



Broad Street Mall Masterplan

Environmental Impact Assessment

Volume 3: Technical Appendices

ES Volume 1

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Annex 1: EIA Scoping

Appendix: EIA Scoping

Annex 1: EIA Scoping



Broad Street Mall

Request for an EIA Scoping Opinion

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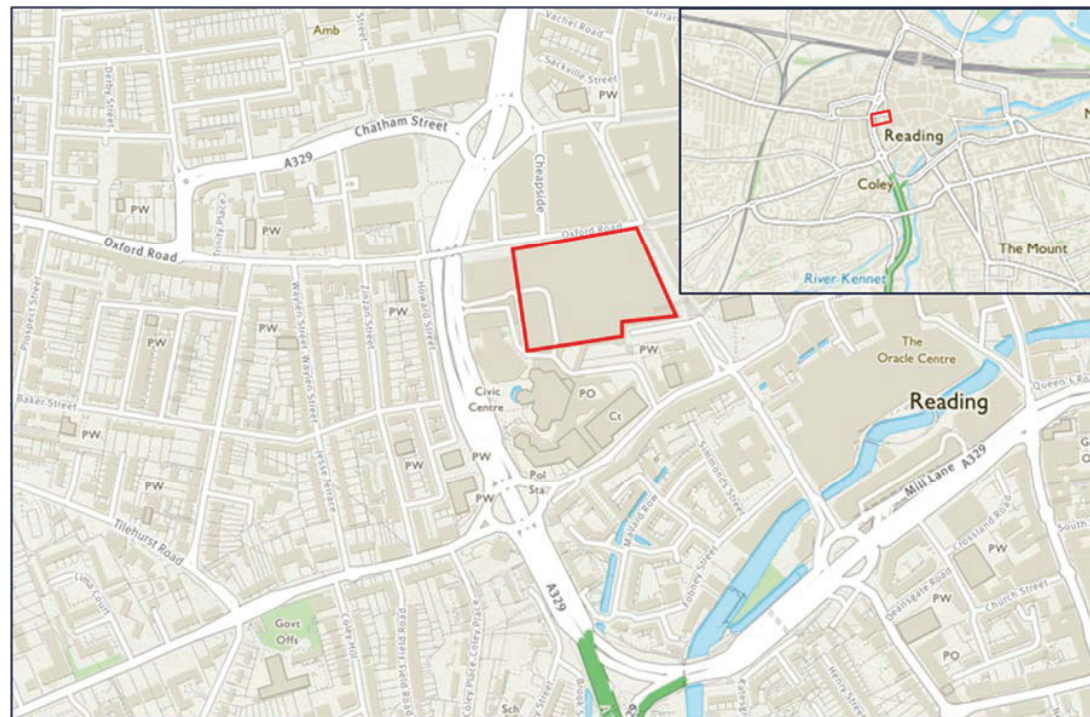
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INTRODUCTION

1. Inception (Reading) Sarl (hereinafter referred to as the 'Applicant') is seeking full (detailed) planning permission for the development of Broad Street Mall in Reading (the 'Proposed Development').
2. The Proposed Development site is located on the western side of Reading centre, adjacent to the A329. The site is situated roughly halfway between the main Reading railway station to the north and the Oracle Shopping Centre to south. The site location is shown in **Figure 1**.
3. The Proposed Development site covers a total area of 1.86 hectares (ha) and, falls within the administrative boundary of Reading Borough Council (RBC). The site is currently known as 'Broad Street Mall' and includes a shopping centre (retail units), office space, car parking and some streetscape / internal thoroughfares.
4. The Proposed Development is for the construction of four new blocks on top of the existing Broad Street Mall shopping centre, and the extension and refurbishment of Quadrant House in Reading. The Proposed Development will provide for a mixed-use development including residential and retail space.

Figure 1 Location of the Proposed Development (not to scale)¹



5. Given the nature of the scheme described, the Proposed Development falls within the classification of Schedule 2, 10(b) (Infrastructure Projects – Urban Development Projects) of the EIA Regulations². The Proposed Development could also be considered to fall under Schedule 2 13(b) (*Any change to or extension of development...where that development is already authorised, executed or in the process of being executed*) of the EIA Regulations.
6. Considering the scale of the development and the nature of the site and surrounding area, it is considered that there is the potential for significant environmental effects to arise. The Proposed Development is therefore considered to constitute 'EIA development' under the EIA Regulations, and so an Environmental Statement (ES) will be prepared and submitted to accompany the planning application.
7. Trium Environmental Consulting LLP (Trium) has been commissioned by the Applicant to prepare a request for an EIA Scoping Opinion for the development of the site in line with the requirements of the

¹ © OpenStreetMap contributors <https://www.openstreetmap.org/copyright>

² Town and Country Planning (Environmental Impact Assessment) Regulations 2017

EIA Regulations and relevant EIA guidance. This includes submitting a request for an EIA Scoping Opinion to RBC that sets out the proposed scope of the EIA and the content and approach to preparing the ES that will be submitted to accompany the application for full planning permission.

8. The EIA Regulations require that in order to ensure the completeness and quality of the ES, '(a) the developer must ensure that the environmental statement is prepared by competent experts' and '(b) the environmental statement must be accompanied by a statement from the developer outlining the relevant expertise or qualifications of such experts'. Trium consider that these requirements are equally important and relevant to the EIA scoping process in addition to the preparation of the ES. As such, in accordance with this requirement, the following statement is provided:

"Trium is an environmental consultancy specialising in urban regeneration and property development projects in the UK. Trium's Partners and Employees have extensive experience in managing the environmental issues and impacts surrounding large scale, high profile urban regeneration development projects. The Partners and Employees of Trium have, over the course of their careers to date (including with former employers), project directed, managed or contributed to over 200 EIAs within the retail, residential, leisure, commercial, cultural, infrastructure and industrial sectors. Trium's lead EIA practitioner for Broad Street Mall is a Full Member of IEMA, a Chartered Environmentalist (IEMA, 2016) and has over 15 years EIA experience".

Structure of the Request for an EIA Scoping Opinion

9. This request for an EIA Scoping Opinion is structured as follows and provides:
 - A summary of the purpose and process of the EIA and EIA Scoping;
 - A description of the location of the site and the site and surrounding area's environmental context;
 - An overview of the Proposed Development;
 - A description of potential environmental sensitivities and receptors;
 - A 'snapshot' of what is proposed to be 'scoped in' and 'scoped out';
 - An outline of the planning policy context;
 - A description of the EIA process and methodology;
 - A description of the environmental topic areas that are considered to potentially result in significant effects on the environment and an explanation of the proposed scope and assessment methodology that will be adopted to predict the magnitude of potential impacts and the resultant scale, nature, geographic extent and duration of potential effects, and the effect significance within the EIA;
 - A description of the environmental topic areas that are considered unlikely to result in significant environmental effects, and are therefore scoped out of the EIA; and
 - Confirmation of the proposed structure of the ES.

EIA AND THE SCOPING PROCESS

EIA Purpose and Process

10. EIA is a process carried out which examines available environmental information to ensure that the likely significant environmental effects of certain projects are identified and assessed before a decision is taken on whether a project is granted planning permission. This means environmental issues can be identified at an early stage and projects can then be designed to avoid or to minimise significant environmental effects, and appropriate mitigation and monitoring can be put in place.
11. Regulation 4 of the EIA Regulations sets out the EIA process. Specifically, Regulation 4(2) states that *"the EIA must identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of the proposed development on the following factors:*
 - (a) *population and human health;*
 - (b) *biodiversity;*
 - (c) *land, soil, water, air and climate;*
 - (d) *Material assets, cultural heritage and the landscape;*
 - (e) *The interaction between the factors referred to in sub-paragraphs (a) to (d)."*
12. The potential for likely significant effects on the aforementioned factors, during both the construction works associated with the Proposed Development and once the Proposed Development is complete and operational, is considered within the following relevant environmental topics addressed within this request for an EIA Scoping Opinion:
 - Socio-Economics;
 - Health;
 - Air Quality;
 - Noise and Vibration;
 - Highways and Transport;
 - Wind Microclimate;
 - Daylight, Sunlight, Overshadowing, Light Pollution and Solar Glare;
 - Townscape and Visual;
 - Built Heritage;
 - Archaeology (Buried Heritage);
 - Geoenvironmental (Land Contamination, Ground Conditions and Groundwater);
 - Aviation;
 - Ecology;
 - Water Resources, Drainage and Flood Risk;
 - Electronic Interference; and
 - Climate Change.
13. The method behind the EIA process generally takes into account the existing conditions of the area into which the development is being introduced (**the baseline**) and makes reasonable predictions of the likely change (**the impact** – in terms of magnitude) that may occur, during both its construction and when the development is completed and operating as proposed. The predicted impact is considered in terms of key environmental and social aspects (**receptor / resource**) found within the surrounding area, and based on their sensitivity to change, the scale of the resulting change experienced by the

receptor / resource (**the effect**) is then determined along with a statement on whether the effect is significant or not. Any mitigation measures required to reduce or eliminate significant adverse effects are then considered and assessed, with the resulting residual effect scale being determined. All the likely effects of the development are reported (within an **environmental statement**) and the likely significant effects are specifically highlighted. The environmental statement is then considered by the relevant planning authority when making a decision whether to grant planning permission for a development.

Land Take and Soils

14. In response to the requirements of the 2017 EIA Regulations, consideration has been given to the potential for any effects arising because of the Proposed Development on 'Land Take' and 'Soils'.
15. With regards to 'Land Take', the site represents an opportunity to intensify an existing development in Reading. The site is not a 'greenfield site'; it is not natural or semi-natural land that is being 'taken up' by urban development. In addition, the site does not represent open or publicly accessible space used as a recreational resource within an already built-up environment. As a result, no likely significant effects associated with 'Land Take' are anticipated because of the Proposed Development.
16. With regards to 'Soil', the Phase 1 Environmental Desktop Study (**Appendix E**) identifies that there is a very low risk from contamination associated with the site. As such, no likely significant effects associated with 'Soil' are anticipated to arise because of the Proposed Development.
17. Based on the above, land take and soil shall not be considered any further within the ES.

Project Vulnerability

18. With reference to Regulation 4(4) and Schedule 4 of the EIA Regulations, this request for an EIA Scoping Opinion also considers whether there are likely to be any significant effects on the environment or the project arising from the vulnerability of the Proposed Development to major accidents or disasters.
19. Available guidance (IEMA Quality Mark Article 'Assessing the Risks of Major Accident and Disasters in EIA (WSP, 2016)) defines major accidents and disasters as follows:

"man-made and natural events which are considered to be likely, and are anticipated to result in substantial harm that the normal functioning of the project is unable to cope with/rectify".
20. Based on the above definition, the major accidents or disasters that could be considered likely and that are considered relevant to the Proposed Development which will be considered within the EIA are as follows:
 - Flood risk; and
 - Fire risk.

Flood Risk

21. The Proposed Development is located within Flood Zone 1, classified as having a low probability of fluvial and tidal flooding. The site is also at low risk from surface water flooding, this is defined as chance of 0.1% to 1% annually.
22. However, as the site area exceeds 1 ha, the planning application will be accompanied by a Flood Risk Assessment (FRA). The FRA will review the potential sources of flooding that could affect the site, and how the identified sources of flooding can be minimised, mitigated or eliminated to reduce project vulnerability.

Fire Risk

23. Fires are normally rare events. However, when they happen the consequences can be significant. Even a small fire can threaten the lives of occupants and could stop the operation of the Proposed Development for many hours or days.
24. Consideration has been given to fire risk and whether this could constitute a major accident or disaster that could be considered likely and relevant to the Proposed Development. It has been concluded however, that fire risk is managed outside of the EIA process through a combination of legislative and industry guidance which mitigate the risk of fire causing a major accident or disaster to new

developments within the urban environment. Legislative requirements include the ‘*The Construction (Design Management) Regulations 2015*’, which provide guidance on fire safety requirements for new buildings, while requirements under the Building Regulations and associated guidance relate to the health and safety of people in and around buildings. Alternatively, compliance can also be achieved by adopting a fire engineered solution where the size and scale of the development necessitates bespoke measures to address the fire risks.

25. The effective implementation of the legislative tools and guidance is considered to reduce the risk of fire to an acceptable level whereby the occurrence is unlikely, or in the event of a fire, appropriate design and management measures are incorporated into a development to avoid the occurrence of a major accident or disaster.
26. Given the above, the consideration of fire risk in terms of causing a major accident or disaster will not be addressed further within the EIA as the risk of occurrence will be managed during the post-consent technical design and construction phases, through a mix of legislative requirements and industry guidance which fall outside of the EIA process.

Alternatives and Design Evolution

27. In addition, the EIA Regulations require (Schedule 4) that the ES provides “*a description of the reasonable alternatives... relevant to the proposed project and its specific characteristics*” which have been considered by the Applicant and “*an indication of the main reasons for selecting the chosen option, including comparison of environmental effects*”.
28. The ES will present any ‘Alternative Sites’ for the Proposed Development that have been considered by the Applicant, if appropriate. This will address why the selected site is the most appropriate from an environmental perspective.
29. The ES will summarise the evolution of the Proposed Development, the alternatives considered, and key modifications made during the design process. Environmental considerations which have influenced this process will be discussed, and a qualitative comparison will be undertaken of the different design options and their relevant environmental effects. Matters that will be considered in terms of design evolution include land uses, layout, building heights and massing. The preferred design alternative, culminating with the Proposed Development being sought for approval, will be discussed.

The EIA Scoping Process

30. EIA Scoping forms one of the first stages of the EIA process. Requesting an EIA Scoping Opinion from a local planning authority, under Regulation 15 of the EIA Regulations, involves the preparation of a request for an EIA Scoping Opinion and its submission to the local planning authority is part of a formal request for their opinion on the content or ‘scope’ and approach to the EIA.
31. The purpose of scoping is to identify:
 - The important environmental issues and topics for consideration in the EIA;
 - The baseline conditions and assessment methodology to be used for assessment;
 - Any potentially sensitive receptors that may be affected by the development being proposed;
 - The appropriate time and space boundaries of the EIA (i.e. time: project timeframes including details of the construction programme and proposed opening year; and space: the site boundary and surrounding environmental context);
 - The information necessary for decision-making in respect of environmental and socio-economic effects; and
 - The likely significant effects to result from the Proposed Development both during its construction and operation.
32. This request for an EIA Scoping Opinion constitutes a formal request for an EIA Scoping Opinion from the RBC. It is noted that regulation 18(4) of the EIA Regulations require that the ES must ‘be based on’ the most recent EIA Scoping Opinion (so far as the Proposed Development remains materially the same), and therefore due consideration will need to be given to the conclusions of the EIA Scoping Opinion.

33. In accordance with the requirements of the Town and Country Planning (Development Management Procedure) Order 2015 (article 18, Schedule 4), this request for an EIA Scoping Opinion will need to be issued by the RBC to the statutory consultees that are considered to have an interest in the EIA of the Proposed Development and should be consulted as part of the EIA Scoping process. It is expected that the RBC will also issue the request for an EIA Scoping Opinion to non-statutory and key, local stakeholders and interest groups who are deemed to similarly have an interest in the EIA of the Proposed Development.
34. The process of consultation is a key requirement of the EIA process and the views of statutory consultees and other stakeholders help to identify specific issues, as well as identifying additional information in their possession, or of which they have knowledge, which may be of assistance in progressing the EIA.
35. The ES will append the EIA Scoping Opinion and include a summary of any other consultation undertaken as part of the EIA process.

SITE CONTEXT

The Site

36. The site is 1.86 ha in size and broadly rectangular in shape. As set out above, the site lies on the western side of the town centre and is situated roughly halfway between the main Reading rail station to the north, and the Oracle Shopping Centre to south. The site is bordered to the north by Oxford Road, to the east by St Mary's Butts, to the south Dusseldorf Way and Hosier Street, and to the west by Queen's Walk.
37. The site is known as 'Broad Street Mall' (**Figure 2** – photograph of the site) and currently includes a shopping centre (retail units), office space, car parking and some streetscape / internal thoroughfares.

Figure 2 View of Broad Street Mall along Oxford Road



38. The retail shopping mall covers the whole site area, and is arranged over basement level, ground floor and one upper floor. The basement level extends underneath the site and includes numerous plant rooms, the main waste storage area and numerous storage rooms associated with the retail units.
39. The office space is contained within Fountain House and Quadrant House. Fountain House sits in the north-western corner of site along Queens Walk and is eight storeys in height (on top of the retail elements i.e. 11 storeys in total) and has recently been refurbished. Quadrant House is located along the eastern boundary along St Mary's Butts, and is currently vacant office space. This is two storeys in height on top of the retail elements.
40. A multi-storey car park is also located on the site – known as 'NCP Broad Street Mall'. This comprises 700 car-parking spaces spread across three floors. The car park is present within the western part of site for the first and podium floors and is present across the whole of the site on the second floor. **Figure 3** shows a photograph of the car parking. The car park is a 24-hour car park, open seven days a week. Access to the site is gained from the west, via A329, through the basement.

Figure 3 Second Storey Roof Car Park, above the Broad Street Mall



41. The site sits within the West Side Major Opportunity Area (WSMOA) of the of the Reading Central Area Action Plan³ (CAAP) (hereafter referred to as 'the Plan'). The Plan defines the planning principles for the centre of Reading up until 2026.

On-Site Environmental Context

42. The site is not located in, or within a 5km radius of, a 'sensitive area' (as defined in Part 1 of the EIA Regulations). Consideration is however given to other environmental receptors. Consideration is however given to other environmental sensitivities.
43. According the Environmental Agency's (EA) flood map⁴ the site is located within Flood Zone 1. This is land defined as having less than 1 in 1,000 annual probability (<0.1%) from river or sea flooding. Flooding from these sources is therefore considered unlikely.
44. The site is located within the Reading Air Quality Management Area (AQMA), which was declared in 2009 due to exceedance of the nitrogen dioxide (NO₂) annual mean.
45. Geological maps indicate the site to be underlain by superficial deposits of Taplow Gravel Member (Sand and Gravel) overlying Seaford Chalk Formation and Newhaven Chalk Formation (Undifferentiated Chalk) and Made Ground present adjacent to the site.
46. The site does not lie within a groundwater source protection zone (SPZ) or a nitrate vulnerability zone (NVZ). The site is located within Secondary A and Principal Aquifer Designation for superficial deposits and bedrock formations respectively. The site is also located within a Major High Aquifer Groundwater Vulnerability Zone. The nearest surface water resource to the site is Holy Brook which is approximately 190m south of the site at its closest point.
47. The site is located approximately 34km west of Heathrow Airport and approximately 400m south-west and 800m east of train lines. The site will therefore not be affected by aircraft noise and noise from train movements.

³ Reading Borough Local Development Framework: Reading Central Area Action Plan to 2026: <http://www.reading.gov.uk/media/1047/Reading-Central-Area-Action-Plan-Adopted-January-2009/pdf/Central-Area-Action-Plan-Jan09.pdf>

⁴ EA (2018): <https://flood-map-for-planning.service.gov.uk/>

48. Although the site is bordered by roads to the east, north and west, road traffic noise at the site is likely only to be significant from the A329, located to the west.

On-site Improvement Works

49. There is ongoing improvement works within the shopping centre, to clear the clutter and update the mall with new lighting, artwork and finishes. This work does not form part of this Proposed Development but has been referenced here as the intention is to apply this approach to the wider development, so that the shopping centre has a more consistent internal design.

RBC Development Site

50. To the south of the site is a parcel of land known as 'RBC Development Site' owned by RBC. There are aspirations to develop this area to provide a distinctive, dense and high-quality multi-functional urban quarter within Reading's Central Core. The site will aim to provide a unique character and sense of place that will be unified by a high quality public realm. The development is likely to be largely residential led although offices remains an appropriate use for this Town Centre location. Development will support retail uses at podium level, alongside new open space/park, multi-functional civic/market space and associated community facilities. The upper levels of development will create opportunities for private and affordable housing in the form of flats and possibly duplexes/maisonettes.
51. A Hosier Street Area Outline Development Framework has been produced and is currently undergoing public consultation until 28th September 2018.
52. Given the proximity to the Proposed Development, draft framework is an important consideration. However how this is assessed within the EIA, will be dependent on the draft framework timelines, and when the planning application for the Proposed Development is submitted. The draft framework will be considered within the EIA at a level that is appropriate to the information available at that time.

OVERVIEW OF THE PROPOSED DEVELOPMENT

53. The Proposed Development includes the construction of four new blocks on top of the existing structure on-site and the extension and refurbishment of one existing blocks.
54. The Proposed Development will comprise a total of circa 30,000 m2 gross internal floorspace (GIA) and up to 530 residential units (of a range of unit sizes and tenures).
55. The current design of the Proposed Development is looking to provide:
- Block 1: 22 storey (on top of the existing mall and therefore 25 storeys in total) development providing up to 180 residential units with amenity space and parking;
 - Block 2: 18 storey (on top of the existing mall and therefore 21 storeys in total) development providing up to 150 residential units, with amenity space and parking;
 - Block 3: 15 storey (on top of the existing mall and therefore 18 storeys in total) development providing up to 115 residential units, with retail unit;
 - Block 4: Refurbishment and extension of existing office floors, with two additional floors proposed above. There will therefore be three levels of residential, within a 5 storey block, providing up to 35 residential units; and
 - Block 5: Provision of up to 50 residential units above the existing retail parade, along with enhancements to the existing shop fronts.
56. The Proposed Development will retain the current car park facilities on the first and podium floors, whilst the car parking on the second floor will be amended due to the introduction of the building footprints. To compensate, a new car parking deck will be constructed at the base of the towers to increase the car parking provision from the existing capacity.
57. It is important to note that the design of the Proposed Development is currently being developed. As such the description included above might change slightly between the submission of this request for an EIA Scoping Opinion, and the planning application. The description should therefore be taken as an approximation at this stage. It is however considered that any alterations to the design would however not be of a scale that this would change the scope of the EIA. The EIA will fully assess the design of the Proposed Development for which planning permission is being sought.

Construction

58. The nature of the Proposed Development means that the foundations will require core walls to be piled into the lower ground surface, with the core walls rising through the existing structure to provide a suitable base for the construction of the proposed residential towers.
59. During the construction works, the current occupiers of the site will be retained. The effects of these works on these receptors will therefore be assessed where appropriate.
60. In addition, the Proposed Development may be subject to phased occupation during the construction works i.e. receptors introduced whilst construction remains ongoing, and therefore should this be the case, these receptors will therefore be assessed where appropriate.

Separate Hotel Application

61. It is noted that a separate application for a hotel is likely to be submitted before the planning application for the Proposed Development. This hotel will be for 100 rooms, and will be located on Hosier Street, adjacent to Block C.
62. This hotel does not form an intrinsic part of the site and is not reliant on the Proposed Development to be progressed. This will therefore not be included in the main assessment of the EIA but will be considered as a cumulative development in the cumulative assessment, if submitted before the application for the Proposed Development.

ENVIRONMENTAL CONTEXT OF THE SITE AND SURROUNDS

Environmental Context and Description of the Surrounding Area

63. The site is located in close proximity to an Area of Archaeological Potential (AAP) as defined by the RBC. The area has demonstrated potential for Saxon structures and environmental evidence due to its proximity to Reading Minster. The AAP extends around the northern and eastern boundaries of the site and lies along the southern boundary of the RBC development site to the south.
64. The surrounding area is urban and high density and is predominantly comprised of retail uses. Council tax registries indicated nearby residences, with the closest being located adjacent to the north boundary across Oxford Street, approximately 20m north of site.
65. The site is located within 500m of Reading Station and 1km of Reading West Station, which provide access to South Western Rail, Cross Country and Great Western Rail services, respectively.
66. There are four bus stops on both Oxford Road and St Mary's Butts, providing easy access to public transport for potential new residents / workers and those wishing to visit Broad Street Mall.
67. The closest station is Reading Station to the northeast of the site (approximately 400m north of site) although Reading West Station to the west of the site is also within easy walking distance. Reading Station offers Great Western Rail, South Western Rail Cross Country services, whilst Reading West offers Great Western Rail. From these stations trains run directly to London Paddington, Bristol Temple Meads, Cardiff Central, Newcastle and numerous other stations to the north, south and west.
68. Reading Station is one of the stations set to benefit from the construction of Crossrail. From December 2019, two Elizabeth line trains an hour (four an hour at peak times) will allow passengers to travel right through central London without having to change trains - greatly increasing the accessibility to the centre of London from Reading.
69. There are four bus stops on both Oxford Road and St Mary's Butts, providing easy access to public transport for potential new residents / workers and visitors. With 59 local bus services are available within 100m of site, including routes 15 Sky Blue, 144, BB3, Purple 17 and 50 Greenwave. The site is well served by local and national cycle routes.
70. There are five primary schools located within 1km of the site, including but not limited to: Coley Primary School and Nursery approximately 500m to the south of the site; Katesgrove Primary School approximately 590m to south of the site; and Kendrick School which is located approximately 700m southeast the site. There are eleven secondary schools within 2.7km of site, Kendrick School is the closest secondary school to the site (approximately 720m to the southeast of the site). Greyfriars Day Nursery is a nursery school located approximately 260m north of the site.
71. The healthcare facilities within the surrounding area of the site include the Reading Walk-in Health Centre (located within Broad Street Mall), Chiltern Medical Centre (approximately 100m to the north-west of the site) and Royal Berkshire Hospital (approximately 1.1km at its closest point north-west of the site). Dental practices are similarly located to the site, the closest being the Reading Smiles Dental Practice (approximately 335m at its closest point east of the site).
72. Children's play area/communal gardens located within close proximity to the site, include the communal gardens along Dusseldorf Way and Hosier Street (approximately 10m south of the site); and the play areas and communal gardens serving properties along Tilehurst Road and Pell Street (both located approximately 650m west and southeast of the site respectively).
73. Heritage The site is located near a Conservation Area as per RBC's designated Conservation Area maps. St Mary's Butts and Castle Street is located to the east and south of site, approximately 30m east of site at the closest point. Russell Street / Castle Hill and Market Place / London Street Conservation Areas are located to the west and east of site respectively.
74. There are 275 listed buildings within 1km of the site. The closest being 3 and 5 Cheapside (Grade II Listed: approximately 30m north of site), The Allied Arms Inn (Grade II Listed: approximately 30m east of site) and 55 and 55a St Mary's Butts (Grade II Listed: located approximately 30m east of site).
75. Five Scheduled Monuments lie within 500m of site, four relate to Reading Abbey, with the closest point approximately 460m northeast of site and High Bridge Scheduled Monument which is approximately 440m east of site.

