that flood risk to the site and surrounding area from surface water is not increased. No anticipated significant risks of accidents during operation as the proposed development does not involve users dealing with hazardous substances. The site does not lie within an area at risk of natural disasters such or tectonic activity. Flooding has been discussed above and significant effects are not anticipated.
Will the development involve use, storage, transport, handling or production of substances or materials which could be harmful to people or the environment (flora, fauna, water supplies)?	During the construction phase, certain materials may be present on the site which may be harmful to the environment. Through the implementation of appropriate environmental control measures in line with the relevant legislation and CEMP there will be no significant environmental effects. The operational development is of employment use and is not expected to involve the use, storage, transport, handling or production of substances or materials which could be harmful to the environment.

SCREENING CRITERIA	PROPOSED DEVELOPMENT
(g) Risks to human health	
What are the risks to human health such as from water contamination or air pollution?	The site includes an area in the east (approximately 0.5ha) to undertake improvements to the vehicular access from Island Road and the junction with the A33. This area lies within the Reading Air Quality Management Area (AQMA), which is declared for Nitrogen Dioxide (NO₂) and covers the A33. As above, dust and emissions during construction will be minimised through the CEMP. As above, emissions from vehicles during operation will be minimised due to the site's proximity to public transport and pedestrian and cycling accessibility. The development will encourage sustainable travel, thereby mitigating significant impacts on emissions to air. Operational emissions would be managed in line with all applicable legislation and permitting, if necessary. Therefore, the development is not anticipated to have a significant impact on local air quality and human health. As above, no significant risk of water contamination. The development would be connected to the mains water supply before it is operational so clean water would be supplied to future users. As above, whilst the site is a former landfill it has been restored and is appropriate for redevelopment. A technical note (see Appendix 2) has been prepared which assesses the development of commercial uses on the site and concludes that ongoing monitoring of the historic landfill site indicates no leachate escape and no evidence of off-site gas migration.
Other characteristics	
Potential physical changes (topography, land use, changes in water bodies etc) from construction, operation or decommissioning of the development?	The principal land use will change from undeveloped fields to land used for commercial and employment purposes. There will be no demolition required for the proposed development. The site comprises Grade 4 agricultural land and therefore is not considered Best and Most Versatile (BMV) agricultural land, as illustrated on the Magic GIS online map (https://magic.defra.gov.uk). The hedgerows which form internal field boundaries will be removed and those trees around the perimeter of the site will be preserved where feasible within the design of the scheme and new planting will be incorporated as part of the landscaping proposals. The proposed development will provide up to 100,000sqm GEA of commercial floorspace, comprising Class B8 (storage or distribution) uses, associated landscaping, parking and servicing areas and improvements to the vehicular access to the site from Island Road and the A33.

SCREENING CRITERIA	PROPOSED DEVELOPMENT
	The proposed development is being designed carefully, informed by a Topographical Survey. There will be no change to water bodies. The main physical change would occur during the construction phase. The proposed development is intended to be permanent, so decommissioning is not anticipated for the foreseeable future.
2. LOCATION OF THE DEVELOPMENT	
(a) Existing and approved land use	
Are there existing land uses on or around the location which could be affected by the development, e.g. residential, industry, commerce, recreation, public open space, community facilities, agriculture, forestry, tourism, mining or quarrying?	Surrounding land uses include existing built development, as detailed above. Construction will lead to an increase in traffic, emissions and noise but such effects would be minimised through the CEMP, temporary and not likely to be significant. Effects on surrounding land uses will be in the context of existing development around the site and are not anticipated to be significant. Once operational, the proposed development would be in keeping with other similar land uses in the local area and effects on neighbouring users are not anticipated to be significant. The development includes for landscaping.
Is the development located in a previously undeveloped area where there will be loss of greenfield land?	The site is currently undeveloped but has previously been used as a landfill site for household waste in the 1990s. The site has now been restored and is currently unused.
(b) Relative abundance, availability, quality and regenerative capacity of natural resources in the area and its underground*	
Are there any areas on or around the location which contain important, high quality or scarce resources which could be affected by the development? • soil • land • groundwater resources • surface waters • biodiversity • forestry • agriculture • fisheries • tourism • minerals	A Preliminary Ecological Appraisal⁴ has been prepared for the site (Appendix 3) and an Extended Phase 1 Habitat survey was completed on 2nd July 2020. The majority of the site is formed of low value habitats largely comprising poor semi-improved grassland which was dominated by coarse grass species whilst forb diversity, which was largely confined to the field boundaries, was limited in both its diversity and abundance. Habitats of greater value recorded on-site include a brook and associated broadleaved plantation woodland which formed the southern boundary of the site, a pond located on the southern boundary, an area of unmanaged marshy grassland located in the north-west of the site and a network of species-poor hedgerows present throughout the site. Other habitats recorded on-site include patches of dense scrub largely located on the boundaries of the site. The habitats of greater value will largely be retained within the scheme except for the internal network of hedgerows which are to be lost to facilitate the development. New hedgerow planting will be incorporated within the scheme

⁴ Technical Note – Ecology Summary, Island Road, Reading, FPRC Environment and Design Ltd (June 2020)

SCREENING CRITERIA	PROPOSED DEVELOPMENT
	to compensate for this loss on a like-for-like basis. Initial species-specific surveys have identified a range of species using the site, and any potential impacts are anticipated to be dealt with through standard measures, following the mitigation hierarchy. Until surveys are completed, full guidance on specific measures is not possible. More general measures will, as a minimum, include a sensitive lighting strategy with regards to retained and boundary features, standoffs around sensitive ecological receptors, habitat enhancements for impacted species and the inclusion of targeted guidance within a CEMP to ensure best practices are adhered to with regards to ecology; including both temporal and spatial limitations. Expected survey work is detailed in Appendix 3. Following the completion of the required surveys a review of the ecological data will identify potential impacts which may arise as a result of development, with the aim, where possible of avoiding potential impacts through design alterations, layout or working methods incorporated into the development delivery. There are no statutorily designated sites within a 5km radius of the site. There are 13 locally designated sites within 2km of the site. With the exception of the Kennet Valley East, Biodiversity Opportunity Area none of the other local sites are anticipated to be impacted directly or indirectly by the proposed development. Approximately 9 ha of the Kennet Valley East, Biodiversity Opportunity Area lies within the site boundary. This area covers a large portion of the Kennet valley and is based on geographical location rather than specific criteria. The area present within the site boundary is dominated by heavily managed grassland, and some areas of more diverse grassland bordering the River Kennet, proposals within these areas of the site are for attenuation and mitigation purposes and as such the scheme is considered to have a negligible impact on the wider identified area. The River Kennet is located adjacent to the north western corner of the site and is located approximately 50m to the north of the remainder of the site with Fobney Island LWS also 50m to the north of the site. Approximately 0.36 ha of the Fobney Island LWS is located within the site boundary. This will be fully retained, with the provision of a suitable buffer habitat adjacent to the LWS boundary. An environmental DNA (eDNA) analysis assessment⁵ was undertaken by ADAS on samples from two suitable waterbodies within the south west of the site in June 2020 to identify signs of Great Crested Newt (GCN) presence. The results were negative which confirmed that DNA from GCN has not been detected in the waterbodies and therefore no significant effects on this species are anticipated.