SCOPE SUMMARY

76. To assist the reader in an early understanding of what is proposed to be 'scoped in' and 'scoped out' of the EIA, **Table 1** sets out the proposed scope of the ES.
77. Further detail on each topic is provided in the following technical sections of this request for an EIA Scoping Opinion.

Table 1 Environmental topics to be assessed for Construction and Operation

Environmental Topics	Construction	Operation
Socio Economics	✓	✓
Air Quality	✓	✓ (although dependent on the number of traffic movements generated/energy centre included)
Noise	✓	✓ (apart from noise from traffic, which has been scoped out)
Vibration	✓	✗
Wind Microclimate	✓ (qualitatively)	✓
Daylight, Sunlight and Overshadowing – internal, new receptors within the Proposed Development	✗	✗ (separate standalone document)
Daylight, Sunlight and Overshadowing – residential properties outside of the red line boundary	✓	✓
Light Pollution and Solar Glare	✗	✗
Townscape, Built Heritage and Visual Impact Assessment	✓	✓
Climate Change, relating to Greenhouse Gas Emissions (within the ES, but not a separate chapter)	✓	✓
Health	✗	✗
Traffic and Transport	✗	✗
Aviation	✗	✗
Water Resources and Flood Risk	✗	✗ (separate standalone document)
Ecology	✗	✗
Archaeology	✗	✗
Ground Conditions and Contamination	✗	✗
Waste	✗	✗
Electronic Interference	✗	✗

PLANNING CONTEXT

Planning Policy Context

78. The ES (within ES Volume 1), will define the relevant national, regional and local policy context. Specifically, the ES will list out the key relevant policy documents but will not discuss the policies within these in any detail.
79. Although relevant policies out of the key planning policy documents will, in some instances, inform the scope and the methodology of the technical assessments within the EIA, the Proposed Development's compliance with and performance against the relevant planning policies will be appraised within the Planning Statement which will be a standalone document that is submitted in support of the planning application. It is not the purpose of the ES to appraise the Proposed Development against relevant national, regional and local planning policy standards / targets.
80. Where planning policy informs the scope and the methodology of the technical assessments of the EIA, the policies will be presented in the ES (in the relevant technical topic chapters) and discussed as necessary. Any policy detail required to support the relevant impact assessment scope, methodology or assessment of effects, will either be provided within the technical topic chapter itself or within an appendix to the ES.

National Planning Policy and Guidance

81. The ES will have regard to the National Planning Policy Framework (NPPF). The NPPF sets out the Government's economic, environmental and social planning policies for England. The policies contained within the NPPF articulate the Government's vision of sustainable development, which are intended to be interpreted at a local level, to meet the requirements of local aspirations.
82. The ES will also refer to the Planning Practice Guidance (PPG), which is an online resource. The PPG aims to make planning guidance more accessible, and to ensure that the guidance is kept up to date.
83. The Ministry of Housing, Communities and Local Government recently consulted on a draft update text of the National Planning Policy Framework. The consultation commenced on the 5th March 2018 and closed on 10th May 2018. The resultant new 2018 Framework which was formally published on the 24th July 2018 seeks to implement the Government's reforms to planning policy and replaces the 2012 Framework.

Local Planning Policy

84. As relevant to the EIA technical topic scope, methodology or assessment of effects, the ES will have regard to the following key strategic planning documents. Any additional strategic planning policy and guidance documents considered relevant to the technical assessments which are covered by the EIA will also be considered:
 - Reading Borough Council, (2008); Reading Borough Local Development Framework: Core Strategy;
 - Reading Borough Council, (2009); Reading Borough Local Development Framework: Reading Central Area Action Plan;
 - Reading Borough Council (2017); Draft Reading Borough Local Plan;
 - Reading Borough Council (2018); Hosier Street Area; Outline Development Framework; Reconnecting with Reading's Historic Town Centre (out for public consultation);
 - Supplementary Planning Notes and Guidance;
 - RBC has adopted and is preparing a number of Supplementary Planning Documents (SPDs) to provide further guidance on policies set out in Local Plan documents;
 - Technical reports and background evidence; and

- These supplementary documents provide further advice for design and planning, including the Tall Building Strategy.

Other Guidance

85. In addition to any relevant planning policies that inform the scope, methodology or assessment of effects, as relevant, the technical topic chapters of the ES will present a summary of any pertinent recognised industry guidance documents.

EIA PROCESS AND METHODOLOGY

EIA Approach and Methodology

87. In addition to the EIA Regulations, there is also guidance available that has been referenced where appropriate, including but not limited to:
- At a European level, reference has been made to the European Commission's (EC) various EIA guidance documents available here: <http://ec.europa.eu/environment/eia/eia-support.html>;
 - At a domestic level, reference has been made to the Department for Communities and Local Government's (DCLG) overarching PPG;
 - In addition, the Department for Transport 'Design Manual for Roads and Bridges Volume 11: Environmental Assessment' has been referred to as applicable;
 - In relation to publications from professional bodies, reference has been made to IEMA publications as these include best practice/suggested improvements to the EIA process. This includes:
 - IEMA's ES Review Criteria (COM3-6);
 - 'Guidelines for Environmental Impact Assessment' (2004);
 - 'Special Report into the State Environmental Impact Assessment Practice in the UK' (2011);
 - 'Shaping Quality Development' (2015);
 - 'Delivering Quality Development' (2016); and
 - 'Delivering Proportionate EIA' (2017).
 - Whilst primarily written for major infrastructure projects, reference is also made to guidance / advice notes published by the National Infrastructure Planning where appropriate, as these can include relevant/helpful information;
 - Whilst written for applications submitted within the London Borough of Tower Hamlets (LBTH), reference is also made to 'Tower Hamlets Council EIA Scoping Guidance', as it includes relevant / helpful information https://www.towerhamlets.gov.uk/Documents/Planning-and-buildingcontrol/Development-control/Revised_Scoping_Guidance_V2_Final.pdf; and
 - Applicable case law.
88. In accordance with the EIA Regulations and best practice guidance documents, the EIA will comprise an assessment for each of the relevant technical topics against an appropriate baseline condition of the site and surrounding area, using methods of prediction including established standards and industry guidelines and techniques confirmed as part of the EIA Scoping process. In all cases, the source data and guidance used to establish the baseline conditions and assessment methodology will be clearly set out within the ES.
- ### Assessment Scenarios
89. Each of the technical topic areas that have the potential for significant effects will consider the following scenarios within their assessments:
- Baseline conditions – be it current baseline and/or future baseline;
 - The construction works associated with the Proposed Development;
 - The completed and operational Proposed Development; and
 - The cumulative effects – the Proposed Development plus other consented and / or forthcoming developments outside of the red line boundary (known as 'cumulative developments').
90. The detail of each of these assessments is set out below.
- #### Baseline Conditions
91. Baseline assessments will utilise any existing and available information, as well as new information

either collected through baseline surveys undertaken during the course of the EIA process or additional information provided as part of the EIA Scoping Opinion and consultation process. This information will be used within the ES (within the individual technical chapters) to present an up to date description of the current baseline conditions of the site and surrounding area.

92. The existing baseline will consider the surrounding environment at it currently stands, as well the existing conditions on the site itself i.e. 2018. The baseline condition for the site will present the current condition of the Broad Street Mall.
93. Where information is not available for this year, appropriate data from an alternative year will be utilised and factored up / down if necessary. Further detail on the data used is included in the technical assessment scopes.
94. For some disciplines, an assessment of the potential Proposed Development effects against a future baseline may be necessary. The future baseline will only include elements that are known to have definitively progressed.
- #### Construction
95. The ES (within a non-technical chapter titled 'Construction') will provide an outline of the anticipated construction programme and related activities and aspects (i.e. enabling works, substructure works, superstructure works etc., waste volumes and construction material quantities, HGV movements and HGV routing). In addition, the standard environmental controls required under legislation and best practice guidance (including relevant codes of construction practice) will be presented.
96. This information will inform the construction impact assessments. Throughout the construction impact assessments, the assumption will be made that the standard environmental controls required under legislation and best practice guidance are met as a matter of course.
97. The assessment of the potential impacts and likely significant effects arising during the construction works will be addressed within each of the individual technical assessment chapters of the ES. The construction assessments presented within the technical chapters of the ES will identify the need for any additional or bespoke environmental management or mitigation measures in order avoid, prevent, reduce or off-set any significant adverse effects identified.
98. Where required, a description of any proposed monitoring arrangements will also be presented and would define (where appropriate) the procedures regarding the monitoring of the relevant significant adverse effects, the types of parameters to be monitored and the monitoring duration.
99. All the measures proposed within the technical chapters will be compiled and presented in a mitigation and monitoring schedule (for ease of reference, to be presented in the ES as one of the concluding chapters).
100. It is anticipated that any required construction related environmental management / mitigation and monitoring measures would be secured and controlled through appropriate construction Environmental Management Plans (EMP) (or equivalent). It is proposed that the requirement for these documents be secured by means of a suitably worded planning condition to be attached to the permission (if granted). Key mitigation and management controls that would later form part of a construction EMP will be presented in the ES to help define the policies, procedures and management framework for the implementation of any identified specific environmental management and mitigation controls and monitoring.
101. It should be noted that as part of the construction work there will be some removal of ground slab etc, to facilitate the new elements – this will only take place internally within some of the existing retail units.
- #### Completed Development
102. The ES will present a description of the Proposed Development. Enough information on the Proposed Development, in terms of the key aspects (see below), will be presented to allow an understanding of the development being proposed, in order to enable the assessment of potential and likely significant environmental effects of the completed and operational development. Any assumptions made will be clearly presented in the narrative.
103. The ES (in a non-technical chapter titled 'The Proposed Development'), will present information on the details of the development sought for approval (including but not limited to):

- Layout – building footprints;
- Means of access and egress and circulations – vehicular and pedestrian and cyclist accessibility into, out of and around the site;
- Scale – the massing, specifically heights of buildings;
- Amount of development – floors areas and uses classes, residential unit numbers and mix;
- Appearance – architectural detail and materiality of the Proposed Development;
- Landscaping – including planting strategy, species and habitats;
- Amenity space and children's playspace – amount of provision and locations / facilities;
- Ecological enhancements;
- Flood resilience and resistance;
- Plant locations;
- Energy strategy;
- Deliveries and servicing strategy (including estimates of the types and quantities of waste anticipated, waste storage, handling and collection);
- Car parking, motorcycle parking, and cycle parking;
- Sustainability (including climate change resilience and adaptation (as relevant)); and
- Utilities (including potable / cold water supply, wastewater, below ground and surface water drainage, gas, electricity, telecommunications).

Cumulative Effects and Effect Interactions

104. The EIA will identify the potential for (a) Cumulative Effects and (b) Effect Interactions as described below.

Cumulative Effects

105. The EIA Regulations require that, in assessing the effects of a particular development proposal, consideration should also be given to the likely significant effects arising from the “*cumulation with other existing and/or approved projects*” (Schedule 4, 5(e)).
106. Cumulative effects can occur as interactions between the effects associated with a number of projects in an area (i.e. Cumulative Schemes) which may, on an individual basis be insignificant, but together (i.e. cumulatively), result in a significant effect. Cumulative effects arising from the Proposed Development in combination with identified Cumulative Schemes will be considered throughout the ES. The potential for cumulative effects arising during the construction works and once the Proposed Development is complete and operational will be considered. Each individual technical chapter of the ES will present an assessment of the cumulative effects of the Proposed Development coming forward alongside the Cumulative Schemes.
107. The Cumulative Schemes that will be considered within the ES will typically be located within a 1km radius from the centre of the site, as this spatial extent is considered appropriate for determining cumulative effects in this context.
108. It is acknowledged that for certain topics of the EIA (specifically townscape and visual), there is a need to consider more distant schemes within the cumulative effects assessment. This is entirely appropriate, given the view locations associated with the townscape and visual effects assessment.
109. Generally, the cumulative schemes will either have:
- Full planning consent or a resolution to grant consent; and
 - Produce an uplift of more than 10,000 square meters (Gross External Area (GEA)) of mixed-use floorspace, or over 150 residential units.

110. In addition, any office to residential conversions (granted under the General Permitted Development Order) giving rise to >150 residential units will be considered.
111. These parameters have been set to allow all the schemes coming forward within the area of the site to be subject to an initial screening exercise to determine the schemes that, based on the scale of development (amount and mix of uses), could potentially have a cumulative effect with the Proposed Development and should be considered further within the cumulative effects assessment of the EIA.
112. By applying these parameters to all the schemes coming forward, the cumulative effects assessment of the EIA becomes more focused on the larger schemes (i.e. those with the potential to interact in a cumulative manner), rather than trying to assess all, including the smaller, domestic applications such as loft and garage conversions and changes of use. Each technical chapter of the ES will be clear on the Cumulative Schemes that have been considered within the cumulative effects assessment of the topic in question, including a reasoning behind their inclusion. Where Cumulative Schemes are 'screened out' of the cumulative effects assessment, the reasoning for doing so will be presented.
113. As part of this EIA sopping process, the RBC (and other consultees, as relevant) are invited to comment on the proposed 1km catchment area and the floorspace parameters defined above to screen the development schemes and so ultimately, the schemes to be considered within the cumulative effects assessment of the EIA.
114. Other schemes that are under construction, where the construction works are significant progressed or where early phases are occupied, will be factored into the baseline conditions.
115. It is acknowledged that there may be other development schemes that are at the **pre-application stage or that have been submitted for planning** but not yet determined by the RBC that may be significant enough to warrant consideration within the cumulative effects assessment. The requirement to include any specific schemes that fall within this category should be identified by the RBC through the EIA Scoping Opinion. Should other development schemes that are at the pre-application stage or that have been submitted for planning but not yet determined be identified by the RBC for inclusion in the cumulative effects assessment, it should be acknowledged by the RBC that the ES will address these as far as is reasonable practicable and that the assessments will be based on the information available on these schemes that is within the public domain.
116. In some instances, cumulative developments that are under construction, where the construction works are significantly progressed or where early phases are occupied, will be factored into the baseline conditions. This will be clearly set out within each individual topic's cumulative assessment methodology text.
117. A preliminary list of cumulative schemes for consideration within the EIA has been identified and is presented in **Appendix A** of this request for an EIA Scoping Opinion. The RBC's feedback on this list is requested to ensure that all cumulative schemes are adequately assessed in the EIA.
118. Of note, is that to the south of the site is a parcel of land known as RBC Development Site for which there are aspirations to develop this area to provide a new high-quality civic core, providing a new Civic Offices building, along with a mix of other uses including residential and supporting community uses and new open spaces. There is likely to be an SPD produced for this site, but consultation on this is not scheduled until later this year, and therefore this is not proposed to be assessed at this time. This is considered to align with the requirements of the EIA Regulations. However, the status of this site will be monitored, and assessed if needed.

Effect Interactions

119. Effect interactions occur as interactions between effects associated with just one project, i.e. the combination of individual effects arising as a result of the Proposed Development, for example effects in relation to noise, airborne dust or traffic on a single receptor.
120. Effect Interactions from the Proposed Development itself on particular receptors at the site will be considered during the construction works and also once the Proposed Development is completed and operational. Dependent on the relevant sensitive receptors, the assessment will focus either on key individual receptors or on groups considered to be most sensitive to potential effect interactions. It should be noted that only residual effects that are of minor, moderate or major significance, will be considered within this assessment. Residual effects of negligible or neutral significance will be excluded from this assessment by virtue of their definition, they are considered to be imperceptible.

121. There is no established methodology for assessing the impact of cumulative effects and effect interactions on a particular receptor. Therefore, a significance threshold will not be applied to the combination of individual effects, instead the effect interaction will be discussed and where possible, professional judgement will be applied to determine whether the effect interaction is considered significant.
122. Consideration of effect interactions will be presented within the ES in a separate chapter titled 'Effect Interactions'.

DETERMINING EFFECT SIGNIFICANCE – TERMINOLOGY AND APPROACH

Reference to 'Impact' and 'Effect'

123. It is noted that the terms 'impact' and 'effect' are distinctly different. Having gained an understanding of the likely impact it is then important to know whether the change in environmental or socio-economic conditions results in a significant environmental effect. The impacts of the Proposed Development may or may not result in significant effects on the environment, depending on the sensitivity of the resource or receptor and potentially other factors (such as duration). The assessment of the likely significant effects of the development is a requirement identified by Schedule 4 of the EIA Regulations.

Receptor Sensitivity and Magnitude of Impact

124. To achieve a consistent approach across the different technical disciplines addressed within the ES (Volume 1), assessments will broadly define the sensitivity of the receptors that could be affected by the Proposed Development and the magnitude of impact or change from the baseline conditions in order to derive the resultant effect.
125. Terminology to describe the sensitivity of receptors and magnitude of impact or change from the baseline conditions is broadly as follows:
- High;
 - Medium;
 - Low; and
 - No Impact (in relation to magnitude of impact or change only).
126. Each of the technical assessment chapters of the ES (Volume 1) will provide further detail on the definition of each of the above terms specific to the topic in question and will also provide the criteria, including sources and justifications, for quantifying the different levels of receptor sensitivity and 'impact magnitude'. Where possible, this will be based upon quantitative and accepted criteria (for example, national standards for air quality and noise), together with the use of value judgement and expert interpretation.
127. Alternatively, some technical assessment chapters may differ in the terminology adopted to describe the magnitude of impact or change from the baseline conditions. Where this occurs, the alternative terminology adopted will be clearly set out within the individual ES chapter.

Identification of a Resultant Effect

128. The basis for determining the resultant effect generally takes into account the sensitivity of the receptor and magnitude of impact or change from the baseline conditions. A generic matrix that combines the sensitivity of the receptor and the magnitude of impact to identify the resultant effect is provided within Table 2.

Receptor Sensitivity	Magnitude of Impact		
	High	Medium	Low
High	Major	Major	Moderate
Medium	Major	Moderate	Minor
Low	Moderate	Minor	Negligible

Scale of Effect

129. Table 3 provides the broad definition of the 'scale' of the resultant effect i.e. definitions of Major, Moderate, Minor and Negligible effects. The definitions may be adjusted to suit the technical topic in question; where this is the case revised definitions of effect scale will be presented in the technical assessment chapters of the ES (Volume 1) and in ES Volume 2.

130. Where there is 'No Effect' this will be stated.

Table 3 Broad Definitions of the Scale of the Resultant Effect

Type of Effect	Description
Major	These effects may represent key factors in the decision-making process. Major effects generally result from receptors of high sensitivity (such as national importance or likely to be important considerations at a regional or district scale) and/or impacts of a high magnitude (such as the loss of large areas of land). Major effects can also result from receptors of medium sensitivity combined with an impact of a high magnitude, or receptors of high sensitivity combined with an impact of a medium magnitude.
Moderate	These effects, if adverse, are likely to be important at a local scale and on their own could have a material influence on decision-making. Moderate effects generally result from receptors of medium sensitivity combined with an impact of a medium magnitude. Moderate effects can also result from receptors of low sensitivity combined with an impact of a high magnitude, or receptors of high sensitivity combined with an impact of a low magnitude.
Minor	These effects may be raised as local issues and may be of relevance in the detailed design of the project but are unlikely to be critical in the decision-making process. Minor effects generally result from receptors of medium sensitivity combined with an impact of a low magnitude, or receptors of low sensitivity combined with an impact of a medium magnitude.
Negligible	Effects which are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error, these effects are unlikely to influence decision making, irrespective of other effects. Negligible effects generally result from receptors of low sensitivity, combined with an impact of a low magnitude.

Effect Nature

131. Table 4 provides definitions of the 'nature' of the resultant effect i.e. definitions of Adverse and Beneficial.

Table 4 Definition of the Nature of the Resultant Effect

Type of Effect	Description
Adverse	Detrimental or negative effects to an environmental / socio-economic resource or receptor. The quality of the environment is diminished or harmed.
Beneficial	Advantageous or positive effect to an environmental / socio-economic resource or receptor. The quality of the environment is enhanced.

Geographic Extent of Effect

132. The ES (Volumes 1 and 2) will identify the geographic extent of the identified effects. At a spatial level, 'site' or 'local' effects are those affecting the site and neighbouring receptors, while effects upon receptors in RBC beyond the vicinity of the site and its neighbours are considered to be at a 'district / borough' level. Effects affecting Berkshire are considered to be at a 'regional' level, whilst those which affect different parts of the country, or England as a whole, are considered being at a 'national' level.

Effect Duration

133. For the purposes of the ES, effects that are generated as a result of the construction works (i.e. those that last for this set period of time) will be classed as 'temporary'; these may be further classified as either 'short term' or 'medium-term' effects depending on the duration of the construction works that generate the effect in question. Effects that result from the completed and operational phases of the Proposed Development will be classed as 'permanent' or 'long-term' effects.

Direct and Indirect Effects

134. The ES will identify whether the effect is 'direct' (i.e. resulting without any intervening factors) or 'indirect' or 'secondary' (i.e. not directly caused or resulting from something else).

Residual Effects

135. Where mitigation measures are identified to either eliminate or reduce adverse effects, these will be

incorporated into the ES, for example either through the design, or will be translated into construction commitments; or operational or managerial standards / procedures.

136. The ES will then highlight the 'residual' effects (those effects which remain following the implementation of suitable mitigation measures).

Effect Significance

137. Following identification of an effect, the effect scale, nature, geographic extent and duration using the above summarised terminology, a clear statement will then be made within the ES as to whether the effect is significant or not significant. As a general rule, the following applies:

- 'Moderate' or 'major' effects are deemed to be 'significant'.
- 'Minor' effects are considered to be 'not significant', although they may be a matter of local concern; and
- 'Negligible' effects are considered to be 'not significant' and not a matter of local concern.

138. Where mitigation measures are identified to either eliminate or reduce likely significant adverse effects, these will be incorporated into the ES, for example either through the design, or will be translated into construction commitments; or operational or managerial standards / procedures. These measures will be compiled in a Mitigation and Monitoring Schedule, included in the ES as a separate chapter.

139. The ES will then highlight the 'residual' likely significant effects (those effects which remain following the implementation of suitable mitigation measures) and classifies these in accordance with the terminology defined above.

TOPICS WITH THE POTENTIAL FOR LIKELY SIGNIFICANT EFFECTS

Socio-Economics

Introduction

140. The ES will include an assessment of the likely socio-economic effects of the Proposed Development associated with both the construction phase and completed development i.e. operational phase. The assessment will be undertaken by Regeneris.

Baseline

141. The site is situated within the WSOA of the Reading CAAP and currently comprises existing retail space and office space at Broad Street Mall, including Quadrant House and Fountain House. The area immediately surrounding the site is dominated by retail and office uses of varying density and some of poor quality.
142. The refurbishment and regeneration of the site would provide an important regeneration opportunity for the area in terms of the provision of new homes, creation of new jobs which would provide longer term socio-economic benefits to the area. The Proposed Development will attract additional population in the locality, which would place additional demand on local recreational spaces, healthcare and educational facilities in the vicinity of the site.

Sensitive Receptors

143. Potentially sensitive receptors to be assessed within the baseline are therefore identified as:

- Existing population and demographic characteristics;
- Existing housing supply (provision of private, shared and affordable housing);
- Existing employment;
- Existing educational facilities and capacity (early years, primary and secondary);
- Existing healthcare facilities (GP's and dentists); and
- Existing open space provision (children's play space and open space).

Potential Effects

144. Following establishment of the existing baseline conditions, the socio-economic assessment will examine the following likely significant effects:
- Loss of existing employment;
 - The generation of temporary employment opportunities during the construction phase;
 - The creation of net additional long-term employment opportunities from the proposed commercial uses of the Proposed Development;
 - The net effects of additional expenditure resulting from the additional employees and residents;
 - The provision of new homes and the contribution of the new homes, including affordable homes, to local policy housing targets;
 - Implications of the site's new residential population for early years, primary and secondary school places; and
 - Implications of the site's new residential population upon primary healthcare facilities and open space provisions including children's play space.

Scope of Assessment

145. There are no published standards or technical guidelines that set out a preferred methodology for assessing the likely socio-economic effects of a development. However, there are a series of commonly

used methodologies for quantifying economic effects both during the construction of a development and following its completion. Where possible, the likely significant socio-economic effects will be quantified, but where this is not feasible, a qualitative assessment will be provided using professional judgement and experience. The following section summarises the approach that will be used to conduct the assessment. Full details of the methodology including all sources and references will be provided as part of the ES. The proposed methodology will include:

- The relevant socio-economic baseline conditions will be assessed using established statistical sources such as the Census of population, Office for National Statistics, National Health Service, Business Register and Employment Survey as well as relevant evidence-based studies from RBC. Where necessary, consultation will be undertaken with RBC, the Education Department and Clinical Care Commissioning Group to test the findings;
 - Identification and assessment of likely effects, using appropriate modelling techniques where necessary. This will include:
 - An estimation and quantification of any existing on-site Full Time Equivalent (FTE) jobs lost as a result of the Proposed Development. These will be estimated using existing floorspace schedules and relevant employment densities based on the Homes and Communities Agency's (HCA) Employment Density Guide;
 - An estimation of the FTE jobs generated during the construction phase. This will use data on construction spend estimates and use Communities and Local Government (CLG) / Offpat Labour co-efficient ratios to derive estimates of the likely number of temporary construction workers per annum during the construction phase;
 - An estimation and quantification of the FTE jobs created by the completed and operational Proposed Development. On-site jobs will be estimated using established employment density ratios. Off-site jobs will be estimated using standard HCA Additional Guide multipliers;
 - An estimation of the new residential site population and child yield arising from the Proposed Development. Child yields will be calculated based on RBC's 5 approach to assessing child yield arising from new developments;
 - An estimation and quantification of the additional expenditure created by the completed and operational Proposed Development. This will use data on the socio-economic profile of the new community associated with the Development and the Family Expenditure Survey (FES) as well as local retail assessments; and
 - An appraisal of the likely effects of the Development's additional population on existing early years provision, local primary and secondary schools, primary healthcare facilities, open space and children's play space using recognised standards for local provision.
 - Identification of appropriate mitigation measures should any significant adverse effects be identified.
146. There are no formalised technical guidance or criteria available to assess the significance of socio-economic effects. Likely effects are therefore assessed by considering the following factors, using professional judgement:
- The sensitivity of each receptor affected; and
 - The magnitude of change / impact to the receptor brought about by the Proposed Development.
147. The sensitivity of each receptor will be evaluated as being high, medium, low or negligible based on a review of the baseline position of each receptor together with consideration of the importance of the receptor in policy terms. This can be summarised as follows:

- **High:** Evidence of direct and significant socio-economic challenges relating to receptor. May be given a high priority in local, regional or national economic and regeneration policy;
 - **Medium:** Some evidence of socio-economic challenges linked to receptor, which may be indirect. Change relating to receptor has medium priority in local, regional and national economic and regeneration policy;
 - **Low:** Little evidence of socio-economic challenges relating to receptor. Receptor is given a low priority in local, regional and national economic and regeneration policy; and
 - **Negligible:** Very low importance and rarity with little or no priority even at local scale.
148. The magnitude of change / impact to a receptor will be determined by considering the estimated deviation from baseline conditions, both before and, if required, after mitigation. The criteria used for the assessment of the magnitude of socio-economic impacts are shown in **Table 5**.

Table 5 Definition of Magnitude of Change / Impact

Magnitude	Criteria
High	Loss of resource and / or quality and integrity of resource; severe damage to key characteristics, features or elements
	Large scale or major improvement of resource quality; extensive restoration or enhancement; major improvement of attribute quality
Medium	Loss of resource, but not adversely affecting the integrity; partial loss of / damage to key characteristics, features or elements
	Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality
Low	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements
	Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring
Negligible	Very minor loss or detrimental alteration to one or more characteristics, features or elements
	Very minor benefit to or positive addition of one or more characteristics, features or elements

149. In reporting the likely scale of the effects of the Proposed Development, with respect to both the construction works and the completed development, the assessment contextualises both the sensitivity of the receptor and the magnitude of the change / impact as a result of the Proposed Development. The matrix used to determine the scale of socio-economic effects is presented in **Table 6**.

Table 6 Matrix Used to Determine the Scale of Socio-economic Effects

Sensitivity of Receptor	Magnitude of Change / Impact			
	Negligible	Low	Medium	High
Negligible	Negligible	Negligible	Minor	Minor
Low	Negligible	Minor	Minor	Moderate
Medium	Negligible	Minor	Moderate	Major
High	Minor	Minor or Moderate	Moderate or Major	Major

Air Quality

Introduction

150. An air quality assessment will be prepared by Hoare Lea.
151. The air quality assessment will review the potential for significant air quality effects resulting from the Proposed Development and how the air quality in the surrounding area may be affected. This takes into consideration the potential effect of the Proposed Development on local air quality and of local air quality on future residents of the Proposed Development ('site suitability').
152. This request for an EIA Scoping Opinion presents the approach for the air quality assessment which will include a review of relevant legislation and planning policy where pertinent to the assessment methodology, outline initial baseline information and detail the proposed scope and methodology for the assessment of air quality effects in the EIA.

Baseline

153. A baseline air quality review will be undertaken to determine the existing air quality in the vicinity of the site. The site is in the centre of Reading and close to the A329, which will be a significant source of emissions from road traffic.
154. Existing or 'baseline' air quality refers to the existing concentrations of relevant substances present in ambient air. These substances may be emitted by various sources, including road traffic, industrial, domestic and natural sources.
155. This desk-top study will be undertaken using the following sources:
- Air quality data for RBC, including a review of the Air Quality Annual Status Reports and local monitoring data;
 - The UK Pollutant Release and Transfer Register⁵;
 - Background pollution maps from Defra's Local Air Quality Management (LAQM) website⁶;
 - The UK Ambient Air Quality Interactive Map⁷; and
 - Aerial photography from Google Maps.
156. The most recent meteorological data will be used in conjunction with air quality data, gathered during the same time period, for the dispersion modelling, this will be for 2016 as it is understood currently 2017 air quality data is unavailable.
157. RBC has declared the whole city centre as an AQMA for likely exceedances of the annual mean objective for NO₂. The Proposed Development is therefore located within an AQMA. The principal source of pollutants in the borough is road traffic exhaust emissions; therefore, there is a risk of exceedances of the annual mean NO₂ objective in areas located close to major roads, including the site.
158. RBC monitors NO₂ and fine particulate matter (PM₁₀) at a number of locations within the borough using automatic monitoring stations and diffusion tube (non automatic) monitoring sites (**Figure 4**). The principal sources of these pollutants are combustion systems associated with road traffic. Monitoring results from diffusion tubes within 500 m and automatic monitors within 1 km of the site boundary are provided in Table 7 and Table 8 respectively.
159. Monitored roadside annual mean NO₂ concentrations ranged from 31 µg/m³ to 52 µg/m³ in 2016, and the annual mean objective of 40 µg/m³ has been exceeded at five of the diffusion tube monitoring sites (DT19, DT33, DT38, DT39 and DT40). Exceedances of the annual mean objective have been measured in the town centre, which would indicate that there is a risk of exceedances at the site (**Table 7**). The closest automatic monitoring station, located approximately 1 km north of the site, measured concentrations below the objectives for NO₂ and PM₁₀ (**Table 8**). As part of the air quality ES chapter a complete baseline review of air quality will be undertaken, as described above.

⁵ <http://prtr.defra.gov.uk/>

⁶ <https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2015>

⁷ <https://uk-air.defra.gov.uk/data/gis-mapping>

160. The monitoring sites operated by RBC provide comprehensive coverage in the town centre and provide appropriate sites to use for model verification; therefore, it is not considered necessary to undertake any further air quality monitoring as this existing monitoring data provides a long term data set.

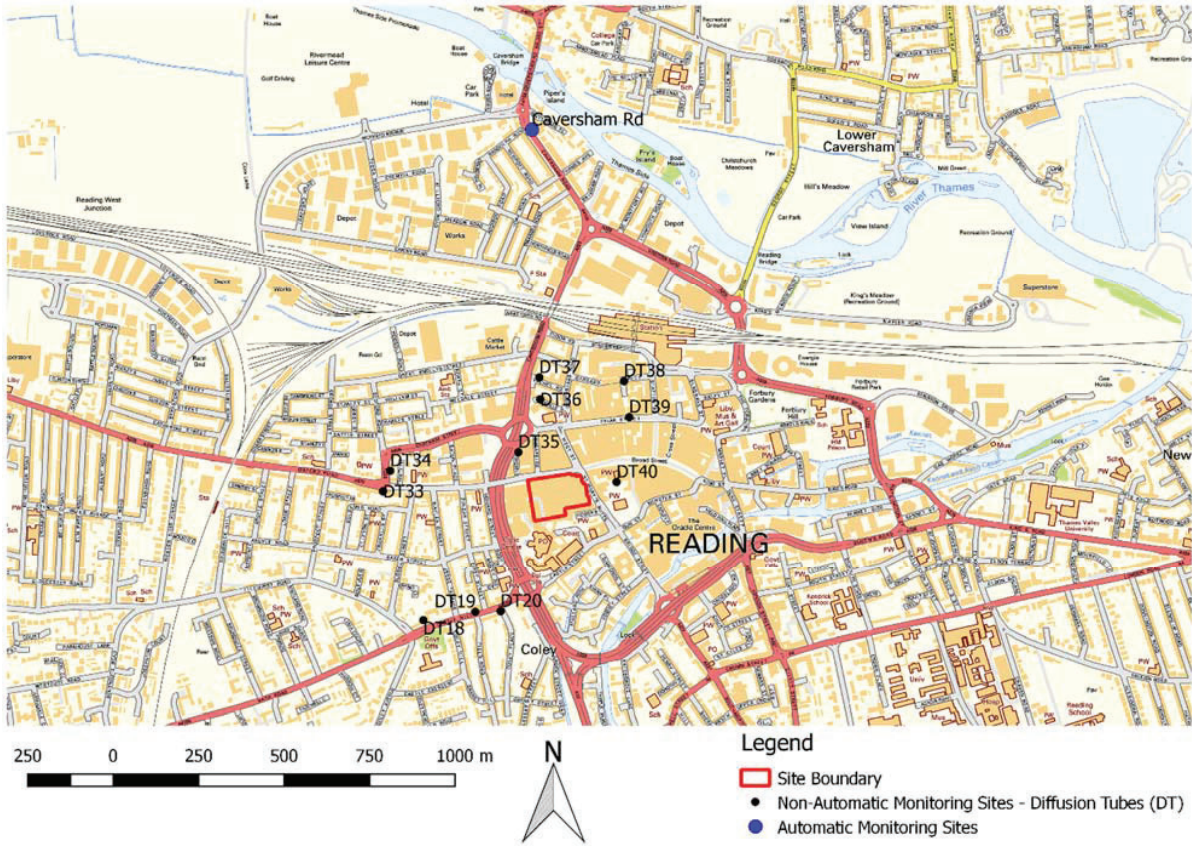
Table 7 Diffusion Tube Annual Mean Measured NO₂ Concentrations (2016)

Site ID	Location	Type	Approximate Distance from Site (km)	Concentration (µg/m ³)
DT 18	162a Castle Hill	Roadside	450	37
DT19	128 Castle Hill	Roadside	320	45
DT20	Blenheim Terrace	Roadside	290	39
DT33	165 Oxford Road	Roadside	420	44
DT34	10 Trinity Place	Roadside	400	31
DT35	Picture House	Roadside	80	32
DT36	Sackville Street	Roadside	230	37
DT37	Vachel Street	Roadside	300	35
DT38	Garrard Street	Roadside	300	42
DT39	Friar Street Nandos	Roadside	220	52
DT40	Station 1	Roadside	90	47

Table 8 Automatic Monitors Annual Mean Measured NO₂ and PM₁₀ Concentrations (2016)

Monitoring site and distance (m) from site boundary (approximate)	Objective	Site Type	2016
NO ₂			
Caversham Road, 1000 m	Annual mean (µg/m³)	Roadside	32
	Number of hours with concentrations >200 µg/m³ (18 exceedances are permitted in a year)		0
PM ₁₀			
Caversham Road, 1000 m	Annual mean (µg/m³)	Roadside	19
	Number of days with concentrations > 50 µg/m³ (35 exceedances are permitted in a year)		2

Figure 4 Local authority automatic and non-automatic air quality monitoring locations in vicinity of the Proposed Development with approximate site boundary (Contains OS Data © Crown Copyright and Database rights 2018)



Sensitive Receptors

161. Sensitive receptors include human receptors and ecological sites.

Potential Effects

162. Those aspects that have the potential for likely significant effects, and are therefore included within the air quality assessment are listed below:

- Construction activity generating dust and particulate matter impacting existing and proposed receptors, including on-site activity (works, machinery, vehicle movements) and potential off-site effects from trackout;
- Energy combustion plant proposed as part of the Proposed Development impacting on local air quality, specifically NO₂;
- Road traffic generated by the scheme impacting air quality at existing receptors, specifically NO₂; and fine particulate matter (PM₁₀ and PM_{2.5}); and
- Existing air quality impacting proposed new receptors, specifically NO₂, PM₁₀ and PM_{2.5}.

Scope of Assessment

Construction

163. Guidance from the Institute of Air Quality Management (IAQM)⁸ advises the need for a construction dust

⁸ Guidance on the Assessment of Dust from Demolition and Construction, Version 1.1 (IAQM, 2016)

assessment if there are human receptors within 350m of the boundary of the site or within 50m of construction vehicle trackout routes and if there are ecological receptors within 50m of the site boundary of the trackout routes. There are sensitive human receptors within 350m of the site boundary and within 50m of the potential construction vehicle routes and as such a construction dust assessment will be undertaken.

164. At this stage the presence of ecological sites is to be confirmed and if present within 50m distance of the site boundary they will be assessed qualitatively as part of the construction assessment in collaboration with the project ecologist.

Completion of the Development

165. The impact of emissions from road traffic generated by the Proposed Development on existing receptors will be assessed if the change in traffic flow exceeds 100 daily movements on a road link, as set out in the criteria published by Environmental Protection UK (EPUK) and the IAQM in Land-Use Planning & Development Control: Planning for Air Quality⁹. These receptors will be located on the façades of properties closest to the road sources, paying particular attention to those located close to junctions, where traffic may become congested, and there is a combined effect from several road links. This will be assessed using ADMS Roads modelling software.
166. There may also be emissions from proposed energy combustion sources on site. Should centralised energy plant be included in the proposals, i.e. gas boilers and combined heat and power (CHP) plant, the effect on local receptors will be assessed. The impacts of existing air quality on the Proposed Development will be assessed using the ADMS-Roads dispersion modelling software, with predicted concentration compared, against the relevant air quality objectives.
167. In addition, as the site is located within an AQMA, there is potential for air quality impacts on future residents of the Proposed Development. Exposure of the users of the Proposed Development will also be assessed in line with the EPUK / IAQM guidance ('site suitability').
168. Following the assessment of both the construction, and operational impacts, details of any mitigation measures required to avoid, reduce or compensate for any significant adverse impacts on air quality will be provided
169. Professional judgement, by a suitably qualified air quality specialist, will be used to determine whether, the effect, is likely to be significant, or not.

⁹ Land-Use Planning & Development Control: Planning for Air Quality, Version 1.2 (EPUK & IAQM, 2017)

Noise and Vibration

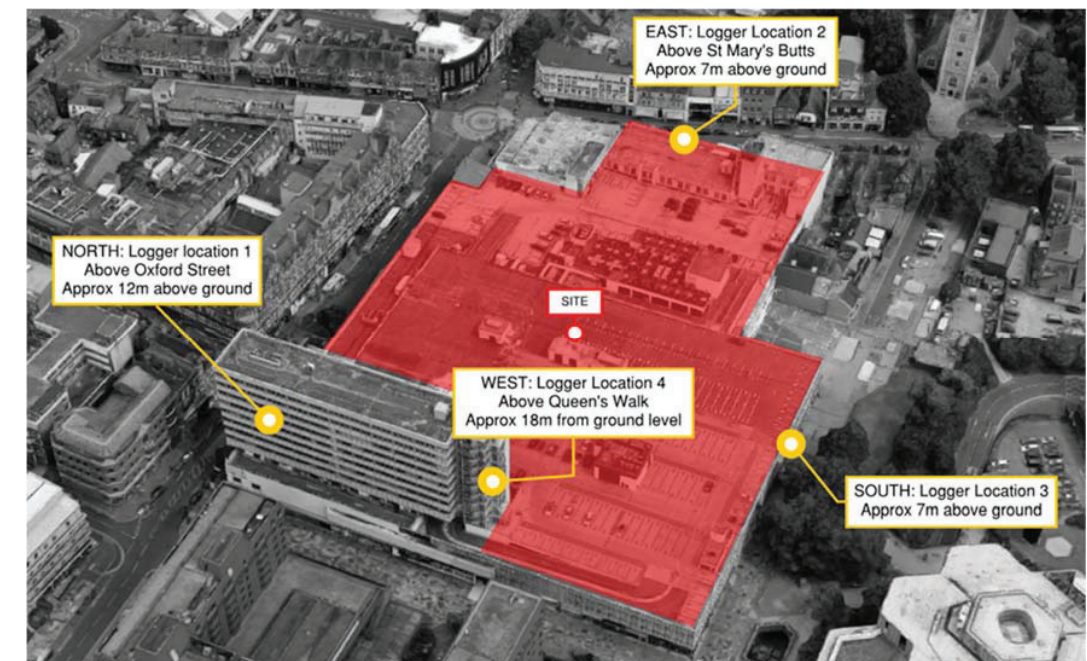
Introduction

170. A noise and vibration assessment will be prepared by Hoare Lea.

Baseline

171. A baseline environmental noise survey has been carried out around the Proposed Development between 13 June 2018 and 18 June 2018. The survey duration included both weekday and weekend periods. The survey comprised unattended continuous noise logging at four locations around the perimeter of the Broad Street Mall site overlooking the surrounding streets and the nearest noise sensitive receivers. The measurement positions and their respective heights above ground level are indicated in **Figure 5**.
172. The locations of the measurement positions were informed by the need to capture the prevalent noise levels incident around the site as well as determine the background noise levels outside the nearest surrounding premises within practical site constraints.
173. The purpose of this study is to determine the predominant noise sources (including but not limited to road traffic, air traffic, industrial, domestic or natural sources) around the site and the existing prevalent noise levels in the area resulting from these.

Figure 5 Noise survey measurement locations



174. A nightclub venue is located adjacent to the south-eastern boundary of the site along Hosier Street. This venue was closed during the duration of the noise survey carried out on site, and it is not clear at this point whether it will become operational in the future. Furthermore, a separate planning application for a hotel development is understood to be proposed on the plot of land currently occupied by the night club premises, which would remove this local noise source.
175. The Proposed Development is to be located at the following approximate distances from potential vibration sources:
- 500 m away from the nearest major vibration source, the railway line to the north of Reading city centre; and
 - 80 m away from the A329 ring road, to the west.

Sensitive Receptors

176. The key sensitive receptors around the site perimeter will be identified with consultation with the council tax registry in the area. These will also inform the assessment of plant noise egress from building services plant, subject to future proposed plant locations.
177. **Table 9** outlines receptor sensitivity, this table indicates that all residential receptors as highly sensitive.

Table 9 Noise Receptor Sensitivities

Sensitivity	Typical descriptors
High	Residential receptors (e.g. houses, flats and apartments, as well as residential healthcare and educational establishments). Educational facilities (e.g. schools and colleges).
Medium	Non-residential: healthcare and hospitals. Noise sensitive leisure receptors (e.g. hotels, museums, libraries, etc.).
Low	Commercial facilities (e.g. retail, office developments).
Very Low	Industrial receptors (e.g. workshops, warehouses)

Potential Effects

178. The following elements are the key noise and vibration issues relating to the Proposed Development:
- Noise and vibration will be generated during the construction works of the Proposed Development as well as during any required enabling works which has the potential to affect nearby residential receptors. Whilst general construction activities are not likely to generate perceptible levels of vibration at the nearby sensitive receptors. However, piling and enabling structural bracing works may generate perceptible levels of construction vibration within the existing Broad Street Mall;
 - The Proposed Development has the potential to generate noise during operation that may affect nearby residential receptors such as new building services plant associated with the proposed residential units; and
 - The Proposed Development site is exposed to noise from external noise sources (i.e. road traffic from the surrounding road network) ('site suitability').
179. It is anticipated that the completed development will generate a negligible increase in road traffic flows due to the limits already imposed on traffic circulation around the Proposed Development. Therefore, the noise and vibration effects of road traffic flows during the finished operation of the Proposed Development are proposed to be scoped out of the assessment.
180. It is not anticipated that any new building plant will generate new vibration effects, and therefore this has been scoped out of the EIA.
181. As the Proposed Development is located at a large distance from the nearest vibration sources, it is proposed that the assessment of 'site suitability' in relation to vibration be scoped out of the assessment.

Scope of Assessment

182. Consequently, the noise and vibration chapter will include:
- Assessment of construction noise. Construction noise is temporary and cannot be assessed in the same way as more permanent operational impacts. Based on likely construction plant and the works programme, anticipated noise levels will be predicted at the most relevant sensitive locations identified below using the methodology set out in BS 5228: 2009 "Code of practice for noise & vibration control on construction and open sites" (Part 1). Where the types of plant are not known, a representative sound power level will be applied from BS5228-Part 1; Assessment of construction vibration. Given the location of the Proposed Development on top of the existing Broad Street Mall structure, construction vibration will be assessed based on likely construction plant and the works programme using the methodology set out in British Standard 5228: 2009 "Code of practice for

noise & vibration control on construction and open sites" (Part 2). Where the types of plant are not known, representative vibration data will be applied from BS5228-Part 2;

- Assessment of the existing and potential future external noise effects on the scheme. This assessment will be carried with regards to any existing RBC planning guidance documentation;
- Based upon the outcome of the assessment, the chapter will outline mitigation measures to achieve internal noise levels set out within BS 8233: 2014 "Sound insulation and noise reduction for buildings – Code of practice"; and
- Noise from new building services plant associated with the Proposed Development are proposed to be assessed in accordance with British Standard 4142: 2014 "Method for Rating Industrial Noise Affecting Mixed Residential and Industrial Areas", relative to the baseline noise conditions measured during the survey and the nearest existing noise sensitive receptors.

183. The predicted scale of an effect will be determined through a standard method of assessment based on professional judgement, considering the sensitivity of the receptor and magnitude of change / impact as detailed in **Table 10**. These criteria apply to all sources of noise.

Table 10 Scale of Potential Effects

Receptor Sensitivity	Magnitude of Impact					
		Very High	High	Medium	Low	Very Low
	High	Major	Moderate	Minor	Minor	Negligible
	Medium	Moderate	Minor	Minor	Negligible	Negligible
	Low	Minor	Minor	Negligible	Negligible	Negligible
	Very Low	Minor	Negligible	Negligible	Negligible	Negligible

184. All major and moderate impacts are to be considered as 'significant' in the context of the noise impact assessment for the EIA.

Wind Microclimate

Introduction

185. The wind microclimate chapter will be prepared by RWDI.
186. The assessment of the wind microclimate will be based on the results from a series of tests of physical models within the wind tunnel to provide a detailed, quantitative assessment. The wind microclimate will be benchmarked against the Lawson Comfort Criteria¹⁰ which have been previously used to assess the wind microclimate on many urban developments across the UK.
187. The wind tunnel model will be built at a scale of 1:300 and cover an area centred on the site with a radius of 360 meters.
188. The wind tunnel test results will combine the wind speed data around the building with long-term meteorological data for London in order to provide a full statistical breakdown of the mean and gust wind conditions both onsite and at off-site locations for all wind directions.

Baseline

189. The baseline assessment will evaluate the existing wind microclimate at the site and benchmark those conditions against the Lawson comfort Criteria.
190. The basic methodology for quantifying the baseline pedestrian level wind environment is outlined below:
- Step 1: Adjust standard meteorological data to account for conditions at the site;
 - Step 2: Measure the building-induced wind speeds at pedestrian level in the wind tunnel;
 - Step 3: Combine these to obtain the expected frequency and magnitude of wind speeds at pedestrian level; and
 - Step 4: Compare the results with the Lawson Comfort Criteria to 'grade' existing conditions around the site.