⁵ ADAS eDNA Results Sheet, ADAS (June 2020)

SCREENING CRITERIA	PROPOSED DEVELOPMENT
	As above, the site comprises Grade 4 agricultural land and therefore is not considered Best and Most Versatile (BMV) agricultural land. There is a drain running through the north west corner of the site which connects with the River Kennet, approximately 50m to the north of the site at this point. As above, the majority of the site is located within Flood Zone 1 and is at low risk of flooding. There are sections within the southern part of the site and the northern part of the site which are located within Flood Zones 2 and 3, and are at medium and high risk of flooding, respectively. The site is not located within an area designated as a Principal Aquifer and it is not within a groundwater SPZ. None of the other features are present in or adjacent to the site.
(c) Absorption capacity of the natural environment**	
Are there any areas on or around the location which are protected under international or national or local legislation for their ecological, landscape, cultural or other value, which could be affected by the development?	There are no statutory designations within or directly adjacent to the site i.e. there are no World Heritage Sites, Scheduled Monuments, AONB, SSSI, National Parks, SACs, SPAs, or Ramsar Sites. The Chilterns AONB is located approximately 5km to the north of the site (north of Reading) and is not anticipated to be affected directly or indirectly by the proposed development. Views of the development from the AONB are completely curtailed by the intervening urban area of Reading. The northern area of the site is located within a locally listed 'Major Landscape Feature'. As above, planting will be incorporated as part of the landscaping proposals and buffer habitat adjacent to the LWS boundary in the northern area of the site. A Landscape Assessment will be submitted with the planning application. A Preliminary Ecological Appraisal⁶ has been prepared for the site (Appendix 3). There are no statutorily designated sites within a 5km radius of the site. As above, there are no significant ecological effects anticipated. There are 13 locally designated sites within 2km of the site. These are not anticipated to be affected directly or indirectly by the proposed development. As above, the majority of the site is formed of low value habitats. The habitats of greater value will largely be retained within the scheme except for the internal network of hedgerows which are to be lost to facilitate the development. New hedgerow planting will be incorporated within the scheme to compensate for this loss on a like-for-like basis. Those trees around the perimeter of the site will be preserved where feasible within the design of the scheme and new planting will be incorporated as part of the landscaping

⁶ Technical Note – Ecology Summary, Island Road, Reading, FPRC Environment and Design Ltd (June 2020)

SCREENING CRITERIA	PROPOSED DEVELOPMENT
	proposals. A surface water attenuation pond is proposed in the north of the site and the attenuation area can be used for ecological enhancements, if required. Initial species-specific surveys have identified a range of species using the site, and any potential impact are anticipated to be dealt with through standard measures. The nearest designated heritage feature to the site is a Grade II listed building, Kirtons Farmhouse, located approximately 650m from the south western boundary of the site. Two scheduled monuments are located within 5km of the site. These are High Bridge and Reading Abbey (a Cluniac and Benedictine monastery and civil war earthwork) which are located approximately 2.8km and 3.2km to the north east of the site, respectively. The site is not located within a Conservation Area. Prospect Park Grade II Registered Park and Garden is located approximately 1.3km to the north west of the site. No effects are anticipated. There is a locally designated area of archaeological potential in the north of the site, however much of this area will be retained, as above. The redevelopment of the site has been informed by a robust understanding of its surrounding context. The development seeks to respond appropriately to the context in which it is located and no significant effects on built heritage are anticipated.
Are there any other areas on or around the location which are important or sensitive for reasons of: • Wetlands, riparian areas, river mouths; • coastal zones and the marine environment; • mountains and forest areas; • nature reserves and parks; • European sites and other areas classified or protected under national legislation; • Areas in which there has already been a failure to meet the environmental quality standards laid down in Union legislation and relevant to the project, or in which it is considered that there is such a failure; • Densely populated areas; • Landscapes and sites of historical, cultural or archaeological significance.	As above. None of the other features listed are present nearby.
Are there any areas on or around the location which are used by protected, important	As above, no significant adverse effects on protected, important or sensitive species of fauna or flora are likely. The results of a GCN eDNA analysis assessment were

SCREENING CRITERIA	PROPOSED DEVELOPMENT
or sensitive species of fauna or flora e.g. for breeding, nesting, foraging, resting, overwintering, migration, which could be affected?	negative which confirmed that DNA from GCN has not been detected in two suitable waterbodies within the south west of the site and therefore no significant effects on this species are anticipated.
Are there any inland, coastal, marine or underground waters on or around the location which could be affected?	As above, no significant adverse effects on water resources are likely.
Are there any groundwater source protection zones or areas that contribute to the recharge of groundwater resources?	No.
Are there any areas or features of high landscape or scenic value on or around the location which could be affected?	No. Not within an AONB. The northern area of the site is located within a locally listed 'Major Landscape Feature'. There are no other known features of landscape importance on or adjacent to the site. The landscape character of the site reflects the local landscape context with the urban fringe. The proposed development includes areas of new landscaping. A Landscape Assessment will be submitted with the planning application.
Are there any routes or facilities on or around the location which are used by the public for access to recreation or other facilities, which could be affected?	Island Road provides access to the site from the north east. The A33 is located to the east of the site which connects the centre of Reading to the M4 in the south. The M4 is located approximately 1km to the south of the site, with the nearest junction being junction 11. The site is surrounded by a network of PRoW, including PRoW ref no. 2 which is located to the north of the site and follows the River Kennet and PRoW ref no. 10 which is located to the east of the site and runs in between the RE3 recycling centre and the sewage works. Bus stops are located to the south and east of the site, which could be used by employees/ visitors to access the site. In addition, Green Park train station currently under construction (anticipated to be completed by the end of 2020) is located adjacent to the south west of the site. There is likely to be an increased number of vehicles using the local road network once the proposed development is operational. The development will be accessed by Island Road in the north east of the site. The development includes for improvements to the vehicular access from Island Road and the junction with the A33. The development includes for 197 HGV parking spaces and 2,000 car parking spaces. A Transport Assessment would be submitted in support of the planning application.
Are there any transport routes on or around the location which are susceptible to congestion or which cause environmental	The construction phases of the proposed development would involve changes to traffic movements (e.g. use of HGVs), however effects are unlikely to be significant. There is likely to be an increased number of vehicles using the

SCREENING CRITERIA	PROPOSED DEVELOPMENT
problems, which could be affected?	local road network once the proposed development is operational. A Transport Assessment would be submitted in support of the planning application. A CTMP will be prepared and implemented during works to minimise congestion.
Is the development in a location where it is likely to be highly visible to many people?	The potential for local views of the site exists from adjacent and nearby roads and public rights of way, and the Green Park Village residential area to the south. The development is not out of scale when compared to the existing urban baseline and is in keeping with the existing industrial and commercial areas in the surrounding area. The proposed development is being designed carefully and will be integrated into the surrounding area and no significant effects on views are anticipated. In addition, the proposed development includes for landscaping, and planting will be established along the borders of the site. As such, visual impacts are not considered to be significant. A Landscape Assessment will be submitted with the planning application.
Are there any areas or features of historic or cultural importance on or around the location which could be affected?	No significant impacts on heritage assets, as detailed above.
Are there any areas on or around the location which are densely populated or built up, which could be affected?	A above. Significant effects are not likely.
Are there any areas on or around the location which are already subject to pollution or environmental damage e.g. where existing legal environmental standards are exceeded, which could be affected?	As above, mitigation measures will ensure that there are no significant effects on air quality.
Is the location of the development susceptible to earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions e.g. temperature inversions, fogs, severe winds, which could cause the development to present environmental problems?	As above. Significant effects are not likely. The development includes areas of landscaping which will have benefits regarding adaptation to and mitigation for climate change.
CHARACTERISTICS OF THE POTENTIAL IMPACT	
(a) Extent and nature of the impact	
Will the effect extend over a large area?	No. Direct effects will be confined to the site and the land immediately adjacent. The proposed development will be visible from certain locations in the surrounding area, such as adjacent and nearby roads and pedestrian routes. As set out above,

SCREENING CRITERIA	PROPOSED DEVELOPMENT
	landscape is a key consideration in the design process to ensure that the development respects local context.
Will many people be affected?	No, as above. The development is being designed carefully, informed by numerous technical consultants, to assess its potential effects. It is unlikely that people would be adversely affected by the development once operational.
What will be the nature of the impact?	Short term increase in HGV traffic movements, noise, dust and emissions during the construction phase. All effects minimised through the CEMP. Effects are not anticipated to be significant. Due to the location of the site surrounded by existing industrial and commercial uses, there are unlikely to be significant effects relating to traffic, noise and emissions (key issues set out in the PPG) once the development is operational.
(b) Transboundary nature of the impact	
Will there be any potential for transboundary impact? (n.b. Development which has a significant effect on the environment in another Member State is likely to be very rare. It is for the Secretary of State to check Environmental Statements to decide whether there is likely to be such an effect in each case).	No.
(c) Magnitude and complexity of the impact	
Will there be a large change in environmental conditions?	No. The site is surrounded by existing built development. The development will be integrated into the surrounding area and includes the provision of landscaping.
Will the effect be unusual in the area or particularly complex?	No.
Will many receptors other than people (fauna and flora, businesses, facilities) be affected?	No.
Will valuable or scarce features or resources be affected?	No.
Is there a risk that environmental standards will be breached?	No.
Is there a risk that protected sites, areas, and features will be affected?	No.
(d) Probability of the impact	
Is there a high probability of the effect occurring?	The effects of the proposed development can be clearly established, and the probability of any effects determined with reasonable confidence.

SCREENING CRITERIA	PROPOSED DEVELOPMENT
Is there a low probability of a potentially highly significant effect?	As above.
(e) Expected onset, duration, frequency and reversibility of the impact	
What will result in the onset of the impact?	Development will commence following the discharge of pre-commencement conditions attached to the planning permission and the issue of any environmental permitting.
Will the effect continue for a long time?	Construction effects would be short term in duration and the operational effects would be long term.
Will the effect be permanent rather than temporary?	Construction effects would be temporary, and the operational effects would be permanent.
Will the impact be continuous rather than intermittent?	Construction – intermittent Operation – continuous
If intermittent, will it be frequent rather than rare?	Frequent.
Will the impact be irreversible?	Construction – Yes Operation – No
Will it be difficult to avoid or reduce or repair or compensate for the effect?	No.
(f) Possibility of effectively reducing the impact	
What is the possibility of the likely impacts arising from the Proposed Development being effectively reduced?	The design of the development is being informed by numerous specialist technical consultants. Appropriate design for the location will ensure that potentially significant effects are avoided altogether. Technical assessments submitted in support of the planning application will propose additional mitigation measures, if required, that could be secured by planning condition to minimise adverse effects and enhance beneficial effects. The mitigation measures proposed are set out in Table 1 of this report and referred to, as necessary in previous sections of this table.

4 CONCLUSION

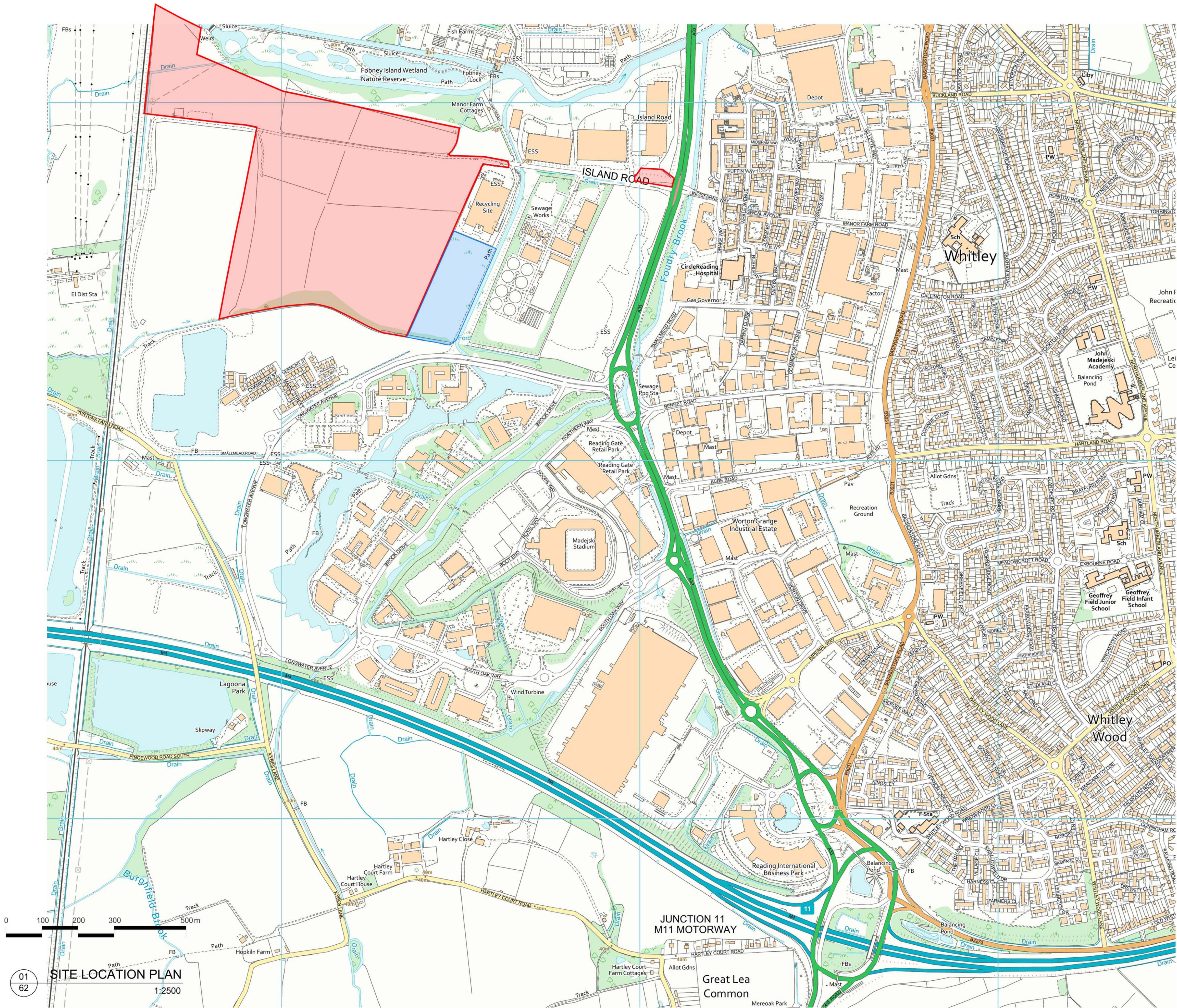
- 4.1 This Screening assessment has considered whether the proposed development of Island Road, Reading, is likely to give rise to significant effects on the environment. The proposed development will comprise Class B8 (storage or distribution) uses, associated landscaping, parking and servicing areas and improvements to the vehicular access to the site from Island Road and the A33.
- 4.2 The proposed development falls within Schedule 2, 10 (a) of the EIA Regulations, as an Industrial Estate Project. The site is not located within a sensitive area as defined by the EIA Regulations. It falls above the indicative criteria and screening thresholds at more than 5ha in area. Accordingly, the Applicant has prepared a Screening Report to seek formal confirmation from RBC that the proposed development would not be likely to result in significant effects on the environment. The proposed development's potential cumulation with other committed development within the surrounding area has been considered in this assessment.
- 4.3 With regard to the indicative criteria and thresholds identified in the PPG (set out in Table 3 above), it is considered that the principal environmental effects will relate to construction and operational increases in traffic movements and associated noise and air quality emissions, although as set out above, these effects could be managed in accordance with best practice through implementation of the CEMP. The site has previously been used as a quarry and as a landfill site for the household waste during the 1990s. However, since this the site has been restored and therefore it is not anticipated to be heavily contaminated (see Appendix 2 for further information).
- 4.4 The proposed development would not lead to effects that are different in nature or complex and would be integrated with the existing and consented similar land uses surrounding the site. The proposed development is in keeping with the existing industrial and commercial uses in proximity to the site. A Transport Assessment will be submitted with the planning application and will detail measures to be incorporated to reduce impacts on the local highway network. The proposals include the provision of new landscaping, which will provide enhancements for both biodiversity and the end users of the proposed development.
- 4.5 The Screening assessment has identified that significant effects on the environment are not considered likely either alone or in combination with other development. Whilst the proposed development area exceeds the indicative threshold of more than 20ha identified in the PPG

(Table 3 above), potential effects from the proposed development could be managed in accordance with standard methods and the mitigation outlined in Table 1 of this report.

- 4.6 The proposed development is therefore not considered to be formal EIA development as defined by the EIA Regulations.