Sensitive Receptors

191. The wind conditions will be primarily compared with the intended pedestrian use of the development because this assessment will take into account changes in pedestrian activities that accompany development.
192. The likely impacts would therefore relate to a wind microclimate that is too windy for the intended use of an area and/or in more extreme cases the generation of strong winds capable of impeding movement.
193. With respect to the site itself, sensitive receptors will include the following locations (where present on the development) – with the required wind conditions specified for each use (if included):
- Thoroughfares (at ground level) – targeting strolling wind conditions;
 - Entrances – targeting standing wind conditions;
 - Seating areas (including that associated with any proposed cafés etc) – targeting sitting wind conditions during the summer season
 - Amenity spaces (including child playspace) – targeting sitting to strolling wind conditions; and
 - Terraces (podium or roof level, if included) – targeting sitting wind conditions during the summer season.
194. In addition, the wind conditions on the surrounding area will also be considered within the area that would potentially be influenced by the Proposed Development. For sensitive receptors surrounding the site, consideration will be given to the uses listed above where appropriate, as well as:
- Bus stops – targeting standing wind conditions;

¹⁰ Lawson, T. (2001). Building Aerodynamics. London: Imperial College Press.

- Pedestrian crossings – targeting walking wind conditions; and
- Amenity spaces – targeting sitting to strolling wind conditions.

195. The ES will include plans that provide details on the location and sensitivity of these uses.

Potential Effects

196. When a new development is built, wind flow patterns within the site and its immediate surrounds are often modified; this could either result in increased wind speeds or increased shelter at certain locations and for certain wind directions.
197. The likely effects relate to:
- A wind microclimate that is too windy for the intended use of an area; and/or
 - In more extreme cases, the generation of 'strong winds' capable of impeding movement. 'Strong winds' are defined as wind speeds in excess of 15 m/s for more than 2 hours of the year.
198. The wind assessment will take account of the wind microclimate for 36 wind directions in order to provide a fully quantifiable assessment of the calm and windy zones around and within the site.

Scope of Assessment

199. The following methodology will be used to quantify the pedestrian level wind environment:
- Measure the building-induced wind speeds at pedestrian level in the wind tunnel;
 - Adjust standard meteorological data to account for conditions at the site;
 - Combine these to obtain the expected frequency and magnitude of wind speeds at pedestrian level; and
 - Compare the results with the Lawson Comfort Criteria to 'grade' conditions around the site.
200. The suitability thresholds for different activities (as per the Lawson Comfort Criteria) are shown in **Table 11** and the scale of effect on wind microclimate are outlined in **Table 12**.
201. In addition to the criteria for pedestrian comfort, there is an additional threshold for occasional strong winds, which would potentially represent a safety concern. This threshold is a wind speed of 15m/s for more than two hours in a year.

Table 11 Lawson Comfort Criteria

Suitability	Wind speed threshold (5% time)	Description
Uncomfortable	>10 m/s	Winds of this magnitude are considered a nuisance for most activities, and wind mitigation is typically recommended.
Walking	8-10 m/s	Relatively high wind speeds that can be tolerated if the objective is to walk, run or cycle without lingering.
Strolling	6-8 m/s	Moderate breezes that would be appropriate for strolling along a city/town centre street, plaza or park
Standing	4-6 m/s	Gentle breezes suitable for main building entrances, pick-up/drop-off points and bus stops.
Sitting	0-4 m/s	Light breezes desired for outdoor restaurants and seating areas where one can read a paper or comfortably sit for long periods.

Table 12 Scale of Effect

Expected Wind Microclimate	Scale of Significance
Wind conditions are 3-steps calmer than those desired	Major Beneficial
Wind conditions are 2-steps calmer than those desired	Moderate Beneficial
Wind conditions are 1-step calmer than those desired	Minor Beneficial

Expected Wind Microclimate	Scale of Significance
Wind conditions are as desired	No Effect
Wind conditions are 1-step windier than those desired	Minor Adverse
Wind conditions are 2-steps windier than those desired	Moderate Adverse
Wind conditions are 3-steps windier than those desired	Major Adverse

202. Analysis will be conducted on a seasonal basis, however, the chapter will focus on the worst case results, which occur during the windiest season (normally winter but can be other times of the year) and those for the summer season, when the use of amenity spaces is usually more utilised.

Construction

203. The construction phase will be assessed qualitatively based on the professional judgement of an experienced wind engineer, using the assessment of the background wind climate at the site and an understanding of the effects of wind in the built environment. This due to the continuous changing nature of the works, and the activity on site being (e.g. construction activity) less sensitive to wind conditions.

Operation

204. Four configurations will be tested within the wind tunnel, as set out below:
- Configuration 1: existing site (baseline scenario) with the existing surrounding buildings;
 - Configuration 2: Proposed Development with the existing surrounding buildings;
 - Configuration 3: Proposed Development cumulative developments; and
 - Configuration 4: any required mitigation (if required).
205. With respect to Configuration 4, mitigation can usually be divided into two categories based upon changes to the massing to fundamentally influence the way in which the wind interacts with the building and more localised mitigation such as landscaping, screening and canopy features. On the former, the ES will stipulate what details have been included within the design of the development to mitigate adverse effects. These will be inherent in the design of the development, and will therefore not need to be tested separately.
206. On the latter, in the assessment there will initially be no landscaping and planting included as part of the wind tunnel model in order to provide a conservative assessment i.e. relatively windy, representation of the wind microclimate. Should the testing identify that mitigation is required, suggested mitigation will be tested within the wind tunnel model.
207. All adverse effects (minor, moderate or major) would be considered significant, on the basis that they would require mitigation in order to create conditions that are suitable for the intended use. Beneficial effects are not considered to be significant.

Daylight, Sunlight, Overshadowing, Light Pollution and Solar Glare

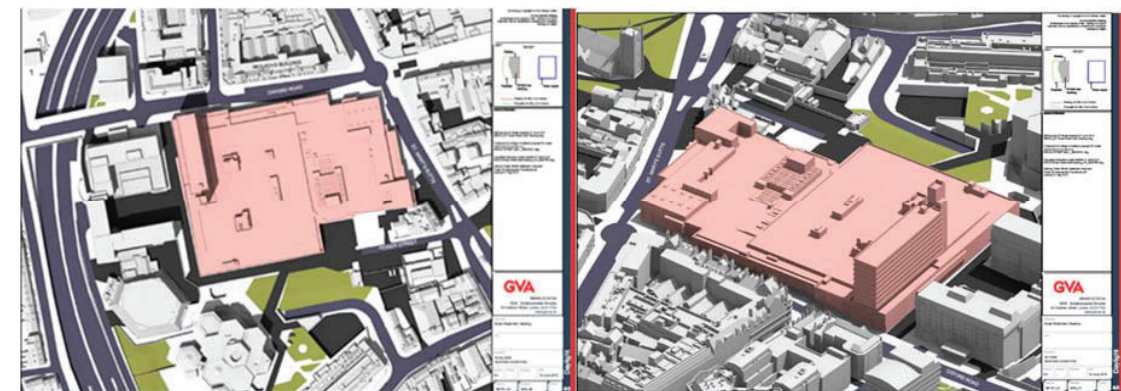
Introduction

208. In relation to daylight, sunlight, and overshadowing, the Proposed Development would give rise to a change in the built form of the site. This is anticipated to result in localised changes to the quantity and quality of daylight and sunlight experienced by occupants of residential buildings surrounding the site and overshadowing to nearby amenity areas. Specialist assessments will therefore consider the potential impact of the Proposed Development on daylight, sunlight and overshadowing. In addition, a separate stand-alone report will set out daylight, sunlight and overshadowing performance within the scheme itself.
209. In terms of solar glare, this can occur when sunlight is reflected from a glazed façade or area of metal cladding. This can affect road and rail users and the occupants of adjoining buildings. According to Building Research Establishment (BRE) Guidelines¹¹ the problem can occur either when there are large areas of reflective glass or cladding which slope back so that high altitude sunlight can be reflected along the ground. Thus, solar glare is only a long-term problem for some heavily glazed (or mirror clad) buildings. It is anticipated that the Proposed Development will not comprise such a design and that the proposed facades will be broken up by solid non-reflective elements. Therefore, it is anticipated that a solar glare assessment will not be required, subject to detailed design of the proposed facades.
210. In terms of light pollution, this is defined as light emitting from artificial sources into spaces where this light would be unwanted, such as spillage of electric light from office or commercial buildings into residential accommodation such as bedrooms, where this would cause inconvenience to occupants. Quantitative criteria for acceptable levels of light pollution are detailed within the Institution of Lighting Professionals (ILP) document entitled "Guidance Notes for the Reduction of Obtrusive Light". The Proposed Development is predominately residential and, therefore, the residential properties surrounding the site will therefore not be assessed for light pollution. However, where external lighting will be provided within the landscaping proposals for the site, as identified in the planning submission, the final lighting scheme will demonstrate it is in accordance with the ILP specifications. This will however not be assessed in the EIA.

Baseline

211. The baseline condition for the daylight, sunlight and overshadowing assessments will comprise all existing buildings on the site. The existing buildings are showing in red in **Figure 6**. Baseline conditions will be assessed and analysed through the use of 3D model and simulation. The 3D model will be based on a 3D measured survey of the site and relevant neighbouring buildings (conducted in May 2018). In addition, a photogrammetry 3D model will be used for additional context further from the site.

Figure 6 3D model of site used for the assessment



212. For the baseline, the daylight and sunlight conditions within each of the relevant surrounding sensitive receptors will be defined firstly under the existing site conditions by reference to the Vertical Sky Component (VSC, Daylight Distribution and. as a supplementary analysis, Average Daylight Factor

¹¹ (Littlefair P., (2011) Site Layout Planning for Daylight and Sunlight: A guide to good practice (2nd Edition), Building Research Establishment Trust, HIS BRE Press)

(ADF) methods.

213. With regards to the relevant existing surrounding outdoor amenity areas and the baseline level of overshadowing, the transient overshadowing (TOS) and sun hours on ground (SHOG) methodology will be used.
214. The daylight, sunlight and overshadowing effects of the Proposed Development will then be assessed against this baseline condition.

Sensitive Receptors

Daylight and Sunlight Receptors

215. The assessment will focus on surrounding residential buildings where the occupants have a reasonable expectation of daylight and sunlight. Commercial properties, such as offices and hotels, due to their reliance on electric lighting and / or transient nature in terms of occupation, will not be assessed.
216. Residential receptors identified on nearby roads / streets that are considered sensitive in relation to daylight and sunlight and will therefore be included within the assessments (as shown in **Figure 7**) include but are not limited to:
- McIlroy's Building, Oxford Road;
 - Residential flats above commercial units on St Mary's Butts (nos.55, 56, 57, 59 and 61); and
 - Queens Court Student Accommodation, 15 Queens Walk.

Figure 7 Surrounding Residential Receptors



Overshadowing Receptors

217. Areas of amenity space are considered most sensitive to overshadowing effects resulting from the Proposed Development. Owing to the southerly location of the sun path, only open space areas located from north-west through to north-east of the site require consideration in relation to overshadowing.
218. The following areas of amenity space have been identified as sensitive receptors in relation to the Proposed Development and will therefore be included within the assessments:
- Pedestrian shopping street Oxford Road;
 - Pedestrian shopping street St Mary's Butts;
 - Pedestrian shopping street Queens Walk; and
 - Pedestrian shopping street Hosier Street.

Potential Effects

219. The potential daylight, sunlight and overshadowing effects associated with the Proposed Development are considered to be as follows (and as relevant to the scope of the assessment in terms of receptors identified below):
- Changes to the daylight and sunlight amenity within surrounding residential properties and other properties identified which have a reasonable expectation to natural light because of the construction works;
 - Changes to overshadowing of surrounding outdoor amenity spaces because of the construction works;
 - Changes to the daylight and sunlight amenity to surrounding residential properties and other properties identified which have a reasonable expectation to natural light as a result of the Proposed Development once complete; and
 - Changes to overshadowing of surrounding outdoor amenity spaces as a result of the Proposed Development once complete, including outdoor amenity areas which comprise part of the Proposed Development.

Scope of Assessment

220. The assessments will be carried out in accordance with the BRE Guidelines: Site Layout Planning for Daylight and Sunlight 2011, A Guide to Good Practice, Second Edition 2011 and the British Standard (BS) 8206 Part 2 Lighting for buildings. Code of practice for daylighting (2008). The analysis will be undertaken from a 3D computer model constructed using specialist software.
221. Cumulative daylight, sunlight and overshadowing assessments, which take into account any nearby consented schemes, will be carried out where necessary.
222. It is important to note that in urban locations, where townscape issues and urban design dictate the design considerations, a planning balance having regard to daylight and sunlight effects needs to be found. It is, therefore, sometimes necessary to apply the BRE guideline criteria flexibly, having regard to a site's location and / or the density of development in the surrounding area. This is supported by the BRE Guidelines which state within the introduction that: "The guide is intended for building designers and their clients, consultants and planning officials. The advice given here is not mandatory and this document should not be seen as an instrument of planning policy. Its aim is to help rather than constrain the developer. Although it gives numerical guidelines, these should be interpreted flexibly because natural lighting is only one of the many factors in site layout design."

Construction

223. Owing to the evolving and changing nature of construction activities, the assessment of potential effects during construction of the Proposed Development on daylight, sunlight, overshadowing to surrounding properties will not be modelled. Instead, a qualitative assessment will be undertaken using professional judgement, with the worst-case scenario in terms of the effects quantitatively modelled and analysed through the assessment of the completed Proposed Development (see below for further details).

Completed Development

Daylight / Sunlight

224. The adequacy of daylight received by existing neighbouring dwellings will be measured using two methods of measurement. First, it is necessary to measure the VSC followed by the measurement of internal Daylight Distribution by plotting the position of the 'existing' and 'proposed' no sky line contour (NSL). ADF will be measured as a supplementary analysis.
225. In terms of sunlight, the BRE Guidelines limit the extent of testing for sunlight where a window faces within 90° of due south. The sunlight standards are normally applied to the principal living room within each neighbouring and proposed dwelling rather than to kitchens and bedrooms.
226. The nature (beneficial or adverse), scale (negligible, minor, moderate or major) and ultimately the significance of daylight and sunlight amenity effects will be determined using professional judgement and by reference to the BRE Guidelines.

Overshadowing

227. In terms of overshadowing, the BRE Guidelines suggest that where large buildings are proposed which may affect a number of gardens or open spaces, it is useful to plot a shadow plan to illustrate the location of shadows at different times of the day and year. The overshadowing analysis on the surrounding areas of amenity space will be undertaken by reference to the TOS method of assessment.
228. For the TOS assessment, the path of shadow will be mapped for the Proposed Development on the following dates as suggested by the BRE Guidelines. For each of these dates, the overshadowing will be calculated at hourly intervals throughout the day. The dates are:
- 21st March (Spring Equinox);
 - 21st June (Summer Solstice); and
 - 21st December (Winter Solstice).
229. Depending on the outcome of this analysis the SHOG assessment may be required for any amenity areas that appear to be significantly impacted by the Proposed Development. The SHOG assessment considers the proportion of a designated amenity space which receives 2 hours of direct sunlight on 21st March.
230. The significance of overshadowing effects will be determined using professional judgement and by reference to Appendix I of the BRE Guidelines. The nature (beneficial or adverse), scale (negligible, minor, moderate or major) and ultimately the significance of overshadowing effects will be determined using professional judgement.

Townscape, Built Heritage and Visual Impact Assessment

231. The Townscape, Built Heritage and Visual Impact Assessment (TBHVIA) will produced by KM Heritage.

Introduction

232. This section considers the potential significant effects of the Proposed Development on views, built heritage assets and townscape at the site and within the surrounding area. For the purposes of this chapter, the term 'built' heritage refers to the above ground heritage assets – below ground heritage assets are considered in the 'archaeology' section of this report.

Baseline

233. Information concerning heritage assets will be drawn from the national lists, local planning authority information concerning conservation areas and local planning authority information concerning non-designated heritage assets including locally listed buildings and locally listed parks and gardens. This includes, statutorily listed buildings, conservation areas, registered parks and gardens of special historic interest and locally listed buildings. This considers both direct effects, as well as the potential indirect impacts through change in their settings.
234. The townscape, views and the nature and distribution of heritage assets will be the subject of consultation with RBC and, if appropriate Historic England.

Sensitive Receptors

235. The site sits adjacent to the St Mary's Butts and Castle Street Conservation Area which is made up of three character areas: St Mary's Church and Graveyard; St Mary's Butts; and Gun Street and Castle Street Frontages. The majority of the buildings contained within this conservation area are statutorily listed in their own right at Grade II, but also comprise an overall area of historic character. For example, St Mary's Church is listed Grade I; 15, 17, 19 Castle Street, Holybrook House, Church of St Mary (Castle Street) and the Culvert on Holy Brook are listed Grade II*.
236. The conservation area appraisal identifies No.1 Gun Street as being a Building of Townscape Merit as well as a Landmark Building. A number of the other statutorily listed buildings are also identified as being Landmark Buildings within the conservation area.
237. Outside the conservation area, but in close proximity to the site and also statutorily listed are: 3 and 5 Cheapside (Grade II); 67 and 68 Broad Street (Grade II); Congregational Church and nos. 89 and 89A Broad Street (Grade II)
238. Additional heritage assets are located further afield from the site. A study centred upon the site will identify those heritage assets not in the immediate vicinity of the site that may be affected by the Proposed Development as well as identifying longer views appropriate for assessment.
239. The physical components and structure of the townscape of the study area will be identified in the ES.
240. 16 viewpoints have been identified initially to inform the assessment of townscape, built heritage and visual effects of the proposed scheme. The proposed set of views for the assessment can be found in **Table 13** and **Figure 8 and 9**. These have previously been discussed and agreed with the RBC during pre-application discussions but are included within this request for an EIA Scoping Opinion for completeness.

Table 13 Description of Proposed Views

Reference	View Description
Mid-range views	
1	View looking North West towards Broad Street Mall from River Kennet
2	View looking North West towards Broad Street Mall along A33 / A329
3	View looking East along Oxford Road
4	View from Gun Street / Bridge St junction looking North West towards Broad Street Mall
5	View from Reading Minster looking West
6	View looking south from Chatham Street roundabout

7	View from Greyfriars Church looking South along Cheapside towards Broad St Mall
8	View from Church of St Giles looking North-West along Southampton Street (A327)
Long-range Views	
9	View East along Oxford Road
10	View looking south from Balmore Park
11	View looking South from George St (B3345)
12	View from Kings meadow looking South-West
13	View from Wokingham Road opposite Parkside Family Practice, looking North-West towards Broad St Mall
14	View from Mount Pleasant area along A327 looking North-West towards Broad St Mall
15	View from London Road looking South-West
16	View from London Road (Shepherds Hill) looking South-West

Figure 8 Map of Proposed Short and Mid-Range Views

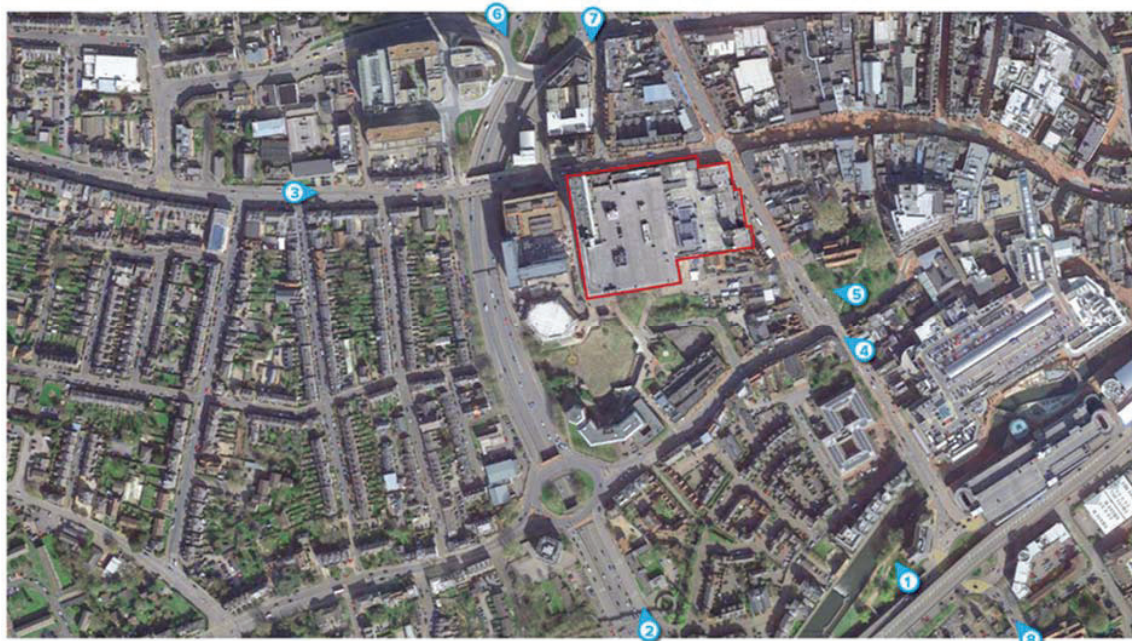
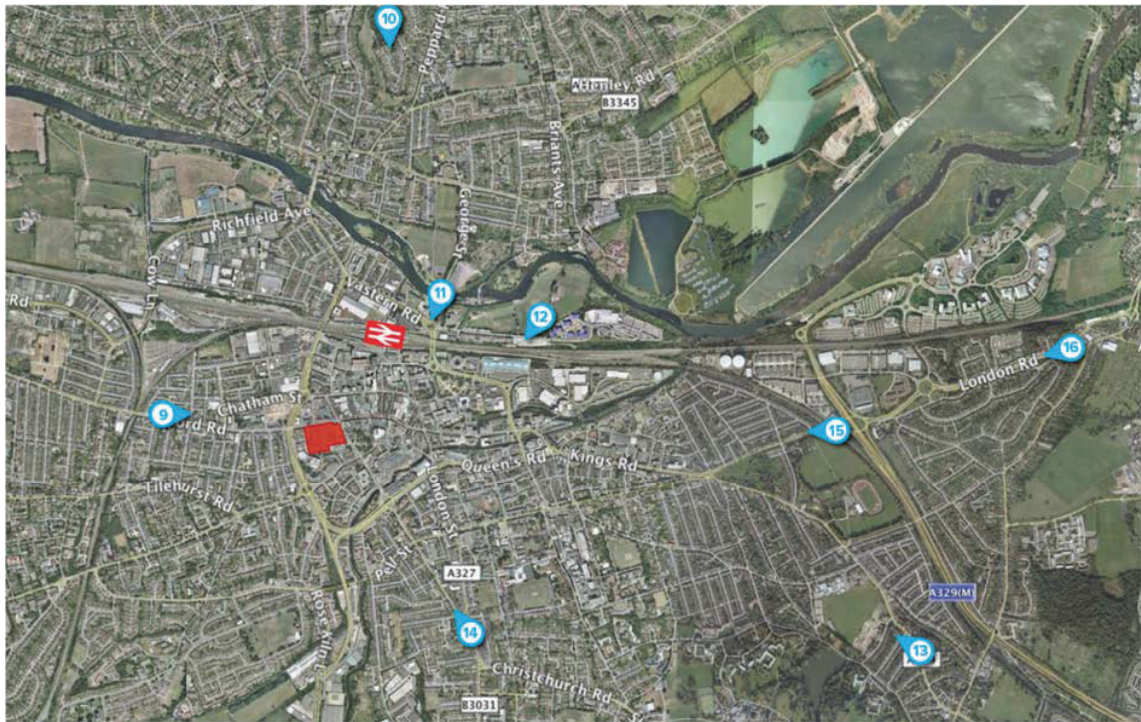


Figure 9 Map of Proposed Long-Range Views



Potential Effects

- 241. The Proposed Development has the potential effects views, townscape and built heritage assets during construction works, and on completion.
- 242. Effects during the construction. These will affect only the assets in the immediate vicinity of the site.
- 243. The completed Proposed Development will have a permanent effect on the setting of the listed buildings within close proximity to the site, the character of the townscape and views towards the site. Significant effects can be anticipated from the operation of the Proposed Development by virtue of its scale and use.
- 244. The assessment will be focused upon the nature and degree of the impact of the development on heritage significance (as defined by Historic England's Conservation Principles' and the National Planning Policy Framework) of the heritage assets in question, with particular emphasis on the effect of the development on their setting as a component of heritage significance.
- 245. It can be anticipated that the magnitude of change for some heritage assets will be high. The geographical extent of effects will be significant given the potential height of the Proposed Development and is likely to occur in permanent form if the development occurs.
- 246. Heritage assets that are located outside of the immediate area and outside the longer-distance views will not be assessed as it is considered that the development will not have a significant effect on the setting of these heritage assets. Though of significant scale, the degree to which the heritage significance of individual heritage assets is meaningfully affected by the development diminishes with distance from the source of change to their setting. There will be limited visual linkage between the development and heritage assets further afield, and such assets will be read, at distance, in conjunction with any of existing and consented schemes in Reading Town Centre.
- 247. The townscape element of the assessment will consider the Proposed Development within its urban context, including the buildings, the relationships between them, the different types of urban open spaces, including green spaces and the relationship between buildings and open spaces.
- 248. The views will consider the Proposed Development over a wider area.