APPENDIX 1

SITE LOCATION PLAN



NOTES:

SUBJECT TO STATUTORY CONSENTS

SUBJECT TO SURVEY

BASED ON OS MAP REPRODUCED BY PERMISSION OF CONTROLLER OF HM STATIONARY OFFICE (c) CROWN COPYRIGHT

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— SITE AREA 41.95 HA / 103.65 ACRES

C	31/07/2020	Boundary updated	GZ	AC
B	31/07/2020	Boundary updated	GZ	AC
A	14/07/2020	Boundary updated	GZ	AC
-	06/11/2019	First issue	GZ	AC
REV	DATE	NOTE	DRAW	CHK



SEGR O

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TITLE
ISLAND ROAD, READING
DRAWING
SITE LOCATION PLAN

CLIENT
SEGR O

DATE	SCALE	DRAWN
NOVEMBER 2019	1 5000 @ A1	AC
	STATUS	CHECKED
	FEASIBILITY	AC

DRAWING NUMBER
30487 / FE / 062C

APPENDIX 2
GROUND CONDITIONS TECHNICAL NOTE
HYDROCK (JULY 2020)

Project name	Proposed Commercial Development Smallmead Farm Landfill, Island Road Reading		
Design note title	Proposal for Preliminary Intrusive Investigations		
Document reference	12720-HYD-XX-XX-RP-GE-1006		
Author	Eric Cooper SiLC		
Revision	P01		
Date	27 July 2020	Approved	✓

1. BACKGROUND

It is proposed to re-develop the Smallmead Farm Landfill for logistical warehousing. As the site is a former domestic waste landfill with an active Environmental Permit it will be necessary to ensure that the development does not result in any form of environmental impairment. It is also a requirement that the conditions of the Environmental Permit, especially landfill gas extraction and monitoring, can continue to be complied with. To meet these objectives, it is necessary to understand the ground conditions at the site.

In September 2013 Hydrock issued Report Reference R/13293/001: Proposed Commercial Development at Island Road, Reading; Preliminary Conceptual Model. This report provided a conceptual interpretation of ground conditions and made recommendations for a non-intrusive geophysical survey to be followed by preliminary intrusive investigations to establish conditions in more detail.

This 2013 Hydrock report was issued to the Environment Agency and was the subject of a letter from the Agency dated 07 November 2013 (Agency reference WA/3013/115841/01-L01) and, later, a meeting with Agency Officers on 09 December 2013. The outcome was general approval of the Hydrock approach and an agreement that the Agency would be consulted again when the geophysics results were available to provide the basis for the preliminary investigations. The geophysics is the subject of Reynolds International Report J16371.278 dated 22 April 2016.

This Hydrock Technical Note (TDN) describes the scope of the preliminary site investigation proposals. However, this TDN reference 12720-HYD-XX-XX-RP-GE-1006 represents an update to Hydrock's Technical Note reference 13293/002 issued in January 2017, since when, Item 4 of the Proposed Scope of Work shown in Table 1 below (the Window Sample Hole investigation into leachate levels) has been undertaken and monitoring is underway.

2. OBJECTIVE

The objective of this Technical Note is to describe proposals for preliminary investigations for review by the Environment Agency.

The objectives of the investigations are to:

- provide information that will help to 'ground truth' the current geophysical interpretation and resolve anomalies;

- provide information concerning the landfill in its current state, including its relationship with the surrounding ground;
- allow preliminary assessments to be made of foundation solutions that will meet all development requirements without any adverse environmental impact.

It is accepted that the preliminary investigations may need to be followed by further investigations to resolve residual uncertainties.

3. REFERENCE DOCUMENTS

Links to the following documents have been supplied separately:

Hydrock, September 2013. Report Reference R/13293/001: Proposed Commercial Development at Island Road, Reading; Preliminary Conceptual Model.

Reynolds International, December 2015. Report Reference J15369.276. Geophysical Investigations at Smallmead Farm Landfill Site Reading.

Reynolds International, April 2016. Report Reference J15369.278. Phase 2 Geophysical Investigations at Smallmead Farm Landfill Site Reading.

4. SUMMARY OF CONDITIONS

This section provides a brief description of site conditions to put the proposed investigations into context. More detailed descriptions of the landfill are provided in Hydrock and Reynold's International reports referenced above.

The waste was tipped over a period of 10 years starting in late 1980s in a former sand quarry. The maximum thickness of waste is approximately 12m. Below that is a variable thickness of Reading Formation (5.0m -16m thick below the site) followed by Seaford Chalk (Upper Chalk). The waste was tipped in linear cells separated by bunds and brought up to ground level. The bunds are thought to be composed of inert cohesive material including overburden.

In the later stages of tipping, permission was later granted to deposit additional waste above ground level to form a dome shape. The bunds were extended to accommodate this additional tipping but their location may not be entirely coincident with the originals. There is no engineered lining or cap. Gas is extracted from this landfill and the adjacent (more modern) Burghfield landfill and used at a generating station with the option of flaring. It is likely that Smallmead Farm currently contributes significantly less gas than Burghfield.

Ongoing monitoring indicates no leachate escape from the landfill and no evidence of off-site gas migration. Off-site Chalk borehole monitoring data indicate that the Reading Formation acts as a confining layer to groundwater in the Chalk, which is artesian in the site area. This relationship suggests that downward leakage of leachate from the landfill to the Chalk is prevented.

5. PROPOSED SITE INVESTIGATION LOCATIONS

The scope of works described in Section 6 below makes reference to borehole locations and trial pits etc. the location of which is shown on Hydrock Drawing 12720-HYD-XX-XX-DR-GE-1009-S2-P01 attached. This drawing is an update to Drawing 13293/D007 presented in Technical Note 13293/002 to include the Window Sample Holes installed in April 2020.

6. PRELIMINARY INVESTIGATIONS PROPOSED SCOPE OF WORK

Table 1: Proposed Scope of Work

Reference	Activity	Purpose	Comment
1	5 slit trenches	To confirm bund location at each of 5 proposed shell & auger borehole locations (Ref 2 and 3 below)	To top of waste only
2	4 shell & auger or rotary boreholes sited on bunds to be drilled through into the Chalk	- Bund characteristics - Lithology and geotechnical properties of Reading Beds - Groundwater quality in the underlying Chalk (pre-development baseline condition)	- drilled at 3 diameters, reducing from 300 mm diameter (bund) >200mm (Reading Formation) >100mm (Chalk) Case off at base of bund and drill through a grout plug - Same again at Reading Formation/Chalk junction (to prevent pollution of Chalk) - Slotted standpipe in Chalk to measure groundwater levels and quality - Geotechnical testing (in situ and lab)
3	1 shell and auger or rotary borehole sited on bund to be drilled through into the Chalk	Investigation of a deep EM anomaly identified by the geophysics	- Sited on a bund - Construction sequence as above
4	20 WSH with standpipes in waste and gas taps	- Confirm leachate levels in waste (single hydraulic unit or separate between cells?) - Gas concentrations and flows - Leachate conductivity	- Circa 6m deep max - In areas where there are no leachate wells - Include water level in bunds to assess tightness of cells - Site works undertaken in April 2020; results awaited
5	15 trial pits	Confirming bund locations elsewhere on site where there is uncertainty in the geophysics	Excavated and backfilled
6	4 trial pits in waste with density measurements	- To investigate EM anomalies - To obtain density values of waste	Excavated and backfilled
7	6-8 trial pits	To explain the linear EM anomalies	Excavated and backfilled

Reference	Activity	Purpose	Comment
8	Sampling and testing	Contamination of near-surface soils and deeper leachate and groundwater	

7. CONSTRUCTION METHODS

There will be a focus on providing valuable information whilst making sure that no environmental impairment occurs. In particular:

- All works will be undertaken with the permission of the Permit Holder (Cemex);
- Shell & auger or rotary drilling will be preceded by slit trench investigations to confirm that the holes are sited on a bund and not waste;
- Shell & auger or rotary drilling (See drawing 12720-HYD-XX-XX-DR-GE-1010-S2-P01 attached) will stop 1m into the Reading Formation at which point a permanent casing will be installed and cemented in. A 2m bentonite plug will then be placed at the base of the hole. Drilling will then continue through the plug at a reduced diameter to 1m into the Chalk and again, a casing will be set and a 2m cement-bentonite plug will be placed at the base of the hole. The drilling diameter will again be reduced and drilling will continue until approximately 5m of competent Chalk has been penetrated. A standpipe will then be installed with a gravel surround and grouting to the surface. These proposals are designed to establish baseline groundwater quality in the Chalk without the risk of downward migration of leachate into the underlying Reading Beds or Chalk.
- Window sample holes will stop several metres above the base of the waste.
- Trial pits will not penetrate the waste to any significant extent and will be fully reinstated on completion;
- Care will be taken not to damage or otherwise interfere with the existing gas extraction network (as indicated on plans and proven by the geophysics); and
- All works will be allocated to qualified and experienced contractors and will be subject to full-time supervision by competent professionals

The final selection of drilling techniques will be subject to of review of the data from the April 2020 phase of investigation and the most appropriate drilling method will be proposed.

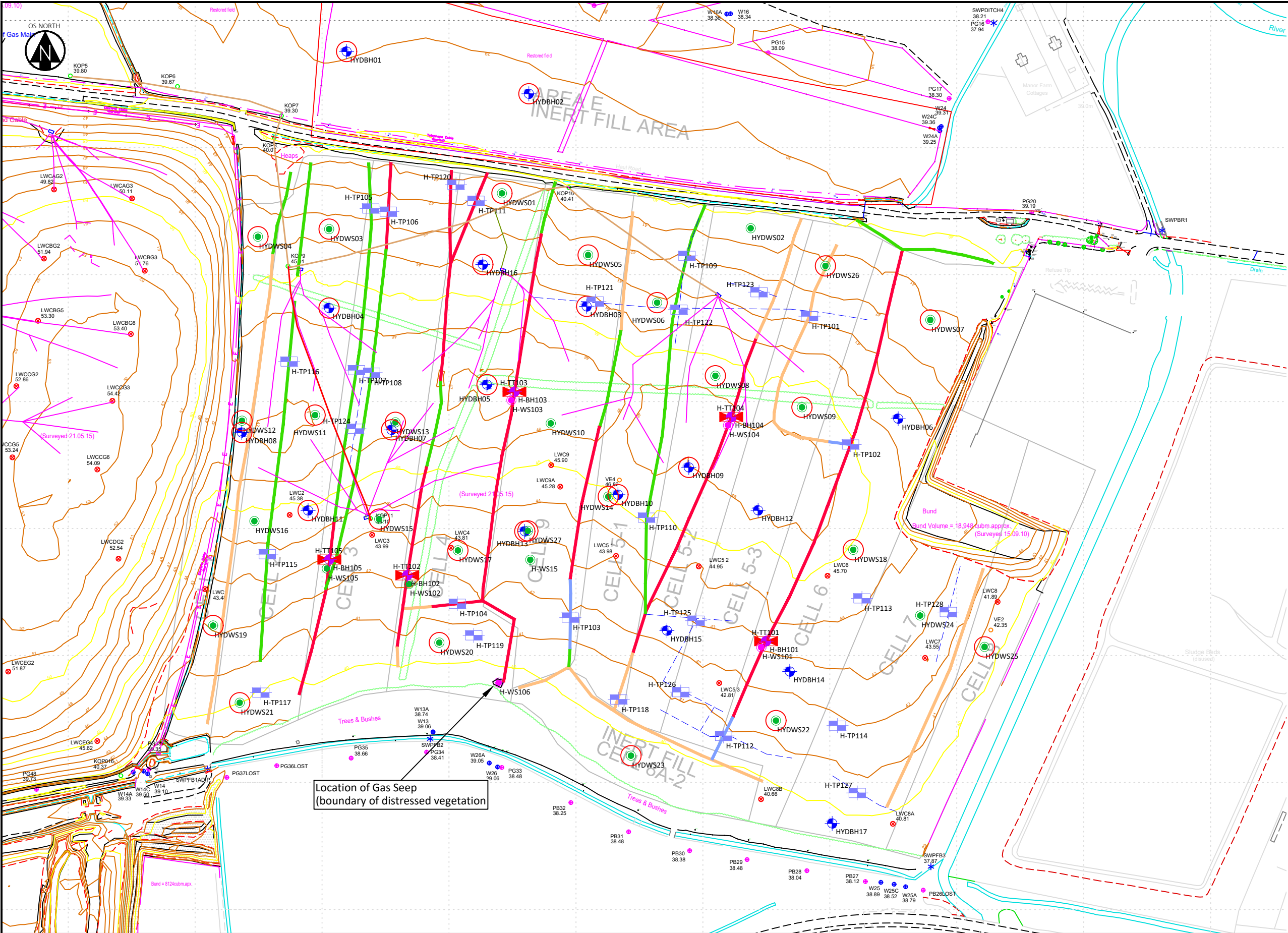
8. CLOSING REMARKS

The site investigation proposals presented herein are designed to provide essential information about the proposed development site with minimal risk. Alongside the geophysical investigations they represent an essential first step in planning the safe development of the site with the approval of the regulatory authorities.

On behalf of Hydrock Consultants Limited



Eric Cooper FGS C. Geol. SiLC



Geophysical Findings

- Bund - high confidence
- Bund - moderate confidence
- Bund - low confidence
- Bund - inferred
- Linear EM Anomaly

Existing Infrastructure

- Gas Extraction Network (35mm)
- Gas Extraction Network (unknown Ø)
- Landfill cell dimensions according to historic plans
- Leachate Well
- Vent
- External Gas well
- Knock out Pot
- Internal Gas well
- Water Monitoring Borehole
- Leachate well Flow meter
- Leachate well Data logger
- Surface water Monitoring Point