Scope of Assessment

249. A detailed assessment of the historic built environment and townscape will be undertaken in order to establish a baseline condition against which an assessment of the impact of the Proposed Development can be made.
250. The assessment of the historic environment will be undertaken using a variety of methods, and be recorded in the Townscape, Built Heritage and Visual Impact Assessment as follows:
- Desk-based assessment of published sources of information of the historic built environment in the area, in the form of statutory information and of studies, histories, and research;
 - Physical inspection and fieldwork on the site of the development and surrounding area;
 - Identification (and agreement) of a number of views and analysis of the impact of the development on heritage assets and their setting within them; and
 - Consultation with RBC and Historic England.
251. For each of the identified views, a description of the view as existing will be given, describing its character, quality and sensitivity to change. A description of the view as proposed will then be given with a narrative assessment, based on the method set out above, of the effect that the Proposed Development will have on the composition, quality and character of the view.
252. The assessment undertaken is based in the context of the statutory environment created by the Planning (Listed Buildings and Conservation Areas) Act 1990. The assessment will be undertaken with reference to the following policy and guidance documents:
- National Planning Policy Framework (NPPF) (2018);
 - National Planning Practice Guidance (NPPG) (first issued March 2014) and the draft revised NPPG;
 - Reading Core Strategy (2008);
 - Reading Central Action Plan (2009);
 - Sites and Detailed Policies Document (2012);
 - Relevant conservation area appraisals;
 - Conservation Principles: Sustainable Management of the Historic Environment, English Heritage (now Historic England) (2008);
 - Seeing the History in the View, English Heritage (now Historic England) (2011); and
 - Historic Environment Good Practice Advice in Planning Note 3: The Setting of Heritage Assets (2015).
253. Historic environment and planning legislation identifies the significance of heritage assets (listed buildings, conservation areas etc) and the contribution that setting makes to that significance. Accordingly, this assessment considers both likely direct (on the assets) and indirect (on the settings and views/visual appearance of the assets) impacts and effects. Setting is not a heritage asset and not a heritage designation. Its importance lies in what it may, or may not, contribute to the significance of a heritage asset. Reasoned professional judgement will be used to assess the effect of the development on the setting of heritage assets.

OTHER TOPICS TO BE ADDRESSED WITHIN THE EIA

254. This section sets out those environmental issues that will not have their own specific chapter in the ES, but due to their importance, will be covered where appropriate in the ES.

Climate Change

255. Recent changes to the EIA Regulations have introduced the requirement for the consideration of climate as part of the EIA process. The EIA Regulations seek to account for climate by requiring a description of '*the impact of the project on climate*' and '*the vulnerability of the project to climate change*' (Schedule 4, paragraph 5(f)).

The Proposed Development's Impact on Climate

256. The approach to assessing the impact of the Proposed Development on climate will be undertaken in accordance with the IEMA guidance 'Assessing Greenhouse Gas Emissions and Evaluating Their Significance' (2017). This guidance sets out a 'good practice' approach to achieving a proportionate assessment of a development's impact on climate and communicating the results in terms of a notional percentage contribution relative to a carbon budget, together with appropriate mitigation.
257. The guidance presents a series of principles developed by IEMA, which highlight that all GHG emissions contribute to climate change, and that the combined effect of all emissions draws us closer to the scientifically defined environmental limit for climate change. The guidance therefore suggests that, in the absence of any defined threshold or significance criteria, any GHG emissions or reductions from a project be considered as significant. The guidance also reinforces a key principle of EIA which is to reduce the impact of a project's emissions at all stages of the lifecycle through mitigation.
258. Consistent with the guidance, the approach taken in the EIA will be to quantify the net GHG emissions¹² from the Proposed Development and compare against an existing carbon budget (defined either at a global, national, regional, local or sectoral level) in order to contextualise the project's carbon contribution by developing a sense of the scale of the emissions anticipated.
259. The ES will present the carbon emissions mitigation being proposed, which will follow the principles of the carbon management hierarchy (i.e. avoid, reduce, off-set), in order to reduce as far as reasonably practicable, the anticipated GHG emissions over the Proposed Development's lifecycle.
260. The assessment of GHG emissions (essentially a carbon footprint or 'inventory' of the Proposed Development) and an outline of the carbon mitigation measures proposed will be presented in a technical report and included within ES Volume 3. Relevant information out of this report (specifically relating to carbon mitigation measures) will be presented within the ES Chapter describing the Proposed Development and the chapter that outlines the enabling and construction works (**ES Volume 1**).

Vulnerability to Climate Change

261. The approach to assessing the vulnerability of the Proposed Development to climate change will be undertaken in accordance with the IEMA guidance 'Climate Change Resilience and Adaption' (2015), which presents a framework for the consideration of climate change resilience and adaption in the EIA process. It recognises a need for a proportionate approach to the assessment, due to the uncertainties associated with predicting how the environment will respond to climate change.
262. The guidance advises on inter alia, defining the future climate scenario, the integration of climate change adaption into the design, and the process for EIA. The guidance also provides advice on the execution of the impact assessment across the technical topics, including the identification of the climate related parameters which are likely to influence the project in question, and the anticipated

¹² Determining the net GHG emissions contribution accounts for the existing GHG emissions within the project boundary prior to the project commencing, against the predicted project emissions.

changes to those parameters under a future climate scenario.

263. Consistent with the guidance, the EIA will describe a future climate scenario which will be developed through the use of the future climate projections published by the Met Office (through the UK Climate Projections (UKPC09) website). The results include projections for variables including annual mean temperatures, and annual changes in summer and winter precipitation.
264. To describe the predicted future climate, it is proposed that the medium emissions scenario (A1B)¹³ for the 2080s will be utilised as the future baseline. The medium emissions scenario (A1B) is based on a future world of rapid economic growth and the rapid introduction of new and more efficient technologies, with a balance of non-fossil and fossil intensive energy technologies. The 2080s covers the years 2070 – 2099 and this is the timeframe considered most relevant to the Proposed Development. The projected change to the range of climatic conditions will adopt the 50% probability level, which is a central estimate adopted given the level of uncertainty associated with predicting the modelled scenarios.
265. The future climate change scenario will be considered within the ES across the technical topics being presented, and the level of assessment and methodology will be proportionate to the available evidence base.
266. The assessment will address firstly:
- The vulnerability of identified sensitive receptors to climate change;
 - Whether this vulnerability to climate change alters the receptors overall sensitivity;
 - Whether the impacts of the Proposed Development (in terms of impact magnitude) will be worse or improve under the future climate; and
 - Based on a-c above, whether the effects on receptors (under the current condition, without climate change) are likely to be different under an alternative future climate regime.
267. Due to the level of uncertainty in both the future climate projections and how the future climate conditions may affect sensitive receptors, the assessment will be qualitative, based on objective professional judgement, unless where there is published, accepted quantifiable methods available (i.e. in relation to the assessment of flood risk).
268. The ES will also address the vulnerability of the Proposed Development to climate change. The ES will do this by identifying how the Proposed Development could be vulnerable to climate change and by presenting the climate change adaption and resilience measures proposed as part of the Proposed Development. These shall be described within **ES Volume 1**.

Health

269. The health and wellbeing of individuals and communities is influenced by a range of factors. The basis of a health impact assessment (HIA) is therefore a broad model of health taking into account a number of factors, known as determinants of health, including age and genetics; individual life style factors; living and working conditions; and general socio-economic, cultural and environmental conditions.
270. The Proposed Development is not considered to be of at a scale that would have overwhelming impacts on any of the above factors. It is therefore proposed to scope health out of the EIA, as significant effects are not considered to be likely. That said, the technical chapters of the ES will consider the effects on air quality and noise receptors, as well as the socio-economic chapter assessing the effects on existing health facilities.
271. The HIA is also not identified as a validation requirement by RBC.

¹³ As defined in the IPCC Special Report on Emissions Scenarios (SRES) (IPCC, 2000)

TOPICS WHERE NO LIKELY SIGNIFICANT EFFECTS ARE ANTICIPATED

272. The following topics areas are not likely to have any significant effects as a result of the Proposed Development, and therefore will be scoped out of the EIA.

Highways and Transport

273. A full Transport Assessment (TA) will be undertaken, by Connect Consultants, to determine the highways and transport effects of the Proposed Development. The TA will be submitted as a standalone document in support of the planning application.
274. As well as policy and guidance, the following will be used to inform the TA baseline conditions on the highways and transport networks (the baseline data will reflect the existing 2018 environment):
- Site visits;
 - Desktop research into relevant published information (e.g. timetables, planning application documents, public consultations);
 - Discussion with the RBC; and
 - Traffic survey and accident data.
275. Highways and transport impacts and resultant effects can be considered under two scenarios:
- Construction – highways and transport related impacts and effects associated with the demolition of existing buildings / structures across the site and construction of the Proposed Development; and
 - Operational / Completed Development – highways and transport related impacts and effects following the development and full occupation of the site.
276. The proposal site is within easy walking distance of central Reading which has numerous bus stops and is served by approximately 34 routes which have frequencies in the range of 1 per hour to 8 per hour. The site is accessible by bus. The site is also within walking distance of Reading Station, which has direct connections by rail to major destinations in the UK including London, Gatwick Airport, Bristol and the South West, Birmingham, and Southampton. The site is accessible by rail.
277. Access to the site is gained from the south via Hosier Street and from the west via A329. The RBC is the local planning and highway authority responsible for the local road network and Highways England (on behalf of the Department for Transport) responsible for the motorway and trunk road strategic network.
278. A car park occupancy survey has been undertaken during July 2017 which recorded the number of cars parked in the multi-storey car park every 15 minutes for 24 hours per day, for Friday to Tuesday. The survey company recorded a total of 768 marked spaces, and a maximum parking demand of 409 vehicles which occurred on Saturday at 14:15 hrs. Based on this, the multi-storey car park has 359 unoccupied spaces.
279. The operational / completed development assessment would account for any measures embedded into the Proposed Development as part of the design and operational strategy to reduce the impact of the Proposed Development on highways and transport networks and in response to climate change e.g. secure high quality cycle parking for residents and visitors to encourage modal shift to active travel choices.

Potential Effects

Construction

280. **Severance** - During construction, the Proposed Development is not expected to result in changes to the highway network which could affect severance and perceptions of severance. A Construction Logistics Plan (CLP) is expected to be secured through an appropriately worded planning condition to manage routing and arrival profile of construction related vehicles to minimise disruption to the surrounding area. Construction related vehicles are expected to arrive at the site directly from A329 or

Castle Street which, based on its character and nature, is not particularly sensitive to construction road traffic related severance. No likely significant effects to severance or the perception of severance as a result of the construction works are therefore anticipated and as such, an assessment of severance during construction is scoped out of the EIA.

281. **Delay** – No likely significant effects to driver/bus delay and pedestrian and cyclist delay are anticipated on the basis that the construction works are unlikely to result in changes to the highway network which could affect delay to these receptors. Assessment of driver / bus delay and pedestrian and cyclist delay is therefore scoped out of the EIA.
282. As the volume of construction related staff travelling by bus and train is unlikely to significantly increase from the baseline demand across the existing services, no likely significant effects to bus or rail delay are anticipated. As such, an assessment of public transport delay during the construction works is scoped out of EIA.
283. **Amenity, Fear and Intimidation** - No likely significant effects to amenity, fear and intimidation are anticipated on the basis that the construction works are unlikely to result in changes to the highway and transport networks which could affect perceptions of amenity, fear and intimidation.
284. The change in HGV activity associated with the construction works relative to the baseline conditions is unlikely to be perceptible. The presence and movement of construction vehicles will also be managed and mitigated through the CLP to minimise the potential for effects on amenity, fear and intimidation. Assessment of amenity, fear and intimidation during the construction works is therefore not considered to be significant and so has been scoped out of the EIA.
285. **Accidents and Safety** - Traffic changes arising as a result of the construction works associated with the Proposed Development will be low and unlikely to be perceptible relative to baseline condition. As such, no likely significant effects associated with accidents and safety are anticipated and so any further consideration of this has been scoped out of the EIA. Road safety would also be further managed and mitigated through the Construction Logistics and Cycle Safety (CLOCKS) scheme and use of contractors registered on the Considerate Constructors Scheme.
286. **Hazardous Loads** - The Proposed Development is not expected to generate or attract hazardous loads during the construction works; on this basis, no likely significant effects are anticipated and so an assessment of hazardous loads is scoped out of the EIA.
287. Hazardous loads include substances such as explosives, flammable, toxic, corrosive or radioactive materials. Abnormal loads such as movement of tower cranes is not considered a hazardous load. Abnormal loads would be managed via agreements and licenses as appropriate.

Operational / Completed Development

288. **Severance** - The Proposed Development is not expected to result in changes which could detrimentally affect perceptions of severance during operation as no additional physical barriers are to be introduced.
289. Car parking for residents is proposed, however the trip generation associated with this number of units is not anticipated to approach or exceed the 30% increase threshold on local network and the effect of the development is likely to be focussed around the access from the A329 with some vehicles potentially arriving at the development via Castle Street. No further assessment is proposed on the basis that likely significant effects are not anticipated for any surrounding road links.
290. **Delay** – The Proposed Development is not expected to result in changes to the highway or transport networks which could affect perception of driver/bus delay, pedestrian and cyclist delay, and rail delay during its operation; no likely significant effects are anticipated to these receptors. Assessment of delay on these sensitive receptors is therefore scoped out of the EIA.
291. **Amenity, Fear and Intimidation** - The Proposed Development is not expected to result in changes to the highway network which could affect amenity, fear and intimidation during its operation; no likely significant effects are anticipated to these receptors. Assessment of amenity, fear and intimidation on these sensitive receptors is therefore scoped out of the EIA.
292. **Accidents and Safety** – The Proposed Development is not expected to result in changes to the highway network which could affect accidents and safety during its operation (any changes are likely to be negligible and therefore not significant). Assessment of accidents and safety during the operation of the Proposed Development has therefore been scoped out of the EIA.

293. **Hazardous Loads** – The Proposed Development is not expected to generate or attract hazardous loads once complete and occupied; on this basis, no likely significant effects associated with hazardous loads are anticipated. Assessment of hazardous loads during the operation of the Proposed Development has therefore been scoped out of the EIA.

294. In summary, as no significant effects are anticipated, highways and transport has been scoped out of the ES.

Aviation

295. The site is located approximately 34 km west of London Heathrow as shown in **Figure 10**. Additionally, no airfields are present within a 5 km radius of site.

Figure 10 Location of the Proposed Development Site Relative to London Heathrow



296. LHR is designated as an 'officially safeguarded aerodrome' in accordance with the Office of the Deputy Prime Minister (ODPM) Circular 1/2003: Safeguarding Aerodromes. Precise and integrated airspace management procedures are necessary to maintain safety and efficiency.
297. The RBC's Tall Buildings Strategy states that 'Tall Buildings must comply, in terms of height, with the Civil Aviation Authority's Aerodrome Safeguarding Criteria'. For the city centre, this represents a maximum height of any structure, including antennae and aerial arrays of 242 m AOD.
298. The height of the tallest element of the Proposed Development will not exceed approximately 117m AOD which lies below the 242 m AOD limit. On this basis, significant effects are not considered to be likely. It is noted that the Civil Aviation Authority (CAA) will be consulted on the request for an EIA Scoping Opinion, as well as the planning application, when submitted to confirm compliance.
299. Further to the above, it can be concluded that there are no likely significant effects on operations at London Heathrow as a result of the Proposed Development, and therefore will not be assessed in the EIA.
300. Any requirement for aeronautical warning lighting on construction cranes or in relation to the proposed residential towers will be discussed and agreed with the CAA as appropriate and formally agreed through appropriately worded planning conditions.

Water Resources

Flood Risk and Surface Water Drainage

301. Flood risk is regulated through the NPPF which requires a site-specific FRA to be produced for developments:
- Within Flood Zone 2 and 3;
 - Greater than one hectare in Flood Zone 1;
 - Less than 1 ha in flood zone 1 that could be affected by sources of flooding other than rivers and the sea; or

- Within flood zone 1 which has critical drainage problems as notified by the Environment Agency.
302. The Proposed Development is located within Flood Zone 1, located between the River Thames to the north and the River Kennet to the south and east. Flood Zone 1 is classified as an area where there is a low probability of fluvial and tidal flooding, having less than 1 in 1000 annual probability of flooding. The site is also at low risk from surface water flooding, this is defined as chance of 0.1% to 1% annually.
303. Whilst within Flood Zone 1, the site is over 1 ha and therefore an FRA is required to be undertaken. The FRA will investigate the potential sources of flooding and demonstrate that any flood risk to the Proposed Development, or caused by the Proposed Development, is mitigated through the use of appropriate design solutions and management procedures.
304. At this initial stage of the design process, it is expected that the management of the residual flood risk linked to a potential breach / overtopping of the tidal flood defences will be the main focus of the FRA, although all potential sources of flooding will be investigated.
305. In line with local and national policy and best practice, the FRA will include an outline surface water drainage strategy. The outline surface water drainage strategy will demonstrate the optioneering work undertaken throughout the design evolution process for the sustainable management of surface water runoff through the use of sustainable drainage systems (SuDS) at the site.
306. The surface water drainage strategy will maintain the existing surface water discharge rates.
307. The FRA will be informed by consultation with key stakeholders including the Environment Agency (EA), the RBC (both as local planning authority and in their role of Lead Local Flood Authority (LLFA)) and Thames Water (TW).
308. It will also use the background information contained within strategic documents, such as the RBC Strategic Flood Risk Assessment (SFRA), SFRA Level 2 and Surface Water Management Plan (SWMP), and the Local Flood Risk Management Strategy (LFRMS).
309. In summary, the FRA will investigate:
- Sources of flooding (i.e. tidal, surface water, groundwater and artificial water sources (e.g. reservoirs)) which could affect the site;
 - Structures influencing local hydraulics;
 - Probability of flooding;
 - Residual flood risk; and
 - Appropriate strategies for surface water drainage.
310. Through a well informed and considered design process, with regard to flood risk and surface water drainage considerations, coupled with appropriate measures to manage the residual flood risk at the site following development, no significant effects associated with flooding and surface water drainage are likely.
311. A list of some of these measures are outlined within the **Appendix F** of this request for an EIA Scoping Opinion. It is envisaged that these measures would be included within the CEMP prepared for the site. The measures outlined within **Appendix F**, to be implemented during the period of construction works, will be presented within the introductory sections of the ES.
312. In recognition that an FRA will be prepared and submitted in support of the planning application which will address in detail the issues identified above, a separate flood risk impact assessment (provided as part of a 'Water Resources, Drainage and Flood Risk' ES chapter) is not considered necessary and so will not be presented in the ES to avoid duplication.
313. The results and conclusions of the FRA will however be presented in the introductory sections of the ES. Furthermore, the FRA will be appended to the ES (as a report within ES Volume 3).
- Wastewater (Foul Drainage)*
314. Foul water discharge rates are expected to increase as a consequence of the Proposed Development and therefore consultation with TW will be undertaken to understand any existing capacity constraints

- on the foul water public drainage network.
315. The Proposed Development will however include water efficiency measures to try and reduce the volume of foul water discharged to the network, and so in combination with the foul water drainage design, reduce the overall magnitude of the impact of the Proposed Development on the foul drainage / sewer network.
316. An outline foul water drainage strategy will be produced a part of the FRA which will identify any existing capacity issues within the foul water drainage network and present strategic options for foul water management at the site.
317. It is anticipated that any required upgrades to the foul water drainage network would be discussed with TW and ultimately undertaken by TW to increase the capacity of the sewer network and enable it to accommodate additional flows from brownfield redevelopment sites.
318. In recognition that the FRA will include an outline foul water drainage strategy that will define the principles of the design of the foul drainage network within the site and the link up to the surrounding public sewer network and identify strategic options for foul water management at the site, no significant effects associated with waste water discharges are anticipated as a result of the Proposed Development. On this basis, no further assessment work with regards to foul water drainage will be presented within the ES.
319. The design principles set by the outline foul water drainage strategy (including assumptions on expected population living within the Proposed Development and estimated wastewater volumes) and its conclusions will be presented in the ES (in Chapter 3: The Proposed Development (Volume 1)). As noted above, the FRA will be appended to the ES (as a report within ES Volume 3).

Water Demand

320. There is a potential impact in the form of increased potable water demand resulting from the Proposed Development. The expected increase in water demand as a consequence of the Proposed Development will be discussed with TW and where required additional capacity will be requested to supply the Proposed Development.
321. The inclusion of water efficiency measures to reduce water usage, in addition to the implementation by TW of the Thames Water Resource Management Plan (i.e. management and provision of water supply at a strategic level which has been made to accommodate future projected housing, commercial and population growth), it is considered that sufficient measures will be in place for water demand to be met and so no likely significant effects are anticipated.
322. In recognition of the above, no further assessment work with regards to potable water demand and supply will be presented within the ES.
323. The ES will however summarise any discussions had with TW on this aspect (including assumptions on expected population living within the Proposed Development and estimated water demand) within the introductory sections of the ES.

Ecology

324. A Preliminary Ecological Appraisal (PEA) has been undertaken of the site. This comprised a Phase 1 habitat survey (undertaken in June 2018), protected species assessment and ecological evaluation. The PEA is appended to this request for an EIA Scoping Opinion in **Appendix D**.
325. The appraisal was prepared with reference to best practice guidance published by the Chartered Institute for Ecology and Environmental Management (CIEEM, 2013), and as detailed within British Standard 42020:2013.
326. The findings of the PEA are summarised in this section of the request for an EIA Scoping Opinion.
327. There are no statutory nature conservation designations present on site or within a 1km radius.
328. The site is not subject to any non-statutory nature conservation designations. There are three non-statutory designated sites (Local Wildlife Sites) within a 1km radius:
- Holy Brook (LWS) located approximately 490m south of site;
 - River Kennet / Kennet and Avon Canal (LWS) located approximately 780m south of site; and

- Cow Lane Depot (LWS) located approximately 880m northwest of site.
329. There are no records of ancient woodland Habitats of Principal Importance within the study area (1km radius from the site). There are areas of lowland mixed deciduous woodland and wet woodland within a 1km radius (at Holy Brook (LWS) and Cow Lane Depot (LWS), detailed in bullet points above).
330. The survey identified that the site predominantly comprises hard standing and an existing shopping mall and multi-storey car park. A basement is present under the current shopping centre. There is no soft landscaping or grassland on site.
331. A total of 46 records of bat were returned in the desk study, comprising eight species. There is however negligible potential to support roosting bats and there are no trees on site - the buildings on site were constructed of concrete, with flat roofs, they were all in good condition with no gaps or cracks and no potential roosting features noted. The gap behind the timber fascia on one of the structures on the roof of the mall was considered to be too wide to support crevice dwelling species and no bat droppings were noted on the wall or floor beneath, indicating it had not been previously utilised by roosting bats. Additionally, the site has limited connectivity to areas of suitable foraging habitat, and the small areas of amenity and species-poor grassland and semi-mature trees within the urban park to the south of the site would provide limited foraging habitats for bats within the local area.
332. The site was observed to support breeding birds, and an active feral pigeon nest was noted on site during the PEA survey. All nesting birds are protected under the Wildlife and Countryside Act 1981 (as amended). To comply with current legislation, and as the main concern is a nesting pigeon, a species that is known to breed throughout the year, it is recommended that a search is carried out prior to works starting at any time of year, although if works commence during the winter months it is probably less likely that there will be an active nest, but it cannot be ruled out unless a search has been made. Consequently, a search for nesting birds within the building up to 48 hours prior to any site works taking place must be undertaken by an experienced ecologist. If any nests are found, the nests are to be protected by an exclusion zone around the nest. Works may then proceed up to, but not within, this exclusion zone until such time as an ecologist confirms the young have fledged the nest. If nesting birds are found at any time during the works, work must stop immediately, and an ecologist must be consulted immediately. It should be noted that feral pigeon will breed throughout the year, and therefore a licence may be required to remove them legally unless they stop breeding.
333. In conclusion, during the PEA no semi-natural habitats or notable features were recorded (with the exception of the active feral pigeon nests). There is considered to be no potential for protected species to utilise the site, with the exception of breeding birds. Potential impacts and legislation breaches relating to breeding birds will be mitigated by a check for nests by a suitably qualified ecologist immediately ahead of works commencing and protection of any active nests.
334. Based on the results of the PEA, it is considered that the Proposed Development does not have the potential to generate any significant ecological effects. As such, it is proposed to scope any further work relating to ecology out of the EIA.
335. Whilst significant effects are not considered to be likely, recommendations to enhance the biodiversity value of the site in accordance with national and local planning policies and the Reading Biodiversity Action Plan (BAP) comprise the inclusion of wildlife planting, flowering lawn, provision of bird nesting opportunities and biodiverse green roof / biosolar options. Measures proposed as part of the proposed landscaping design to enhance the ecological value of the site (and their associated biodiversity benefits) will be described in the introductory sections of the ES.