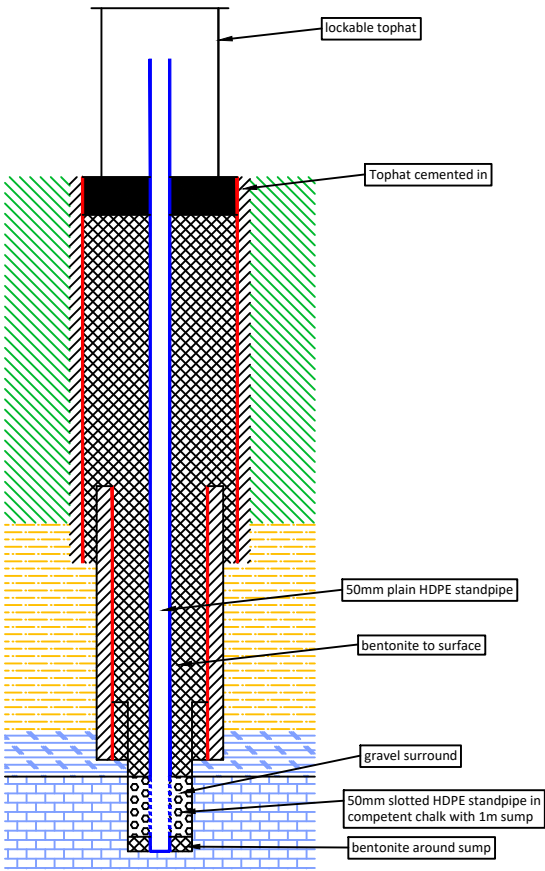
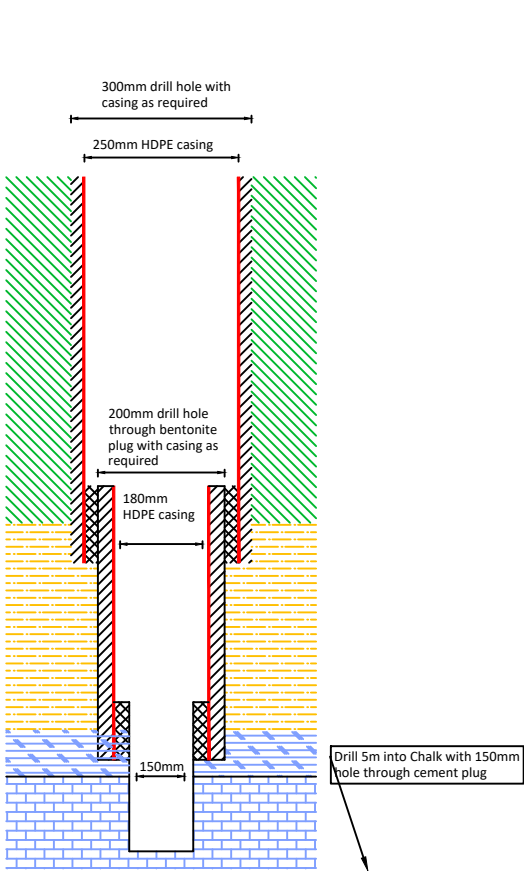
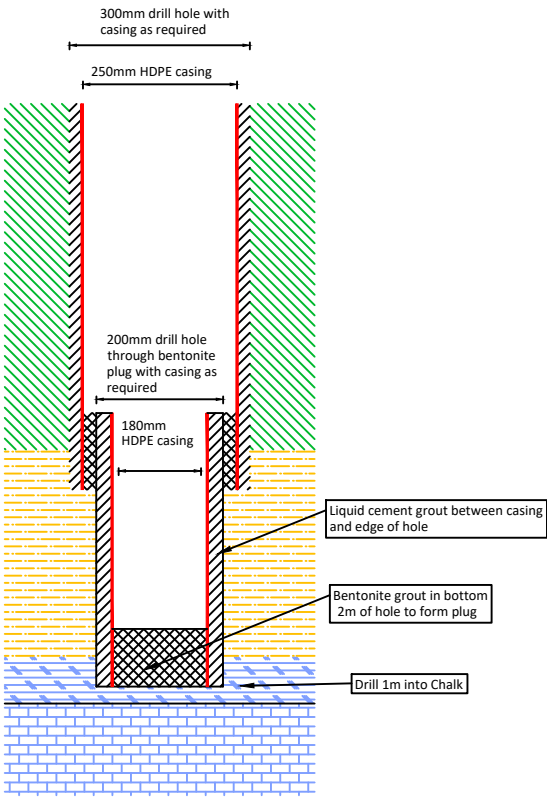
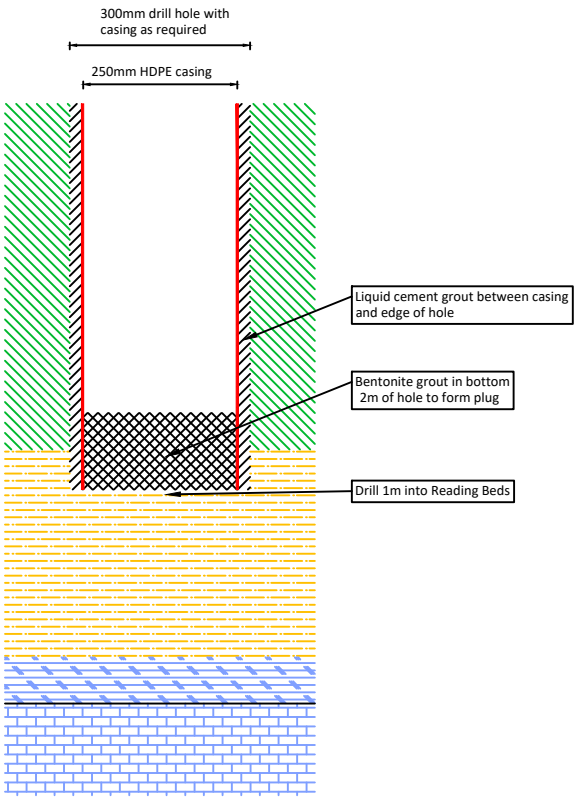
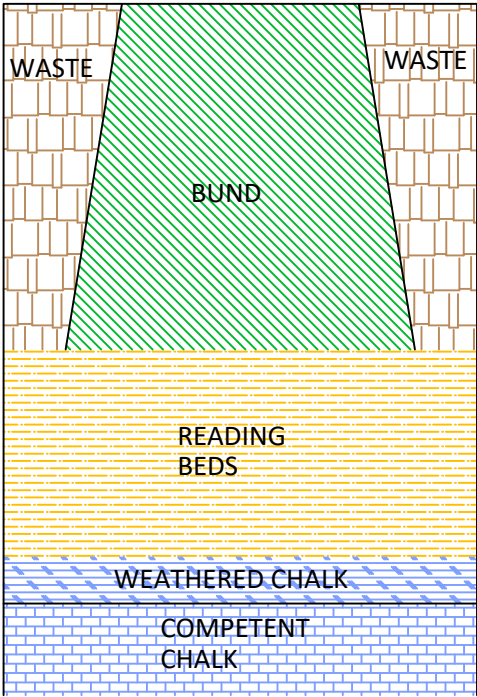
Hydrock 2020 Investigation

- Cable Percussion
- Window Sample
- Installation

Proposed Investigation

- 5 x Cable Percussion to circa 30m bgl. (H-BH101-106) Triple cased in the Bund, Reading Based and Upper Chalk. Installation into the Upper Chalk.
- 5 X Slit trench in all locations prior to borehole to prove bund location and width. (H-TT01-05)
- 6 x Window Sample boreholes to circa 5m bgl with gas and groundwater installations.
 - 5 located adjacent to CP holes (H-WS101-105);
 - 1 located adjacent to the gas seep (H-WS107)
- 28 Trialpits:
 - 16 trial pits to circa 1.5m bgl to confirm bund locations (H-TP101-116);
 - 4 trial pits to circa 4m bgl to investigate EM anomalies and perform in-situ density resting (H-TP117-120);
 - 6-8 trial pits to circa 2m bgl to investigate linear EM anomalies (H-TP121-128),

KEY	NOTES 1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing. 2. This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications. 3. This drawing has been based on the following drawings and information: Drawing based on CH Surveys May 2015 Topo Plan, reference BUR27116, dated July 2015 4. This drawings represents an update of a previous Hydrock drawing 13293/D007.				Hydrock 4 Lakeside Festival Way Stoke-on-Trent ST1 5RY t: +44(0) 1782 261919 e: stoke@hydrock.com or visit www.hydrock.com	TITLE		
						Proposed Investigation Plan (Indicative)		
						HYDROCK PROJECT NO. C-12720	SCALE @ A3 1:3,000	
						CLIENT		
						SEGRO PLC		
						PROJECT		
						ISLAND ROAD, READING		
						PURPOSE OF ISSUE SUITABLE FOR INFORMATION		STATUS S2
						DRAWING NO. (PROJECT CODE-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER) 12720-HYD-XX-XX-DR-GE-1009		REVISION P01
						PO1		
REV.								
DRAWN BY		DATE						
CHECKED BY		DATE						
APPROVED BY		DATE						



KEY

NOTES

1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing.
2. This drawing is to be read in conjunction with all relevant Engineers' and Service Engineers' drawings and specifications.

PO1	FIRST ISSUE					
	LW	27/07/20	EC	27/07/20	EC	27/07/20
REV.	REVISION NOTES/COMMENTS					
	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE



CLIENT

SEGRO PLC

PROJECT

ISLAND ROAD, READING

TITLE

Proposed Deep Borehole Schematic

HYDROCK PROJECT NO.
C-12720

SCALE @ A3
NTS

PURPOSE OF ISSUE
SUITABLE FOR INFORMATION

STATUS
S2

DRAWING NO. (PROJECT CODE-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)
12720-HYD-XX-XX-DR-GE-1010

REVISION
P01

APPENDIX 3
PRELIMINARY ECOLOGICAL APPRAISAL
FPRC ENVIRONMENT AND DESIGN LTD (JUNE 2020)



June 2020

Technical Note – Ecology Summary

Island Road, Reading

FPCR Environment & Design Ltd have been instructed by SEGRO to carry out a Preliminary Ecological Appraisal at Island Road, Reading to inform a planning proposal for commercial development of the site. This summary provides an outline of the surveys completed to date to inform the EIA screening report.

Internationally Designated sites

A desktop study completed using the government MAGIC website identified that there no statutorily designated sites within a 5km radius of the site.

Locally designated sites

There are 13 locally designated sites within 2 km of the site. Approximately 0.36 ha of the Fobney Island LWS is located within the site boundary, current proposals show full retention of these areas, with the ability to provide suitable buffer habitat adjacent to the LWS boundary. With the exception of the Kennet Valley East, Biodiversity Opportunity Area none of the other local sites are anticipated to be impacted directly or indirectly by the proposed development. Approximately 9 ha of the Kennet Valley East, Biodiversity Opportunity Area lies within the site boundary. This area covers a large portion of the Kennet valley and is based on geographical location rather than specific criteria. The area present within the site boundary is dominated by heavily managed grassland, and some areas of more diverse grassland bordering the River Kennet, proposals within these areas of the site are for attenuation and mitigation purposes and as such the scheme is considered to have a negligible impact on the wider identified area.