Archaeology

336. An Archaeological Desk-Based Assessment (DBA) of the Proposed Development has been undertaken. The DBA is included within this request for an EIA Scoping Opinion in **Appendix C**.
337. The DBA is a desk-based study which assesses the impact on buried heritage assets (archaeological remains). The DBA comprises an examination of evidence on the Berkshire Archaeology Historic Environment Record and other sources, in particular the results of previous archaeological work from within the vicinity of the site. The DBA presents the archaeological potential of various part of the site, by drawing on the available archaeological, topographic and land-use information.
338. The DBA identified that there are no World Heritage, Historic Battlefield or Historic Wreck study sites

- lie within, or within the study area (note, the study area was a 250 m radius around the site);
339. The Reading AAP lies adjacent, to the south, east and north, of the site. This designation comprises areas indicated as having the potential for archaeological discoveries. The archaeological potential can be influenced by geological, land use and topographical factors.
340. A possible residual Saxon knife was found at the Civic Centre 70m south of the site. According to the Historic Environment Record projection of the Saxon Reading settlement, the north-west corner of this extended into the eastern half of the site.
341. Reading was subject to considerable urban development during the medieval period, which is reflected in the fact that archaeological investigations nearby have revealed evidence of occupation along Hosier Street, to the south of the site, as well as further structural and cut features in the wider study area.
342. Cartographical evidence provides evidence that the site has been developed since at least the 17th century. In the 19th century the site was almost fully occupied by a combination of commercial, industrial and residential buildings. By 1912 a timber yard, associated with a saw mill, is noted on the west of the site. By 1931-1983 the site has been redeveloped as residential buildings. It is noted in mapping from 1962 the site comprises a garage and car park. Historical mapping from 1969-1970 shows the site to be undeveloped. With the current site development present on site from 1979-1983, with the multi-storey car park noted on historical mapping from 1980-1986.
343. The site can be considered to have a low to moderate potential for post-medieval remains, low to moderate potential for Saxon remains and low to moderate potential for late medieval remains. Abraded human remains have been found at the Civic Centre 70m south of the site. These remains have not been dated and it is not known whether they represent an anomaly or are indicative of further interments in the area.
344. The existing basement covers approximately 90% of the site and will have removed all archaeological remains within its footprint. The remaining 5% of the site is located at the northern edge of the footprint and is described on the topographic survey as a 'floated area'. It is assumed for the purposes of assessment that the depth of truncation is at least as deep as that of the existing basement levels.
345. The remaining 5% of the site at the eastern edge of the footprint will also have been disturbed as part of the process of excavating the existing basement and the construction of the retaining walls. It is thus also very likely that this area has been heavily disturbed however this has not been confirmed.
346. Although the precise details would need to be agreed with the RBC's archaeological advisor, it is suggested that the most appropriate investigation strategy is likely to entail geo-archaeological boreholes to determine the depth of the underlying deposits in the areas outside of the existing basement. The results would be used to target further archaeological evaluation if necessary to confirm the presence, nature and significance of archaeological remains. This would in turn enable an informed decision to be made in respect of an appropriate mitigation strategy for any significant archaeological assets, such as targeted excavation, and / or a watching brief during ground works for remains of lesser significance. This would ensure that significant archaeological assets are not removed without record.
347. Any archaeological work would need to be undertaken in accordance with a Written Scheme of Investigation (WSI) and could be carried out under the terms of a standard archaeological planning condition set out with the granting of planning consent.
348. On the basis that the DBA has defined the potential for remains of limited heritage significance only, the development of the site is unlikely to generate any significant archaeological (buried heritage assets) related effects. The likely effects can be adequately managed so as not to cause unacceptable harm to any surviving assets.
349. As such, it is considered that the likely archaeological effects are sufficiently well understood and that based on the information currently available, it is likely that the residual archaeological effects would not be significant.
350. Furthermore, planning conditions attached to the planning permission are envisaged to cater for any further required archaeological work and subsequent recording and reporting prior to the start of works on site.
351. On this basis, an archaeological impact assessment has been scoped out of the EIA. The DBA will however be submitted in support of the planning application the ES (Volume I) will cite the above

measures (specifically those that would be undertaken pursuant to planning conditions attached to the planning permission).

Geoenvironmental (Land Contamination, Ground Conditions and Groundwater)

352. A Phase 1 Environmental Desktop Study for the site has been undertaken. The review was undertaken by desk based research. The study is included within this request for an EIA Scoping Opinion in **Appendix E**.
353. Historical maps indicate that from at least 1879, the site comprised numerous unlabelled assumed residential properties and commercial buildings. Furthermore, at this time, steam saw mills and a timber yard were labelled within the north-western area of the site and a brewery ('Lion Brewery') was labelled within the southern area of the site. By 1895, the brewery on-site had been re-labelled as a furniture depository and by 1899, a smithy was present within the north-western area of the site. Between 1931 and 1957 the timber yard and saw mills had been redeveloped into a car park and a garage was present within the centre of the site. By 1958 a 'sunk petrol tank' was labelled adjacent to the east of the garage on-site and a furniture warehouse was labelled within the eastern area of the site. Furthermore, by this time an electricity sub-station, a rifle range and two further small garages were labelled within the southern area of the site. By 1970 the majority of the site (apart from the furniture warehouse within the eastern area of the site) had been cleared. Between 1970 and 1973, the entire site had been redeveloped into a shopping centre ('The Butts Centre') forming much of the current site layout. Furthermore, at this time a public house was present within the southern area of the site. By 1988 the shopping centre had been re-labelled as 'The Broad Street Mall' and by 1990, the public house on-site was no longer labelled (assumed cleared).
354. The site supports a shopping mall ('Broad Street Mall') arranged over basement level, ground floor and one upper floor. Furthermore, office accommodation ('Quadrant House') is located within the eastern area of the site and further office accommodation ('Fountain House') is located within the north-western corner of the site. A multi-storey car park is located within the south-western area of the site and numerous further car parking spaces are located on the roof of the shopping mall. The basement level extends underneath the development and includes numerous plant rooms, the main waste storage area and numerous storage rooms associated with the retail units on-site.
355. The British Geological Survey (BGS) 1:50,000 Digital Geological Map of Great Britain shows the solid geology underlying the site to comprise the Seaford Chalk Formation and Newhaven Chalk Formation (undifferentiated), part of the White Chalk subgroup. The Chalk is underlain by the Upper Greensand and the Gault Formation at depth. Local publicly available BGS boreholes indicate this is overlain by the Taplow Gravel Member (Sand and Gravel).
356. Alluvial deposits (associated with the nearby river and its tributaries) and River Terrace Deposits (sands and gravels) overlie the London Clay formation. The Taplow Gravel Member comprises a succession of sand and gravel, locally with lenses of silt, clay or peat.
357. There is no available data for the made ground. However, it is known that the existing foundations bear onto natural strata at basement level and therefore any made ground which may have existed prior to construction of the mall will have been removed. The ground surrounding the site is retained by the basement structure which would have been backfilled against the retaining wall utilizing suitable excavated material.
358. The BGS Database identifies the following geological risks within 100m around the site boundary and their associated risk rating:
- Potential for Collapsible Ground – Very Low;
 - Potential for Compressible Ground Stability Hazards – Negligible;
 - Potential for landslide ground instability – Very Low;
 - Potential for Running Sand Ground – Very Low;
 - Potential for shrinking or swelling Clay – Negligible; and
 - Potential for soluble rocks – High.

359. According to the Environment Agency groundwater vulnerability maps, the superficial Alluvium forms a Secondary A Aquifer. This aquifer comprises permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers.
360. The underlying Seaford and Newhaven Chalk Formation is designated as a Principal Aquifer, geology comprising high intergranular and/or fracture permeability - meaning they provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale.
361. A surface water features (Holy Brook) is located approximately 180m south. Groundwater abstractions are present within a 1km radius of the site (for various retail, commercial / industrial / public services).
362. The site is not located within a Source Protection Zone.
363. A preliminary contamination risk assessment has been carried out using best practice methodology in the context of the site setting, assessing the potential pollutant linkages to site receptors. The conceptual site model (CSM) identifies the site as generally having a very low risk to current and future users, workers, neighbouring residents and construction workers
364. The main findings of the study can be summarised as set out below.
365. The site has been subjected to significant industrial use during its history, including on site uses of steam saw mill, smithy, brewery, car park and garage. This is likely to have resulted in the introduction of a variety of soil contaminants to the site. The risk of encountering or being exposed to such contaminants during construction works is very low and can be further controlled by adopting appropriate control / protective measures.
366. The site is designated as having a low risk for Unexploded Ordnance (UXO). The risk associated with UXO is considered further minimised due to the previous development on site, including the basement, and the limited scope of intrusive works associated with the Proposed Development.
367. A geotechnical ground investigation is recommended, to assess the risk of instability due to soluble rock, any ground strengthening works which may be required will be developed once the findings of the intrusive ground investigation are made available.
368. Based on the findings of the study undertaken to date, and with the implementation of the proposed mitigation and management measures, it is considered that the Proposed Development is unlikely to give rise of significant geoenvironmental effects. On this basis, a ground conditions impact assessment is scoped out of the EIA.
369. It is anticipated that the proposed mitigation / management and monitoring measures will be secured by the RBC through appropriately worded planning conditions, which will be attached to the planning permission and which will secure further detailed geoenvironmental analyses, including but not limited to: carrying out ground investigations to establish geotechnical parameters to inform design.

Waste

370. Mitigation measures to avoid, remedy or mitigate adverse effects in terms of waste and recycling during the construction can include:
- Provision of a CEMP to include waste reduction and management objectives;
 - The appropriate management of any potential contamination identified on-site; and
 - The minimising of stockpiling of construction materials.
371. The specific mitigation measures to be implemented throughout the construction works will be outlined within the introductory chapters of the ES. Through the implementation of mitigation measures, amount of waste generated will be minimised.
372. An operational waste and recycling management strategy will be prepared and will calculate waste storage provisions based on unit mix and area schedule and will outline associated waste management measures. The Proposed Development will be designed to accommodate the required waste storage. In particular, the strategy will provide details on how each waste stream generated from each use class

will be managed, and details on how waste will be reduced, minimised and recycled, where possible (in line with the Waste Hierarchy). Measures relating to the Proposed Development once complete and occupied, including a summary of the waste strategy, will be presented in the introductory chapters of the ES.

373. With these measures in place, it is considered that the likely waste effects would not be significant. As such, no technical waste assessment is proposed to be undertaken, but as stipulated above, will be referenced as appropriate within the ES, and where appropriate, appended to the ES.
374. Any impacts associated with the transportation of waste (particularly in construction) will be dealt with where applicable in the transport chapter, and dust within the air quality chapter.
375. A waste and recycling assessment is therefore proposed to be scoped out of the EIA.

Electronic Interference

376. Interference to certain telecommunications systems (e.g. television (TV), mobile phone and radio) can arise from buildings physically blocking and absorbing associated signals. Therefore, a loss or degradation of the reception of such systems can result from the introduction of new buildings and is often referred to as 'electronic interference', with the affected area referred to as the 'shadow area'.
377. This section of the request for an EIA Scoping Opinion therefore considers electronic interference associated with telecommunications. For assessment purposes, domestic dwellings where TV is watched, or radio is listened to as an amenity, are identified as sensitive receptors. Places where the provision of TV or radio form part of a commercial premises (e.g. hotels, offices and shops), are not identified as sensitive receptors.

Radio Signals

378. Due to radio signals being at lower frequencies, they can 'bend' to a greater extent around buildings (or other obstructions) when compared to TV signals. Radios are also able to make constructive use of reflected signals. As such, radio signals are able to operate successfully in dense urban settings (i.e. containing a large density of tall and large buildings) and therefore radio reception (both analogue and digital) is not considered to be at risk of degradation as a result of the Proposed Development. No likely significant effects to radio reception (both analogue and digital) are therefore anticipated as a result of the Proposed Development.

Cable TV Reception

379. Cable TV (CATV) services are delivered via underground coaxial or fibre-optic cables to residential dwellings. As CATV services are not transmitted through the air, there is limited potential for interference to CATV, and therefore CATV is not considered to be at risk of degradation as a result of Proposed Development. No likely significant effects to CATV services are therefore anticipated as a result of the Proposed Development.

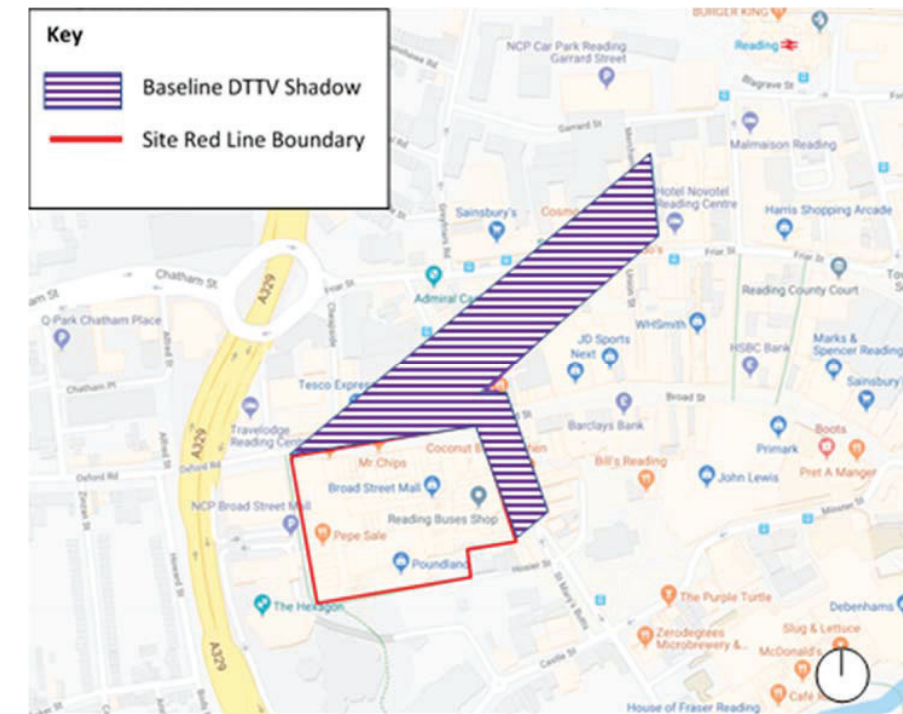
Mobile Phone Reception

380. A review of Ofcom's mobile availability checker has identified that both 3G and 4G mobile services for four network providers (EE, O2, Vodafone and Three) are available within and in close proximity to the Station Road site. A search of the Mast Data database identified five existing mobile phone masts atop existing buildings/structures on-site. Communication with the Operations Manager at Broad Street Mall revealed that all existing masts were present on Fountain House, an area of site which has already been renovated and won't be included in the Proposed Development, apart from one Vodafone mast which is present on Quadrant House, to be extended by two floors as part of the Proposed Development. The Vodafone mast will have to be removed prior to the period of construction works associated with the Proposed Development and be relocated by the network provider.
381. It is therefore considered that there is no risk of degradation to mobile phone reception as a result of the Proposed Development. No likely significant effects to mobile phone reception are therefore anticipated as a result of the Proposed Development.

Terrestrial TV Reception

382. Terrestrial (land based) TV signals are transmitted in digital format (Digital Terrestrial TV (DTTV) i.e. freeview). The site receives DTTV signals from the Hannington transmitter mast, which is located approximately 25km to the south-west of the site; therefore, any resultant DTTV shadow areas will be located to the north-east of the site.
383. The existing Fountain House, located in the western portion of the site, generates an existing DTTV shadow which falls up to Hotel Novotel Reading Centre, where it ceases due to the height and massing of this building (as shown in **Figure 11**). It is considered that DTTV reception to the north-east of the site is generally poorly received due to the height and massing of the existing buildings e.g. Hotel Novotel Reading Centre, NCP Car Park, Thames Tower etc. This is highlighted by the 'raised aerials' that can be viewed on the properties falling within the compass bearing, in an attempt to better receive DTTV signal.

Figure 11 Baseline DTTV Shadow (not to scale)

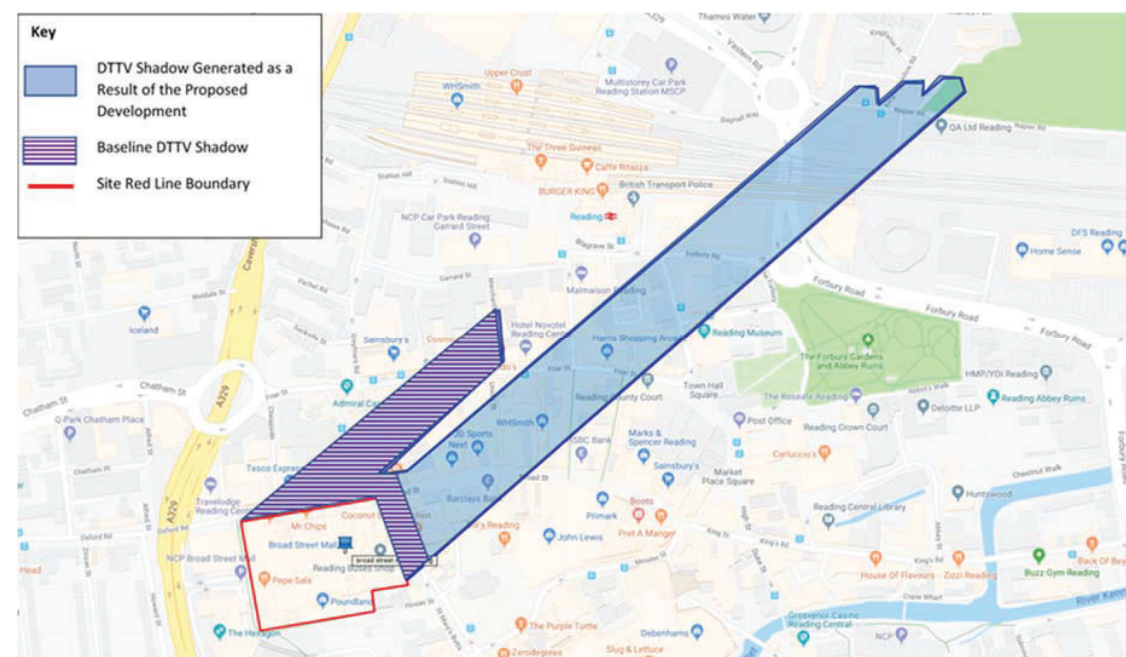


384. The closest relay TV transmitter mast (the Hemdean relay transmitter) is located approximately 2.8km to the north of the site, any resultant DTTV shadow areas will be south of the site. From a review of Google Streetview, properties to the south of the site are receiving DTTV from the Hannington transmitter mast (observed from the orientation of TV aerials atop roofs to the south of the site). As coverage from relay transmitter masts is not received at the site or in the area surrounding the site it is considered that the Proposed Development would not affect the reception of services transmitted by relay transmitter masts, and no likely significant effects to DTTV services transmitted by these masts are anticipated as a result of the Proposed Development.
385. Design information relating to the Proposed Development has been reviewed (specifically information relating to building massing and heights). It has been identified that the Proposed Development will comprise three prominent tall towers located in the southern portion of the site, with the tallest reaching ground plus approximately 24 storeys in height.
386. The DTTV shadow generated as a result of the Proposed Development, is anticipated to fall to the north-east of the site. The DTTV shadow will fall over several retail and office buildings, with potential residential dwellings located on the upper floors, and residential dwelling blocks. The DTTV shadow will continue north-east where it will cease prior to reaching King's Meadow (as shown **Figure 12**). The predicted DTTV shadow, generated as a result of the Proposed Development, has the potential to result

in a loss or degradation to DTTV reception received by sensitive receptors within the anticipated DTTV shadow area. It should be noted that some areas of anticipated DTTV shadow fall within existing DTTV shadow areas (predominantly generated as a result of the existing Fountain House (due to be refurbished as part of the design proposals)). The DTTV shadow generated as a result of the Proposed Development will not worsen any adverse effects to DTTV reception currently experienced by any residential dwellings falling within the area of existing DTTV shadow.

387. The most noticeably adverse effects will be experienced by those residential dwellings located in closest proximity to the site, with the scale of the impact reducing with distance away from the site. This is due to 'knife-edge diffraction'. This diffraction mechanism is a process whereby signals appear to bend (or 'diffract') behind a structure and eventually meet, like that of a knife-edge as opposed to a straight block. Therefore, the residential dwellings likely to experience the most noticeably adverse effects are likely located along Broad Street, Friar Street, and West Street. With those located north-east of these being less noticeably affected.

Figure 12 DTTV Shadow Generated as a Result of the Proposed Development (not to scale)



388. For potentially affected residential dwellings located within the DTTV shadow area, standard measures are available to mitigate the potential adverse effect, these include:

- Upgrading the existing DTTV aerials by increasing their height and gain;
- The provision of a non-subscription satellite service which is available from the BBC and ITV ('Freesat') or Sky for a one-off cost; or
- Linking affected residential dwellings up to the existing available CATV network at a one-off cost.

389. The residential dwellings could also receive TV reception from the Hemdean relay transmitter, although this service is a 'freeview light' service, and therefore does not contain all of the channels available to those receiving DTTV reception from the Hannington transmitter mast (which transmits the full freeview channel list). These standard measures are straight forward to implement and would remove the adverse effects to DTTV reception.

Satellite TV Reception

390. Satellite TV services to the UK are provided by geo-stationary satellites, which are primarily located within the Astra 28.2° E satellite cluster. Due to the geostationary positioning of the satellites in relation to Reading, satellite TV shadow areas will fall to the northwest of the site.

391. Due to the positioning of the tall towers in the south of the site, the anticipated satellite TV shadow generated as a result of the Proposed Development will fall to the northwest of the site up to, but not beyond, the buildings located on the northern side of Oxford Road. It is therefore considered that the Proposed Development would not affect the reception of satellite TV services, and no likely significant effects to satellite TV receptor are anticipated as a result of the Proposed Development.

Conclusion

392. Based on the information available, it can be concluded that there is the potential for a loss or degradation to DTTV reception received by residential dwellings, as a result of the Proposed Development. Suitable measures have been identified and are available to all potentially affected residential dwellings.
393. Whilst there is the potential for some impact to occur, taking into account the size and extent of potential impacts and the availability of standard measures to monitor and remedy potential impacts, the likely residual effects on DTTV reception to surrounding receptors are not considered to be significant.³ On this basis, no further consideration of electronic interference effects will be presented within the ES.

FORMAT AND CONTENT OF THE EIA

394. The proposed scope and structure of the ES is as follows:

- **ES Volume 1: Main ES** – a document which forms the main body of the ES and which comprises of the following non-technical and technical chapters:
 - Chapter 1. Introduction and EIA Methodology;
 - Chapter 2. Alternatives and Design Evolution;
 - Chapter 3. The Proposed Development;
 - Chapter 4. Construction;
 - Chapter 5. Socio-Economics;
 - Chapter 6. Air Quality;
 - Chapter 7. Noise and Vibration;
 - Chapter 8: Daylight, Sunlight and Overshadowing;
 - Chapter 9. Wind Microclimate;
 - Chapter 10: Effect Interactions;
 - Chapter 11. Likely Significant Effects and Conclusions;
 - Chapter 12. Mitigation and Monitoring Schedule; and
 - Chapter 13. Glossary and Abbreviations.
- **ES Volume 2: Townscape, Built Heritage and Visual Impact Assessment** – a separate townscape, built heritage and visual impact assessment (THVIA) document that will be accompanied by a full set of views and verified images, as agreed with RBC;
- **ES Volume 3: Technical Appendices** – comprises background data, technical reports, tables, figures and surveys.
- **ES Non-Technical Summary (NTS)** - this will be a separate document providing a concise description of the Proposed Development, the alternatives considered, identified mitigation measures and the residual likely significant environmental and socio-economic effects.

395. Schedule 4 of the EIA Regulations sets out the information for inclusion within an ES. In response to this schedule of the EIA Regulations, **Appendix B** to this request for an EIA Scoping Opinion provides a 'way-finding' table which sets out the information for inclusion within an ES and where this information will be presented within the ES.

APPENDIX A – Cumulative Schemes

For the Proposed Development, the following preliminary list and map of cumulative schemes have been identified for consideration (**Table A.1** and **Figure A.1**).

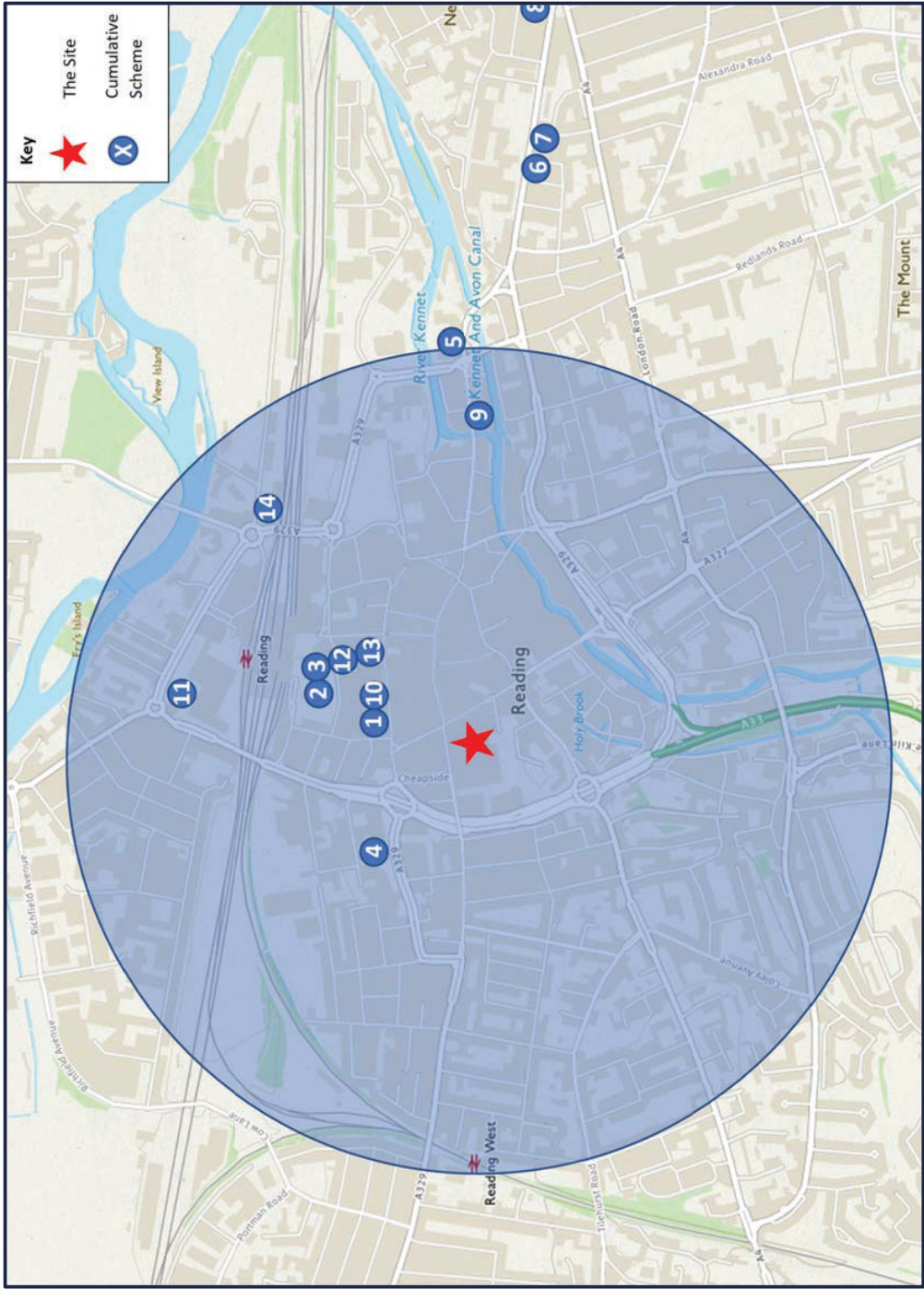
As noted above, the separate hotel application on Hosier Street will be included as a cumulative development if submitted before the Proposed Development. This has not yet been included in **Table A.1** or **Figure A.1** as no there is no planning application (or corresponding reference number), but this will be included in the ES as appropriate.

Table A.1 Details of existing or approved projects to be included in the Cumulative Schemes

Reference	Cumulative Scheme	Application No.	Scheme Description	Status as of January 2018
1	52-55 Friar Street Reading and 12 Greyfriars Road, RG1 1DX	162210	Demolition of existing building and structures (Class A1) and erection of 3 new buildings ranging between 6 - 12 (and basement) storeys in height to provide 135 (1xstudio, 54x1, 73x2 & 7x3-bed) residential units (Class C3), a flexible Class A1-A5 use at ground floor level fronting onto Friar St, a flexible Class A1-5, B1(a) or D2 (gym only) use at ground floor level fronting onto Greyfriars Rd, with associated access, parking, servicing, landscaping and engineering works (amended description).	Permitted
2	Station Hill, Reading	130436	Outline application for mixed use redevelopment of the site through the demolition and alteration of existing buildings and erection of new buildings & structures to provide Offices (Use Class B1), a range of town centre uses including retail and related uses (Use Class A1 - A5) leisure (Use Class D2) and residential units, associated infrastructure, public realm works and ancillary development (all matters reserved).	Permitted
3	Plot E & Telecom House Land Friar Street/ Garrard Street Station Hill RG1 1DX	151426	Outline application with all matters reserved for mixed use redevelopment of Plot E of the Station Hill site and neighbouring Telecom House site (48 to 51 Friar Street & 4 to 20 Garrard Street) to comprise the demolition of existing buildings and erection of new buildings/ structures to provide residential units, a range of town centre uses including retail and related uses (Use Class A1 - A5), associated infrastructure, public realm works and ancillary development.	Permitted
4	Land between Weldale Street and Chatham Street Reading	170326	Demolition of all existing buildings (including 3 retail units) and structures, and erection of new buildings ranging between lower ground& 4 storeys to lower ground & 11 storeys in height, providing 427 (233x1, 182x2 & 12x3-bed) residential units (Class C3) and 1 flexible ground floor retail shop (Class A1) or restaurant and cafe (Class A3) unit, together with new public realm, landscaping, accesses, parking and associated works (amended description).	Permitted
5	Kings Point, 120 Kings Road, Reading, RG1 3DA	162087	Demolition of existing building and the erection of a part seven, part nine, part eleven, part twelve and part seventeen storey building comprising 103 residential units and 351.5 sqm G/A of commercial (A1/A3) floorspace at ground and mezzanine floor level together with parking and associated landscaping (without complying with conditions (2, 7, 8, 9, 18, 19, 28 of planning permission 150019) to allow the removal of sub-basement, enlargement of basement level and internal and external alterations at the basement, ground and mezzanine levels (amended description).	Permitted
6	Berkshire House, 252-256 Kings Road, Reading, RG1 4HP	161461	Change of use and extension of the existing office building Berkshire House (252 – 256 Kings Road, Reading) to create a six storey student residential building but with a variation of condition 2 (approved plans) of planning permission ref. 141986 but with a variation of condition 12 of planning permission ref. 141986 for amendments to the approved ventilation system	Permitted
7	Aspen House, 300 Kings Road, Reading, RG1 4HP	170512	Change of use of office building from Class B1(a) (offices) to C3 (dwelling houses) to comprise 78 flats. Prior Notification under Class O, Part 3 of Schedule 2 of the Town and Country Planning (General Permitted Development) Order 2015	Prior Approval Notification - Approval
8	Alexander House 205-207 Kings Road Reading RG1 4LS	162057	Erection of basement and 4 - 7 storey building comprising 56 (30x1, 18x2 & 8x3-bed) residential units (Class C3) with associated parking and landscaping, following demolition of existing basement and 2 storey office building (Class B1a)	Permitted
9	Horwath Clark Whitehill, Kennet House 80-82 Kings Road Reading RG1 3BL	121489	The comprehensive refurbishment and change of use from office to residential of Kennet House and an increase in Station Hill, Reading the building's height by the addition of new terraced floors resulting in a 10 storey building containing 103 flats with associated basement parking and landscaping.	Permitted

10	Bridewell and Samuel House, 60-61 Friar Street	120977	Demolition of Samuel House and refurbishment and extension of Bridewell House to create a student hall of residence comprising 127 self-contained studios and 14 accessible self-contained studios with common room and ancillary facilities. Retention of ground floor of Bridewell House as retail use	Permitted
11	Former Sorting Office, Caversham Road / Vastern Road	110024	Outline planning application for business uses (Use Class B1), residential accommodation (Use Class C3), hotel (Use Class C1), retail floor space (Use Class A1), food and drink uses (Use Class A3, A4 and A5), leisure uses (Use Class D2), and associated car parking, open space and landscaping, highways, access and associated works.	Permitted
12	Garrard House, 30 Garrard Street	110131	Change of use from office (Use Class B1) to a 94-bedroom apart hotel (Use Class C1), with spa (Use Class D2) at basement and café (Use Class A3) at ground floor level, involving the formation of an additional two storey roof extension.	Permitted
13	35-38 Friar Street	070001	Demolition of existing four storey building (Use Class A1 retail use on ground floor and Use Class B1 office use on upper floors) and erection of a seven storey building with Use Class A1/A2/A3 use on ground floor, Use Class D2 leisure in basement, and 83 Use Class C1 hotel use serviced apartments on the upper floors.	Permitted
14	Former Cooper Reading Bmw Kings Meadow Road Reading RG1 8BN	162166	Erection of a part 12 storey, part 23 storey building comprising 315 apartments in a mix of studio, one-bedroom, two-bedroom and 3-bedroom units; residents' lounges, tech-hub, dining room, and cinema room, various rooftop outdoor amenity spaces, concierge/reception with coffee meeting area, residents' storage facilities, postroom, ancillary back-of-house facilities, 315 secure cycle parking spaces, 49 car parking spaces, landscaping, and associated works. Demolition of existing multi-storey car park.	Permitted

Figure A.1 Map identifying all the developments to be included in the Cumulative Schemes



APPENDIX B – Information for Inclusion within an ES: Way Finding

396. Table B.1 is a wayfinding table outlining the expected layout and organisation of the final ES.

Table B.1 Wayfinding table

	Information for Inclusion in Environmental Statements, as Specified in Schedule 4 of the EIA Regulations 2017	How the EIA addresses the Information Specifications
1.	A description of the development, including in particular:	
(a)	a description of the location of the development;	ES Volume 1: Chapter 1: Introduction and EIA Methodology
(b)	a description of the physical characteristics of the whole development, including, where relevant, requisite demolition works, and the land-use requirements during the construction and operational phases;	ES Volume 1: Chapter 3: The Proposed Development Chapter 4: Construction
(c)	a description of the main characteristics of the operational phase of the development (in particular any production process), for instance, energy demand and energy used.	ES Volume 1: Chapter 3: The Proposed Development
	...nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used; and	ES Volume 1: Chapter 3: The Proposed Development Chapter 4: Construction
(d)	an estimate, by type and quantity, of expected residues and emissions (such as water, ...	ES Volume 1: Chapter 1: Introduction and EIA Methodology ES Volume 3: Appendix EIA Methodology: Request for an EIA Scoping Opinion
	...air, ...	ES Volume 1: Chapter 6: Air Quality ES Volume 3: Appendix Air Quality: Supporting Technical Data
	...soil and subsoil pollution,...	ES Volume 1: Chapter 1: Introduction and EIA Methodology ES Volume 3: Appendix Introduction and EIA Methodology: Request for an EIA Scoping Opinion
	...noise, vibration, ...	ES Volume 1: Chapter 7: Noise and Vibration ES Volume 3: Appendix Noise and Vibration: Supporting Technical Data
	...light, ...	ES Volume 1: Chapter 1: Introduction and EIA Methodology Chapter 8: Daylight, Sunlight and Overshadowing ES Volume 3: Appendix Introduction and EIA Methodology: Request for an EIA Scoping Opinion Appendix Daylight, Sunlight and Overshadowing
	...heat, radiation and ...	ES Volume 1: Chapter 3: The Proposed Development Chapter 8: Daylight, Sunlight and Overshadowing ES Volume 3: Appendix Daylight, Sunlight and Overshadowing Appendix Climate Change: GHG Emissions Assessment

	...quantities and types of waste produced during the construction and operation phases;	ES Volume 1: Chapter 3: The Proposed Development Chapter 4: Construction
2.	A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.	ES Volume 1: Chapter 2: Alternatives and Design Evolution
3.	A description of the relevant aspects of the current state of the environment (baseline scenario) ...	ES Volume 1: Chapter 1: Introduction and EIA Methodology Technical Chapters 5 – 9 ES Volume 3: Appendix Climate Change: GHG Emissions Assessment
	...and an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.	ES Volume 1: Chapter 1: Introduction and EIA Methodology Technical Chapters 5 – 9
4.	A description of the factors specified in regulation 4(2) likely to be significantly affected by the development: population, human health, ...	ES Volume 1: Chapter 5: Socio-Economics ES Volume 3: Appendix Introduction and EIA Methodology: Request for an EIA Scoping Opinion
	...biodiversity (for example fauna and flora), ...	ES Volume 1: Chapter 1: Introduction and EIA Methodology ES Volume 3: Appendix Introduction and EIA Methodology: Request for an EIA Scoping Opinion
	...land (for example land take), ...	ES Volume 1: Chapter 1: Introduction and EIA Methodology ES Volume 3: Appendix Introduction and EIA Methodology: Request for an EIA Scoping Opinion
	...soil (for example organic matter, erosion, compaction, sealing), ...	ES Volume 1: Chapter 1: Introduction and EIA Methodology ES Volume 3: Appendix Introduction and EIA Methodology: Request for an EIA Scoping Opinion
	...water (for example hydromorphological changes, quantity and quality), ...	ES Volume 3: Appendix Introduction and EIA Methodology: Request for an EIA Scoping Opinion
	...air, ...	ES Volume 1: Chapter 6: Air Quality ES Volume 3: Appendix Air Quality: Supporting Technical Data
	...climate (for example greenhouse gas emissions, impacts relevant to adaptation), ...	ES Volume 1: Chapter 2: Alternatives and Design Evolution Chapter 3: The Proposed Development Technical Chapters 5 – 9 ES Volume 3: Appendix Climate Change: GHG Emissions Assessment
	...material assets, cultural heritage, including architectural and archaeological aspects, and landscape...	ES Volume 1: Chapter 1: Introduction and EIA Methodology

		ES Volume 2: Townscape, Built Heritage and Visual Impact Assessment ES Volume 3: Appendix Introduction and EIA Methodology: request for an EIA Scoping Opinion
5.	A description of the likely significant effects of the development on the environment resulting from, inter alia:	
(a)	the construction and existence of the development, including, where relevant, demolition works.	ES Volume 1: Chapter 4: Construction
(b)	the use of natural resources, in particular land, soil, ...	ES Volume 1: Chapter 3: The Proposed Development Chapter 4: Construction
	...water and ...	ES Volume 3: Appendix Introduction and EIA Methodology: Request for an EIA Scoping Opinion
	...biodiversity, ...	ES Volume 1: Chapter 1: Introduction and EIA Methodology Chapter 3: The Proposed Development ES Volume 3: Appendix Introduction and EIA Methodology: Request for an EIA Scoping Opinion
	...considering as far as possible the sustainable availability of these resources;	ES Volume 1: Chapter 3: The Proposed Development Technical Chapters 5 – 9
(c)	the emission of pollutants, ...	ES Volume 1: Chapter 1: Introduction and EIA Methodology Chapter 7: Air Quality ES Volume 3: Appendix Introduction and EIA Methodology: Request for an EIA Scoping Opinion Appendix Air Quality: Supporting Technical Data Appendix Climate Change: GHG Emissions Assessment.
	...noise, vibration,...	ES Volume 1: Chapter 8: Noise and Vibration ES Volume 3: Appendix Noise and Vibration: Supporting Technical Data
	...light, ...	ES Volume 1: Chapter 1: Introduction and EIA Methodology Chapter 8: Daylight, Sunlight and Overshadowing, ES Volume 3: Appendix Introduction and EIA Methodology: Request for an EIA Scoping Opinion Appendix Daylight, Sunlight and Overshadowing
	...heat and radiation, ...	ES Volume 1: Chapter 3: The Proposed Development Chapter 8: Daylight, Sunlight and Overshadowing ES Volume 3: Appendix Daylight, Sunlight and Overshadowing
	...the creation of nuisances, ...	ES Volume 1: Chapter 8: Noise and Vibration ES Volume 3: Appendix Noise and Vibration: Supporting Technical Data

	...and the disposal and recovery of waste;	ES Volume 1: Chapter 3: The Proposed Development Chapter 4: Construction
(d)	the risks to human health, cultural heritage or the environment (for example due to accidents or disasters);	ES Volume 1: Chapter 1: Introduction and EIA Methodology ES Volume 2: Townscape, Built Heritage and Visual Impact Assessment ES Volume 3: Appendix Introduction and EIA Methodology: Request for an EIA Scoping Opinion
(e)	the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;	ES Volume 1: Technical Chapters 5 – 9 Chapter 10: Effect Interactions
(f)	the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change; and	ES Volume 1: Chapter 3: The Proposed Development ES Volume 3: Appendix Climate Change: GHG Emissions Assessment
(g)	the technologies and the substances used.	ES Volume 1: Chapter 3: The Proposed Development Chapter 4: Construction Technical Chapters 5 – 9
6.	A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.	ES Volume 1: Chapter 1: Introduction and EIA Methodology Technical Chapters 5 – 9
7.	A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases.	ES Volume 1: Chapter 3: The Proposed Development Chapter 4: Construction Technical ES Chapters 5 – 9 Chapter 12: Mitigation & Monitoring Schedule
8.	A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to EU legislation such as Directive 2012/18/EU(c) of the European Parliament and of the Council or Council Directive 2009/71/Euratom(d) or UK environmental assessments may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.	See section 'EIA and the Scoping Process – Project Vulnerability' of this report
9.	non-technical summary of the information provided under paragraphs 1 to 8.	ES Non-Technical Summary
10.	A reference list detailing the sources used for the descriptions and assessments included in the environmental statement.	ES Volume 1: Chapter 1: Introduction and EIA Methodology Technical Chapters 5 – 9

APPENDIX C – Archaeological Desk-Based Assessment



Broad Street Mall
Reading
RG1 7QE

Historic environment assessment

BROAD STREET MALL
Reading

County of Berkshire

Historic environment assessment

July 2018

NGR 471166 173346

Sign-off history

issue no.	Issue date	Prepared by	Reviewed by	Project Manager	Notes
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Note: site outlines may appear differently on some figures owing to distortions in historic maps. North is approximate on early maps.

Executive summary

Trium Environmental Consulting LLP has commissioned MOLA to carry out a historic environment assessment in advance of proposed development at Broad Street Mall, Reading RG1 7QE. The scheme comprises the construction of five new residential structures within the existing context of the Broad Street Mall. Augered pile foundations will be required.

This desk-based study assesses the impact of the scheme on buried heritage assets (archaeological remains). Above ground heritage assets (historic structures) are not discussed in detail, but they have been noted where they assist in the archaeological interpretation of the site. The existing basement covers approximately 90% of the site and will have removed all archaeological remains within its footprint. The remaining 10% of the site is likely to have been disturbed to a similar level as part of the process of excavating the existing basement and the construction of the retaining walls.

Buried heritage assets that may be affected by the proposals comprise:

Post-medieval remains. Cartographical evidence indicates that parts of the site have been developed from at least the 17th century and onwards. In the 19th century the site was almost fully occupied by a combination of commercial, industrial and residential buildings and the existing shopping centre was built in the late 20th century. Any post medieval remains would be of low heritage significance.

Saxon remains. A possible residual Saxon knife was found at the Civic Centre 70m south of the site. According to Astill's projection of the Saxon Reading settlement, the north-west corner of this extended into the eastern half of the site. If residual Saxon remains did survive within the site they would be of medium significance.

Medieval remains. Reading was subject to considerable urban development during the medieval period, which is reflected in the fact that archaeological investigations nearby have revealed evidence of occupation along Hosier Street to the south of the site, as well as further structural and cut features in the wider study area. Any medieval remains would be of medium significance.

There is anticipated to be low potential for earlier periods due to the fact there is no substantial archaeological evidence for occupation of the site and wider area prior to the Saxon period.

There is a low potential for human remains. Abraded human remains have been found at the Civic Centre 70m south of the site. These remains have not been dated and it is not known whether they represent an anomaly or are indicative of further interments in the area.

Within the footprint of the existing basement, any groundworks as part of the insertion of new piling is not expected to have an archaeological impact. Outside of this, the area to the north of the site boundary is described in a topographical survey as a 'floated area' and is expected to be truncated down to a similar level as the basement. The area to the east is likely also to have been disturbed as part of the process of constructing the basement. If any piled foundations were inserted in this area they would destroy all surviving archaeological remains within their footprint.

Although the precise details would need to be agreed with the local authority's archaeological advisor, it is suggested that the most appropriate investigation strategy is likely to entail geo-archaeological boreholes to determine the depth of the underlying deposits in the areas outside of the existing basement. The results would be used to target further archaeological evaluation if necessary to confirm the presence, nature and significance of archaeological remains. This would in turn enable an informed decision to be made in respect of an appropriate mitigation strategy for any significant archaeological assets, such as targeted excavation, and / or a watching brief during ground works for remains of lesser significance. This would ensure that significant archaeological assets are not removed without record.

Any archaeological work would need to be undertaken in accordance with a Written Scheme of Investigation (WSI) and could be carried out under the terms of a standard archaeological planning condition set out with the granting of planning consent.

1 Introduction

1.1 Origin and scope of the report

- 1.1.1 Trium Environmental Consulting LLP has commissioned MOLA (Museum of London Archaeology) to carry out a historic environment assessment in advance of proposed development at Broad Street Mall, Reading, Berkshire; National Grid Reference (NGR) 471166 173346; Fig 1. The proposed scheme is for the construction of five new residential structures within the existing structure of Broad Street Mall. Augured pile foundations would be required.
- 1.1.2 This desk-based study assesses the impact of the scheme on buried heritage assets (archaeological remains). It forms a technical appendix in support of an Environmental Statement, assessing the impact of the proposed development (hereafter referred to as 'the site') on the historic environment. It will enable the archaeological advisors to the local planning authority (LPA) to formulate an appropriate response in the light of the impact on any known or possible heritage assets. These are parts of the historic environment which are considered to be significant because of their historic, evidential, aesthetic and/or communal interest.
- 1.1.3 This report deals solely with the archaeological implications of the development and does not cover possible built heritage issues, except where buried parts of historic fabric are likely to be affected. Above ground assets (i.e., designated and undesignated historic structures and conservation areas) on the site or in the vicinity that are relevant to the archaeological interpretation of the site are discussed. Whilst the significance of above ground assets is not assessed in this archaeological report, direct physical impacts upon such assets arising from the development proposals are noted. The report does not assess issues in relation to the setting of above ground assets (e.g., visible changes to historic character and views).
- 1.1.4 The assessment has been carried out in accordance with the requirements of the National Planning Policy Framework (NPPF) (MHCLG, 2018; DCLG 2012, 2014; see section 10 of this report) and to standards specified by the Chartered Institute for Archaeologists (CIfA Dec 2014a, 2014b), Historic England (EH 2008, HE 2015. Under the 'Copyright, Designs and Patents Act' 1988 MOLA retains the copyright to this document.
- 1.1.5 Note: within the limitations imposed by dealing with historical material and maps, the information in this document is, to the best knowledge of the author and MOLA, correct at the time of writing. Further archaeological investigation, more information about the nature of the present buildings, and/or more detailed proposals for redevelopment may require changes to all or parts of the document.

1.2 Designated heritage assets

- 1.2.1 Historic England's National Heritage List for England (NHL) is a register of all nationally designated (protected) historic buildings and sites in England, such as scheduled monuments, listed buildings and registered parks and gardens. The List does not include any nationally designated heritage assets within the site. There are four Listed buildings within 150m of the site, these are:
- The Grade II listed 20th century houses at 38 Oxford Road and 3 and 5 Cheapside (National Heritage List no. 1113436) is located 30m north of the site;
 - The Grade II listed Allied Arms Inn (National Heritage List no. 1156940) is located 130m east of the site
 - the Grade II 19th century buildings at 55 and 55A St Mary's Butts (National Heritage List no. 1113572).
- 1.2.2 The Grade II Queen Victoria Jubilee Fountain (National Heritage List no. 1113571) located 150m south-east of the site. The site is not within the/ a Reading Area of Archaeological Importance nor is it within a Conservation Area.

1.3 Aims and objectives

1.3.1 The aim of the assessment is to:

- identify the presence of any known or potential buried heritage assets that may be affected by the proposals;
- describe the significance of such assets, as required by national planning policy (see section 9 for planning framework and section 10 for methodology used to determine significance);
- assess the likely impacts upon the significance of the assets arising from the proposals; and
- provide recommendations for further assessment where necessary of the historic assets affected, and/or mitigation aimed at reducing or removing completely any adverse impacts upon buried heritage assets and/or their setting.

2 Methodology and sources consulted

2.1 Sources

2.1.1 For the purposes of this report, documentary and cartographic sources including results from any archaeological investigations in the site and the area around it were examined in order to determine the likely nature, extent, preservation and significance of any buried heritage assets that may be present within the site or its immediate vicinity. This information has been used to determine the potential for previously unrecorded heritage assets of any specific chronological period to be present within the site.

2.1.2 In order to set the site into its full archaeological and historical context, information was collected on the known historic environment features within a 250m-radius study area around it, as held by the primary repositories of such information within the county. These comprise the Berkshire Archaeology Historic Environment Record (BAHER). The Berkshire Archaeology Historic Environment Record is managed by Reading Borough Council and includes information from past investigations, local knowledge, find spots, and documentary and cartographic sources. The MoL Archaeological Archive includes a public archive of past investigations and is managed by the Museum of London. The study area was considered through professional judgement to be appropriate to characterise the historic environment of the site. Occasionally there may be reference to assets beyond this, where appropriate, e.g., where such assets are particularly significant and/or where they contribute to current understanding of the historic environment.