Habitats

An Extended Phase 1 Habitat survey was completed on 2nd July 2020 following the standard methodology as recommended by Natural England. The results of this survey showed that the majority of the site was formed of low value habitats largely comprising poor semi-improved grassland which was dominated by coarse grass species whilst forb diversity, which was largely confined to the field boundaries, was limited in both its diversity and abundance. However, a small section of grassland immediately to the south of the recycling centre on the eastern boundary of the site supported a greater diversity of forb species with species including common knapweed *Centaurea nigra*, creeping cinquefoil *Potentilla ripens* and oxeye daisy *Leucanthemum vulgare* recorded here. Other habitats of greater value recorded on-site include a brook and associated broadleaved plantation woodland which formed the southern boundary of the site, a pond located on the southern boundary, an area

of unmanaged marshy grassland located in the north-west of the site and a network of species-poor hedgerows present throughout the site. Other habitats recorded on-site include patches of dense scrub largely located on the boundaries of the site.

Current proposals indicate that the habitats of greater value will largely be retained within the scheme except for the internal network of hedgerows which are to be lost to facilitate the development. Consequently, it is recommended that new hedgerow planting is incorporated within the scheme to compensate for this loss on a like-for-like basis. Habitat loss is largely confined to the poor semi-improved grassland which is not considered to represent a constraint to development due to its low ecological value. It is considered that through the retention of the habitats of greater value and the creation of semi-natural habitats within the Green Infrastructure (GI), such as species-rich grassland, that the ecological value of the site can be maintained and enhanced as a consequence of the development.

Badgers

There were no badger setts or evidence of badger utilising the site identified during the surveys undertaken to date. The suitability of the core of the site for badgers is limited due to the lack of cover and low habitat diversity. However, the grassland does provide some limited foraging opportunity, while the hedgerows and woodland blocks on the peripheries of the site could provide suitable areas for setts. As there were local records of badger identified within the desk study, risk of badgers traversing the site cannot be ruled out.

Bats

Suitable bat foraging habitats are present on site in the form of grassland compartments, hedgerows and woodland. Bat transect and Static surveys are being carried out in accordance with BCT guidelines on a monthly basis to ascertain levels of bat activity across the site. To date, two bat transect surveys and two months of static surveys have been carried out at the site. The below provides a broad summary of the surveys.

During the transect surveys six species / species groups have been recorded, these are, Noctule, Soprano Pipistrelle, Common Pipistrelle, Brown Long-eared, Myotis sp. and Nyctalus sp. Low levels of bat activity were observed across the site, primarily in association with the internal and boundary hedgerows.

Static detector surveys have identified the same group of bat species / groups utilising the site common and soprano pipistrelle records forming a majority of the recorded activity. The non-pipistrelle species recorded during static detector surveys equated to c. 15% of the activity.

The bat species recorded are common and widespread with relatively low overall activity levels recorded on the static detectors and observed during bat transects. The highest activity levels have been associated with the woodland in the south and hedgerows.

Birds

Breeding bird surveys were carried out during June and July 2020. Surveys recorded a total of 49 species, of which 16 are listed either on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), as Species of Principal Importance under Section 41 of NERC Act or on the BoCC red/amber lists, and are therefore considered notable.

Of the 49 bird species recorded, 15 were confirmed as breeding on site, including notable species skylark *Alauda arvensis* and dunnoek *Prunella modularis*. An additional five species were considered

probable breeders, including notable species kestrel *Falco tinnunculus*. The remaining 29 species were considered either possible breeders (13) or non-breeders (16) due to a lack of additional breeding evidence.

The grassland that dominated the central region of the site provided breeding and foraging habitat for species such as skylark and stonechat *Saxicola torquata*, which were both confirmed as breeding in this area. Kestrel was also observed foraging over this central grassland. Tall, dense hedgerows which separated these areas of grassland provided foraging habitat for several generalist species such as blue tit *Cyanistes caeruleus*, blackbird *Turdus merula*, magpie *Pica pica* and wren *Troglodytes troglodytes*.

The outer portion of the site was dominated by bramble scrub to the west, north and east, and these provided suitable breeding and foraging habitat for whitethroat *Sylvia communis*, stonechat, and notable species linnet *Linaria cannabina* and dunnoek. The wet woodland which ran along the northern, southern and eastern borders of the site supported a number of widespread species such as chiffchaff *Phylloscopus collybita*, reed warbler *Acrocephalus scirpaceus*, sedge warbler *Acrocephalus schoenobaenus*, garden warbler *Sylvia borin*, blackcap *Sylvia atricapilla* and notable species willow warbler *Phylloscopus trochilus*, stock dove *Columba oenas* and song thrush *Turdus philomelos*.

A number of notable species were recorded over flying the site only and were therefore considered non-breeders, these included mallard *Anas platyrhynchos*, red kite *Milvus milvus*, lapwing *Vanellus vanellus*, herring gull *Larus argentatus*, great black-backed gull *Larus marinus*, swift *Apus apus* and starling *Sturnus vulgaris*. Two other notable species (black-headed gull *Chroicocephalus ridibundus* and lesser black-backed gull *Larus fuscus*) were considered non-breeders on site due the absence of suitable breeding habitat.

Dormice

Suitable habitat for dormice is present across the extent of the site, consisting of a network of hedgerows, patches of woody scrub and woodland edge on both the southern and northern boundaries. The hedgerows provide a safe route for dispersal between the woodland belts to the north and south. However, while dense in structure, they contain a limited diversity of species, being dominated by hawthorn and blackthorn, and as such provide a limited range of seasonal food sources for dormice.

The woodland belts to the north and south support a greater diversity of fruit and nut producing species, which can provide dormice with a successional seasonal food supply. A dense understorey of wooded scrub and bramble is also present that provide both refuge, and sheltered routes between the canopy and ground level, for dormice.

Dormouse nest tubes were deployed in suitable habitat throughout the site in June 2020, followed by a single survey in July, during which no dormice, or evidence of occupation by dormice, was identified in any of the nest tubes. In order to assess presence/likely absence of dormice, a total index score of 20 for probability of absence will be reached, as such further surveys will be undertaken in August, September, and October 2020, with additional surveys in early 2021.

GCN

During the phase 1 survey of the site two waterbodies with potential suitability to support GCN were identified. These were a pond located adjacent to the woodland block forming the southern boundary, with a HSI score of 0.62 and classed as average. And a watercourse with standing water immediately

to the east of the site boundary, with a HSI score of 0.74 and classed as good. In order to establish if GCN were present within these waterbodies eDNA surveys were completed on both waterbodies, the results of which came back as negative. As such GCN are considered to provide no further constraint to the scheme.

Reptiles

Habitats suitable to support reptiles, while present, were limited to peripheral, edge-type habitat situated predominantly along the northern and southern boundaries, between the landfill site and adjacent areas of woodland. These areas were comprised of rank, rough grassland, with a tall ruderal component and provide reptiles with foraging opportunities and possible cover from predators. A further compartment of unmanaged grassland, approximately 0.75ha in area, was present at the north western edge of the site and constitutes the largest single area of rough grassland present on-site. The grass species present formed a patchwork of thick tussocks, provide opportunities for both foraging and refuge for reptiles.

Most of the land area is dominated by species-poor semi-improved grassland, which appears to be subject to regular and intense management, having been reduced to a short sward length by the time of the second reptile survey. The management extended almost to the base of the hedgerows that subdivide the field compartments, leaving little or no margins suitable to provide reptiles with possible refuges or routes for dispersal.

Two surveys have been conducted to date, during which a single adult slow worm was identified along the northern site boundary. Further surveys are scheduled for completion during August and September 2020.

Water vole & Otter

A survey for otter and water vole was carried out on 16/7/2020 by suitably experienced ecologists from FPCR following the methodologies as detailed in the New Rivers and Wildlife Handbook and outlined within Strachen et al (2011). Water vole monitoring stations in the form of floating platforms were deployed on the same day along the streams running parallel to the southern and eastern site boundaries.

Evidence of otter activity consisting of spraints, anal jelly, feeding remains, prints, couches and slides were recorded in several locations along the periphery watercourses to the north, east and south of the site as summarised in table 1 below. This activity was most concentrated along the southern watercourse. Evidence was of mixed age with fresh prints, feeding remains and spraints highlighting recent use, while established couches and old spraints demonstrating longer term occupancy.

Watercourse	Description	Evidence
Northern (River Kennet)	A fast flowing river exceeding 10m width and 2m depth. Sand/silt substrate with steep banks.	Spraints recorded on a fallen tree bridging the river.
Eastern	A stream that has been canalised in its northern extent from Island road. The stream exceeded 5m width and 1m depth with a sluggish flow and a silt substrate. In the north vertical artificial walls contained the stream, while vegetated shallow earth banks continue along the southern section.	Feeding remains of fresh water mussels, spraints and a slide were clustered to the south of this section, just to the north of Longwater Avenue and in close proximity to where the southern stream tributary joins this watercourse.

Southern	A small, slow stream exceeding 2m width and 0.5m depth with a silt substrate and shallow heavily vegetated banks.	Footprints, 3 couches, 6 locations with spraints and 1 with anal jelly.
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No evidence of water vole was record during the survey. On-going monitoring of the feeding platforms is being undertaken and second water vole survey is scheduled for later in the year.

Proposals will retain all watercourses in full and additionally buffer these to minimise disturbance. The majority of on-site habitats to be lost are of limited value to otter and water voles consisting of regularly cut agricultural grassland, with a small number of hedgerows providing potential corridors of movement for terrestrial species.

Closing remarks

As the scheme progresses the Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Ecological Impact Assessment in the UK and Ireland (2016) will be used to determine the likely impacts of the scheme and their significance.

The proposed development is anticipated to have no effect on international or nationally designated sites and a negligible effect on a single locally designated site. The habitats present on site are of limited ecological value and are common and wide spread in the local area. Initial species-specific surveys have identified a range of species using the site, and any potential impact are anticipated to be dealt with through standard measures.

Following the completion of the required surveys a review of the ecological data will identify potential impacts which may arise as a result of development, with the aim, where possible avoiding potential impacts through design alterations, layout or working methods incorporated in to the project delivery.



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Key

 Site Boundary

 Site Boundary 2 km Buffer

Locally Designated Sites

 Berkshire Local Wildlife Site

 Berkshire Proposed Local Wildlife Site Extension

 Biodiversity Opportunity Area

 Other Berkshire Site



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Key

 Site Boundary

Locally Designated Sites

 Biodiversity Opportunity Area

 Berkshire Local Wildlife Site

Key Species Results

 GCN eDNA Sample Locations

Reptile Sightings

 Slow Worm

Otter Signs

 Anal jelly

 Couch

 Feeding Remains

 Footprints

 Slides

 Spraints

APPENDIX 4
ENVIRONMENTAL DNA ANALYSIS ASSESSMENT
ADAS (JUNE 2020)

Client: Molly Foulds,
FPCR Environment and Design Ltd.



ADAS
Spring Lodge
172 Chester Road
Helsby
WA6 0AR

Tel: 01159 516747
Email: Helen.Rees@adas.co.uk

www.adas.uk

Sample ID: 2020-1338 Condition on Receipt: Good Volume: Passed
Client Identifier: Pond 1 (river), 9572 Description: pond water samples in preservative
Date of Receipt: 23/06/2020 Material Tested: eDNA from pond water samples

Determinant	Result	Method	Date of Analysis
Inhibition Control [†]	2 of 2	Real Time PCR	26/06/2020
Degradation Control [§]	Within Limits	Real Time PCR	26/06/2020
Great Crested Newt*	0 of 12 (GCN negative)	Real Time PCR	26/06/2020
Negative PCR Control (Nuclease Free Water)	0 of 4	Real Time PCR	As above for GCN
Positive PCR Control (GCN DNA 10 ⁻⁴ ng/μL) [#]	4 of 4	Real Time PCR	As above for GCN

Report Prepared by: Dr Helen Rees Report Issued by: Dr Ben Maddison

Signed:

Signed:

Position:

Director: Biotechnology

Position:

MD: Biotechnology

Date of preparation:

29/06/2020

Date of issue:

29/06/2020

eDNA analysis was carried out in accordance with the stipulated methodology found in the Technical Advice Note (WC1067 Appendix 5 Technical Advice Note) published by DEFRA and adopted by Natural England.

** If all PCR controls and extraction blanks give the expected results a sample is considered: negative for great crested newt if all of the replicates are negative; positive for great crested newt if one or more of the replicates are positive.*

[†] Recorded as the number of positive replicate reactions at expected C_t value. If the expected C_t value is not achieved, the sample is considered inhibited and is diluted as per the technical advice note prior to amplification with great crested newt primer and probes.

[§] No degradation is expected within time frame of kit preparation, sample collection and analysis.

[#] Additional positive controls (10⁻¹, 10⁻², 10⁻³ ng/μL) are also routinely run, results not shown here.

Client: Molly Foulds,
FPCR Environment and Design Ltd.



ADAS
Spring Lodge
172 Chester Road
Helsby
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www.adas.uk

Sample ID: 2020-1385 Condition on Receipt: White Precipitate Volume: Passed
Client Identifier: Pond 2, 9572 Description: pond water samples in preservative
Date of Receipt: 23/06/2020 Material Tested: eDNA from pond water samples

Determinant	Result	Method	Date of Analysis
Inhibition Control [†]	2 of 2	Real Time PCR	26/06/2020
Degradation Control [§]	Within Limits	Real Time PCR	26/06/2020
Great Crested Newt*	0 of 12 (GCN negative)	Real Time PCR	26/06/2020
Negative PCR Control (Nuclease Free Water)	0 of 4	Real Time PCR	As above for GCN
Positive PCR Control (GCN DNA 10 ⁻⁴ ng/μL) [#]	4 of 4	Real Time PCR	As above for GCN

Report Prepared by: Dr Helen Rees Report Issued by: Dr Ben Maddison

Signed:  Signed: 

Position: Director: Biotechnology Position: MD: Biotechnology

Date of preparation: 29/06/2020 Date of issue: 29/06/2020

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** If all PCR controls and extraction blanks give the expected results a sample is considered: negative for great crested newt if all of the replicates are negative; positive for great crested newt if one or more of the replicates are positive.*

[†] Recorded as the number of positive replicate reactions at expected C_t value. If the expected C_t value is not achieved, the sample is considered inhibited and is diluted as per the technical advice note prior to amplification with great crested newt primer and probes.

[§] No degradation is expected within time frame of kit preparation, sample collection and analysis.

[#] Additional positive controls (10⁻¹, 10⁻², 10⁻³ ng/μL) are also routinely run, results not shown here.

Appendix 1: Interpretation of results

Sample Condition

Upon sample receipt we score your samples according to quality: good, low sediment, medium sediment, high sediment, white precipitate, and presence of algae.

There are three reasons as to why sediment should be avoided:

1. It is possible for DNA to persist within the sediment for longer than it would if it was floating in the water which could lead to a false positive result i.e. in this case GCN not recently present but present a long time ago
2. In some cases sediment can cause inhibition of the PCR analysis used to detect GCN eDNA within samples which could lead to an indeterminate result.
3. In some cases sediment can interfere with the DNA extraction procedure resulting in poor recovery of the eDNA which in turn can lead to an indeterminate result.

Algae can make the DNA extraction more difficult to perform so if it can be avoided then this is helpful.

Sometimes samples contain a white precipitate which we have found makes the recovery of eDNA very difficult. This precipitate can be present in such high amounts that it interferes with the eDNA extraction process meaning that we cannot recover the degradation control (nor most likely the eDNA itself) at sufficient levels for the control to be within the acceptable limits for the assay, therefore we have to classify these type of samples as indeterminate.

What do my results mean?

A positive result means that great crested newts are present in the water or have been present in the water in the recent past (eDNA degrades over around 7-21 days).

A negative result means that DNA from the great crested newt has not been detected in your sample.

On occasion an inconclusive result will be issued. This occurs where the DNA from the great crested newt has not been detected but the controls have indicated that either: the sample has been degraded and/or the eDNA was not fully extracted (poor recovery); or the PCR inhibited in some way. This may be due to the water chemistry or may be due to the presence of high levels of sediment in samples which can interfere with the DNA extraction process. A re-test could be performed but a fresh sample would need to be obtained. We have successfully performed re-tests on samples which have had high sediment content on the first collection and low sediment content (through improved sample collection) on the re-test. If water chemistry was the cause of the indeterminate then a re-test would most likely also return an inconclusive result.

The results will be recorded as indeterminate if the GCN result is negative and the degradation result is recorded as:

1. evidence of decay - meaning that the degradation control was outside of accepted limits
2. evidence of degradation or residual inhibition - meaning that the degradation control was outside of accepted limits but that this could have been due to inhibitors not being removed sufficiently by the dilution of inhibited samples (according to the technical advice note)