2.1.3 In addition, the following sources were consulted:

- MOLA – in-house Geographical Information System (GIS) with statutory designations GIS data, the locations of all ‘key indicators’ of known prehistoric and Roman activity across Greater London, past investigation locations, projected Roman roads; burial grounds from the Holmes burial ground survey of 1896; georeferenced published historic maps; Defence of Britain survey data, in-house archaeological deposit survival archive and archaeological publications;
- Historic England – information on statutory designations including scheduled monuments and listed buildings, along with identified Heritage at Risk;
- Berkshire Record Office – historic maps and published histories;
- British National Copyright Library – historic Ordnance Survey maps from the first edition (1860–70s) to the present day;
- Groundsure – historic Ordnance Survey maps from the first edition (1860–70s) to the present day,
- British Geological Survey (BGS) – solid and drift geology digital map; online BGS geological borehole record data;
- Trium Environmental Consulting LLP – architectural drawings (Corstorphine and Wright Architects, October 2016), engineering drawings (Moorgarth, June 2018), existing site survey (Warner Surveys, May 2017);
- Internet – web-published material including the LPA local plan, and information on conservation areas and locally listed buildings.

2.1.4 The assessment included a site visit carried out on the 28th of June 2018 in order to determine the topography of the site and existing land use/the nature of the existing buildings on the site, and to provide further information on areas of possible past ground disturbance and general historic environment potential. Observations made on the site visit have been incorporated into this report.

2.2 Methodology

2.2.1 Fig 2 shows the location of known historic environment features within the study area. These have been allocated a unique historic environment assessment reference number (**HEA 1, 2,**

etc), which is listed in a gazetteer at the back of this report and is referred to in the text. Where there are a considerable number of listed buildings in the study area, only those within the vicinity of the site (150m) are included, unless their inclusion is considered relevant to the study. Conservation areas and archaeological priority areas are not shown. All distances quoted in the text are approximate (within 5m), and measured from the nearest site edge.

- 2.2.2 Section 10 sets out the criteria used to determine the significance of heritage assets. This is based on four values set out in Historic England's *Conservation principles, policies and guidance* (EH 2008), and comprise evidential, historical, aesthetic and communal value. The report assesses the likely presence of such assets within (and beyond) the site, factors which may have compromised buried asset survival (i.e. present and previous land use), as well as possible significance.
- 2.2.3 Section 11 includes non-archaeological constraints. Section 12 contains a glossary of technical terms. A full bibliography and list of sources consulted may be found in section 13 with a list of existing site survey data obtained as part of the assessment.

2.3 Assumptions and limitations

- 2.3.1 The proposed scheme is not yet at design freeze stage, thus the report will be updated upon receipt of further details.

3 The site: topography, geology and modern impacts

3.1 Site location

- 3.1.1 The site is Broad Street Mall, Reading (NGR 471166 173346: Fig 1). It is a 1.8ha late-20th century retail building and is bounded by Oxford Road immediately to the north, St Mary's Butts immediately to the east, Hosier Street and Dusseldorf Way immediately to the south and Queens Walk immediately to the west. The site falls within the historic parish of St Mary Reading, within the county of Berkshire prior to being absorbed into the administration of the county borough of Reading.
- 3.1.2 The site is 300m north-west of the River Kennet, a tributary of the Thames. The Kennet was canalised in the 18th century, and now forms part of the water frontage of the Oracle.

3.2 Topography

- 3.2.1 Topography can provide an indication of suitability for settlement, and ground levels can indicate whether the ground has been built up or truncated, which can have implications for archaeological survival (see section 5.2).
- 3.2.2 Ground level generally slopes down from north to south, from 45.0m above Ordnance Datum (OD) at the north-east corner of the site to 43.7m OD at the south-east corner of the site (Fig 4a, Corstorphine and Wright Architects, October 2016). The topography likely reflects the presence of the River Kennet valley.

3.3 Geology

- 3.3.1 Geology can provide an indication of suitability for early settlement, and potential depth of remains.
- 3.3.2 The British Geological Survey (BGS) 50k digital data indicates the site is on a Taplow Gravel terrace associated with the River Thames.
- 3.3.3 In places the Gravels are capped by fine-grained silt known in London as Langley Silt Complex ('brickearth'), which was laid down as alluvium and/or wind-blown deposits during the last glaciation around 17,000 BC. This produced fertile soils but was often exploited for the manufacture of bricks and much has been removed by quarrying or by subsequent building development.
- 3.3.4 There have been eleven BGS boreholes drilled within the site footprint that are publicly accessible, the results of which are summarised below. Two of the boreholes, SU77SW865 and SU77SW868, appear to have been drilled from a basement level. The rest of the boreholes were drilled from ground level, all conducted in 1968 prior to the construction of the existing Broad Street Mall and basement.
- 3.3.5 Table 1 differentiates between modern made ground (i.e. containing identifiably modern inclusions such as concrete and plastic) and undated made ground, which may potentially contain deposits of archaeological interest. This distinction was not apparent in the original report as it was commissioned for engineering purposes. *Table 1: summary of geotechnical data (BGS)*

Levels are in metres below ground level (mbgl)

BH/TP ref.	Ground level	Undated made ground	Top of natural brickearth	Top of natural gravel
SU77SW690	45.0m OD	<0.8	0.8	2.0
SU77SW864	44.8m OD	<1.8	1.8	2.5
SU77SW866	45.0m OD	<1.6	1.6	2.5

BH/TP ref.	Ground level	Undated made ground	Top of natural brickearth	Top of natural gravel
SU77SW867	44.8m OD	<1.5	-	1.5
SU77SW871	44.8m OD	<1.5	-	1.5
SU77SW872	44.8m OD	<0.1 (Concrete)	-	0.1
SU77SW865	39.8m OD	-	-	-
SU77SW868	39.8m OD	-	-	-
SU77SW869	44.8m OD	<2.6	-	2.6
SU77SW870	44.5m OD	-	<3.4	-
SU77SW873	44.2m OD	<0.3	0.3	2.9

- 3.3.6 The BGS boreholes indicate that the top of natural gravels are at 43.3m OD (0.4–1.7mbgl) in the north of the site, sloping down to 41.3m OD (2.4–3.7mbgl) in the south of the site, broadly reflecting the topography of the area. These gravels were in places overlain with 0.7m–1.6m thick deposits of brickearth. Six of the boreholes recorded no brickearth, suggesting heavy truncation of these deposits on the site. This was capped by a generally 1.5m–1.8m thick deposit of made ground, although one borehole noted 2.6m of made ground overlying natural gravels.

3.4 Modern impacts affecting archaeological survival

- 3.4.1 The existing 1970s Broad Street Mall has a basement which covers 90% of the site with a variable finished floor level of 37.6–40.2m OD (3.5–7.4mbgl) (Fig 4b, Corstorphine and Wright Architects, October 2016; Warner Surveys, Job No.S715/0357, May 2017). This will have removed any archaeological remains present within its footprint and cut into natural gravels.

4 Archaeological and historical background

4.1 Overview of past investigations

- 4.1.1 There have been no archaeological within the site footprint itself. There have been 17 past archaeological investigations within the 250m radius study area. These are mostly clustered to the west of the study area, towards the urban centre of Reading. The closest is located 70m to the south of the site at reading Civic Headquarters (**HEA 2**), where a possible Saxon or early medieval knife was found as well as abraded human remains. A large assemblage of medieval roof tiles was also found which is indicative of the dwellings on Hosier Street at this time.
- 4.1.2 Other archaeological investigations in the study area uncovered medieval cut and structural features (**HEA 4, 7 and 16**) as well as post-medieval remains also relating to the habitation of this area (**HEA 3, 6, 8 and 17**). How well understood is the study area?
- 4.1.3 The results of these investigations, along with other known sites and finds within the study area, are discussed by period, below. The date ranges given are approximate.

4.2 Chronological summary

Prehistoric period (800,000 BC–AD 43)

- 4.2.1 The Lower (800,000–250,000 BC) and Middle (250,000–40,000 BC) Palaeolithic saw alternating warm and cold phases and intermittent perhaps seasonal occupation. During the Upper Palaeolithic (40,000–10,000 BC), after the last glacial maximum, and in particular after around 13,000 BC, further climate warming took place and the environment changed from steppe-tundra to birch and pine woodland. It is probably at this time that Britain first saw continuous occupation. Erosion has removed much of the Palaeolithic land surfaces and finds are typically residual. There are no known finds dated to this period within the study area. A Lower Palaeolithic handaxe has been found 330m north of the site on Greyfriars Road (Oxford Archaeology 2015, 47).
- 4.2.2 The Mesolithic hunter-gatherer communities of the postglacial period (10,000–4000 BC) inhabited a still largely wooded environment. The river valleys and coast would have been favoured in providing a dependable source of food (from hunting and fishing) and water, as well as a means of transport and communication. Evidence of activity is characterised by flint tools rather than structural remains. There are no known finds dated to this period within the study area.
- 4.2.3 The Neolithic (4000–2000 BC), Bronze Age (2000–600 BC) and Iron Age (600 BC–AD 43) are traditionally seen as the time of technological change, settled communities and the construction of communal monuments. Farming was established and forest cleared for cultivation. An expanding population put pressure on available resources and necessitated the utilisation of previously marginal land. There have been no finds from these periods within the study area.
- 4.2.4 There is limited evidence for the prehistoric settlement of Reading, though it is possible that the areas surrounding the River Thames and River Kennet may have been subject to temporary occupation as the rivers may have been exploited as sources of food, water and transportation routes (Cotswold Archaeology 2015, 17).

Roman period (AD 43–410)

- 4.2.5 The site is located 3km north-west of the principal Roman road connecting *Londinium* (London) to the east, to towns in the west. The civic capital of *Callaeva Attrebatum* (Silchester) is 13km south-west of the site and would have formed the main focal point for settlement in the wider area during this period. The landscape may have been interspersed with smaller farms and villas, usually in proximity to the road network (Margary 1967).
- 4.2.6 There have been no finds dating to this period within the study area, the closest Roman finds are a chance find of a 4th century AD coin 330m north of the site (outside the study area), and sherds of Romano-British pottery 300m north-east of the site. During this period, the site was

likely within marshland of the River Kennet and River Thames. It has been suggested that the area formed a trading port for the town of *Callaeva* (Lawes Long, 1836 11-13), although the lack of evidence for this period likely arises from the development of the town in the later medieval and post-medieval periods (Norton and Poore 2007).

Early medieval (Saxon) period (AD 410–1066)

- 4.2.7 Following the withdrawal of the Roman army from England in the early 5th century AD, Germanic ('Saxon') settlers arrived from mainland Europe, with occupation in the form of small villages and an economy initially based on agriculture. By the end of the 6th century a number of Anglo-Saxon kingdoms had emerged, and as the ruling families adopted Christianity, endowments of land were made to the church. Landed estates (manors) can be identified from the 7th century onwards; some, as Christianity was widely adopted, with a main 'minster' church and other subsidiary churches or chapels. In the 9th and 10th centuries, the Saxon Minster system began to be replaced by local parochial organisation, with formal areas of land centred on settlements served by a parish church.
- 4.2.8 The place-name 'Reading' is thought to have derived from a Saxon tribe known as *Readingas*, who settled in this area in the 6th century (Reading Borough Council 2008), and translates as "Reada's people" (Oxford Dictionary of British Place Names, 2012) Reading is first mentioned in the Anglo-Saxon Chronicle in 871 AD, in the year that the Danes invaded Wessex, took Reading and put up fortifications between the Kennet and the Thames (Ditchfield and Paige 1923, fn. 1). It was during this period that Roman roads converging on Silchester began to be replaced with roads meeting in Reading, and a church was established on the current site of Reading Minster, 170m east of the site (Reading Minster 2018).
- 4.2.9 Astill's *Historic Towns in Berkshire* contains a possible projection of the extent of the Saxon settlement, centred on the church (**HEA 1**). The north-western corner of this overlies the eastern half of the site (Astill 1978). A possible early medieval or Saxon knife has been found during an evaluation at the Reading Civic Headquarters (**HEA 2**) 70m to the south of the site. It appears that the site either just within or on the outskirts of the Saxon settlement.

Later medieval period (AD 1066–1485)

- 4.2.10 At the time of the Domesday Survey (1086), Reading was held in demesne (land held and maintained by the house) by William, and was assessed at 43 hides (a unit of measurement denoting the amount of land needed to support a household). The survey notes four mills and three fisheries in the manor (Williams and Martin eds. *Domesday* 1992, 140). It is also noted that the king held 28 closes (likely plots of land) within the Borough of Reading, suggesting this was land within the walled town. A church with a further eight hides of land was held by the Abbott of Battle, along with two mills (*ibid.* 146).
- 4.2.11 In 1121 Reading Abbey was founded by Henry I, 830m north-west of the site. The founding of the abbey focused attention away from the old market in St Mary's Butts, adjacent to the site, to the gates of the new abbey, and this was reflected in the road layout with Broad Street (immediately north of the site) and New Street (now Friar Street, 200m north of the site) laid out to provide access to it (Cotswold Archaeology 2015, 19).
- 4.2.12 A Franciscan Friary (**HEA 19**) was founded in Reading in 1233, initially located by the River Thames and then moved to New Street (Friar Street) in c 1285, 260m north-east of the site. Dumping activity for the purpose of ground levelling is thought to have occurred at Greyfriars Church (**HEA 9**) 200m north of the site during this time. Close by at the Greyfriars Day Nursery (**HEA 16**), a burial associated with the old Friary's cemetery was found. Works in Greyfriars Road, approximately 280m north-east of the site, found flint footings of a buildings potentially associated with the Franciscan Friary.
- 4.2.13 Archaeological investigations within the study area have uncovered evidence of the medieval development in this area. Structural evidence of occupation during the 12th to 13th centuries has been found on 99–105 Friar Street (**HEA 7**) 175m north-east of the site, comprising two adjoining buildings fronting Friar Street. At the Reading Civic Centre (**HEA 2**), 70m to the south of the site, a large assemblage of residual medieval roof tiles is indicative of the properties that existed along Hosier Street during this period. Further deposits have also been found at 55–56 St Mary's Butts (**HEA 4**) 130m east of the site, infilling a ditch, as well as Castle Street (**HEA 14** and **15**) 230m south of the site, comprising pits and land reclamation.

- 4.2.14 During this period the site would have been located on the main through-fare to the Abbey. It is likely that the site was developed by this time. Elaborate further based on the evidence.

Post-medieval period (AD 1485–present)

- 4.2.15 During the early post-medieval period, development within Reading remained within the limits of the medieval town, as can be seen from John Speed's map of 1611
- 4.2.16 John Speed's map of Reading in 1611 (Fig 5, Berkshire Record Office, D/Ex2385/1), shows the site was partly occupied by buildings fronting onto what was then known as 'Pangburne Lane,' with the southern two-thirds of the site occupied by open land. The town is shown to be more heavily developed to the east, with open fields indicated to the west of the site (although this is difficult to discern as the map ends shortly thereafter). The Minster of St Mary the Virgin is marked, 160m to the east of the site as '15' on the map, and the Parish Church of St Laurence is marked 420m to the north-east as 'D'.
- 4.2.17 During the Civil War, Reading was adopted as a Royalist garrison between 1642 and 1643. In 1642 the town was subject to fortification, comprising mostly bastions linked by earthen banks (Astill 1978). The site is located 130m east of a north-south aligned section of these defences (**HEA 18**).
- 4.2.18 By the time of the St Mary parish tithe map of 1839 (Fig 6, Berkshire Record Office, D/D1/98/1), the site appears to have been completely developed. As in the present day, the site is bounded to the north by Broad Street (now Oxford Road), to the east by St Mary's Butts and to the south by Hosier Street. The street configuration to the west has changed somewhat though as in the early 19th century 'Soho Street' passed through the south-western corner of the site.
- 4.2.19 The Ordnance Survey 1st edition 25":mile map of 1879 (Fig 7) provides a more detailed impression of the site in the late 19th century. It was occupied by a combination of commercial, domestic and industrial buildings. Cross-referencing the map with the Goad Insurance Plan of Reading Sheet 7-1 of 1895 (not reproduced), the buildings fronting on to Broad Street and St Mary's Butts were for commercial usage, whilst there were Saw Mills at the north-western corner of the site and tenements and their guardians occupying the southern third of the site. For example, there was a public house and a furniture shop fronting on to St Mary's Butts and at least eight stable buildings at the centre of the site.
- 4.2.20 By the early 20th century, much of the western half of the site, with the exception of terraced houses along Hope Street, had been cleared to make way for a car park, as shown on the Ordnance Survey 25":mile map of 1912 (Fig 8). There was also a new street at the north-eastern extent of the site providing access from Oxford Road (previously Broad Street), servicing a Garage as well as a Salvation Army Citadel which had been newly constructed in that area. Part of a drill hall is noted in the south-east of the site, which extended south, and fronted onto Hosier Street. Kelly's Directory of 1914 notes that this is the headquarters of the Fourth Battalion of the Princess Charlotte of Wales' Royal Berkshire Regiment (Kelly's Directories, Reading 1914, 45; 213).
- 4.2.21 By the time the Ordnance Survey 1:1,250 scale map of 1969–71 (Fig 9) was produced, the majority of the building within the site had been cleared, with only one structure (nos. 7–10) present fronting on to St Mary's Butts. The Ordnance Survey 1:1,250 scale map of 1980 (Fig 10) shows that by this time the existing shopping centre, then known as 'The Butts Centre' had been constructed. No further changes are noted.

5 Statement of significance

5.1 Introduction

- 5.1.1 The following section discusses historic impacts on the site which may have compromised archaeological survival from earlier periods, identified primarily from historic maps, and information on the likely depth of deposits.
- 5.1.2 In accordance with the NPPF, this is followed by a statement on the likely potential and significance of buried heritage assets within the site, derived from current understanding of the baseline conditions, past impacts, and professional judgement.

5.2 Factors affecting archaeological survival

Natural geology

- 5.2.1 Based on BGS boreholes and the information from archaeological investigations in the vicinity, the predicted level of natural geology within the site is as follows:
- Current ground level is at 43.7–45.0m OD (sloping down from north to south)
 - The top of truncated brickearth is at 41.1m–43.9m OD (1.1m–3.9m below ground level/mbgl) and generally reflects the slope of topography.
 - The top of untruncated Gravel is at 41.3m–44.7m OD (0.3m–3.7mbgl)
- 5.2.2 Between the top of the natural and the current ground level is undated made ground. The latter may potentially contain remains of archaeological interest.

Past impacts

- 5.2.3 The existing basement covers 90% of the site (Fig 4b, Fig 11 and Fig 12) and is at a level of 39.3–40.2m OD (3.5–5.7mbgl). If a basement slab of presumed 0.5m thickness is included then the overall formation level of the basement is expected to reach 4.0–6.2mbgl; thus this will have removed any archaeological remains present and cut well into natural gravels.
- 5.2.4 Five percent of the remaining site is located at the northern edge of the footprint and is described on the topographic survey as a 'floated area' (Warner Surveys, Job No.S715/0357, May 2017). It is assumed for the purposes of assessment that the depth of truncation is at least as deep as that of the existing basement levels.
- 5.2.5 The remaining 5% of the site at the eastern edge of the site footprint will also have been disturbed as part of the process of excavating the existing basement and the construction of the retaining walls. In particular, "the ground surrounding the site is retained by the basement structure which would have been backfilled against the retaining wall utilizing suitable excavated material" (BJB Consulting 2018, 6). It is thus also very likely that this area has been heavily disturbed however this has not been confirmed.

Likely depth/thickness of archaeological remains

- 5.2.6 Based on the suspected level of truncation on the site from the existing basements and the construction of the existing building, there is expected to be no archaeological remains present.

5.3 Archaeological potential and significance

- 5.3.1 The nature of possible archaeological survival in the area of the proposed development is summarised here, taking into account the levels of natural geology and the level and nature of later disturbance and truncation discussed above.
- 5.3.2 *The site has low potential for prehistoric remains.* No prehistoric remains have been found within the study area and there is little evidence for the prehistoric settlement of Reading in general. Although the areas surrounding the River Thames and Kennet were likely subject to

temporary occupation it is not expected that the site itself was a site of prehistoric activity.

- 5.3.3 *The site has low potential for Roman remains.* No roman remains have been found in the study area. Roman Silchester, which is thought to have been the main urban centre in the area, was located 13km away. The site was likely undeveloped and uncultivated during this period.
- 5.3.4 *The site has low to moderate potential for Saxon remains.* Reading itself is thought to have been established during the 6th century and was mentioned in the Anglo-Saxon Chronicle in 871 AD. According to Astill's projection of the Saxon settlement, the north-west corner of this overlies the eastern half of the site. There is low potential for remains within the footprint of the existing basement and floated area, and moderate potential outside of it. If residual Saxon remains did survive within the site they would be of **medium** significance.
- 5.3.5 *The site has low to moderate potential for medieval remains.* Reading was subject to considerable urban development during the medieval period, which is reflected in the fact that archaeological investigations nearby have revealed evidence of occupation along Hosier Street to the south of the site, as well as further structural and cut features in the wider study area. There is low potential for remains within the footprint of the existing basement and floated area, and moderate potential outside of it. Any medieval remains would be of **medium** significance.
- 5.3.6 *The site has low to moderate potential for remains from the 17th century and onwards.* Cartographical evidence indicates that the site has been developed from at least the 17th century and onwards. In the 19th century the site was occupied by a combination of commercial, industrial and residential buildings and the existing shopping centre was built in the late 20th century. There is low potential for remains within the footprint of the existing basement and floated area, and moderate potential outside of it. Any post medieval remains would be of **low** archaeological significance.
- 5.3.7 *There is a low potential for human remains.* Abraded human remains have been found at the Civic Centre (**HEA 2**) 70m south of the site. These remains have not been dated and it is not known whether they represent an anomaly or are indicative of further internments in the area. Given the extent of truncation within the site it is not expected that further human remains will survive within it.

6 Impact of proposals

6.1 Proposals

- 6.1.1 The proposed scheme is for the construction of five new residential structures within the existing context of the Broad Street Mall. These will require augered piling (Moorgarth, Drawing No. 2206-BJB-XX-XX-DR-S-0500-S2-P01, June 2018).

6.2 Implications

- 6.2.1 The identification of physical impacts on buried heritage assets within a site takes into account any activity which would entail ground disturbance, for example site set up works, remediation, landscaping and the construction of new basements and foundations. As it is assumed that the operational (completed development) phase would not entail any ground disturbance there would be no additional archaeological impact and this is not considered further.
- 6.2.2 It is outside the scope of this archaeological report to consider the impact of the proposed development on upstanding structures of historic interest, in the form of physical impacts which would remove, alter, or otherwise change the building fabric, or predicted changes to the historic character and setting of historic buildings and structures within the site or outside it.

New piled foundations

- 6.2.3 It is anticipated that the new residential structures will require augered pile foundations.
- 6.2.4 Within the existing basement, the piling will have no archaeological impact.
- 6.2.5 Any piled foundations located in the floated area to the north are unlikely to have any further impact.
- 6.2.6 At present there are no piled foundations planned for the area to the east of the site of the site footprint outside of the existing basement. Any works in this area would completely remove any surviving archaeological remains within their footprint.

7 Conclusion and recommendations

- 7.1.1 The site is located at Broad Street Mall, Reading RG1 7QE. It is not within an Area of Archaeological Importance nor is it within a Conservation Area.
- 7.1.2 There is low to moderate potential for post-medieval remains and medieval remains as the site and area surrounding it has been developed since this time, but the site has been subject to severe truncation. Prior to this, Reading was not subject to any settlement which has been confirmed archaeologically, thus there is low archaeological potential for the prehistoric and Roman periods.
- 7.1.3 It is anticipated that the existing basement will have removed all archaeological remains within the site. As a result, the proposed piling for the new development will have no archaeological impact within the footprint of the existing basement, but would remove any archaeological remains within their footprint outside of it.
- 7.1.4 Table 2 summarises the known or likely buried assets within the site, their significance, and the impact of the proposed scheme on asset significance.

Table 2: Impact upon heritage assets (prior to mitigation)

Asset	Asset Significance	Impact of proposed scheme
Post-medieval remains (Low to moderate potential)	Low	New piled foundations outside of existing basement and 'floated area'
Early medieval remains (Low to moderate potential)	Medium to high	
Late medieval remains (Low to moderate potential)	Medium	
		Asset significance reduced to negligible
		New piled foundations within existing basement and 'floated area'
		No archaeological impact

- 7.1.5 Although the precise details would need to be agreed with the local authority's archaeological advisor, it is suggested that the most appropriate investigation strategy is likely to entail geo-archaeological boreholes to determine the depth of the underlying deposits in the areas outside of the existing basement. The results would be used to target further archaeological evaluation as necessary to confirm the presence, nature and significance of archaeological remains. This would in turn enable an informed decision to be made in respect of an appropriate mitigation strategy for any significant archaeological assets, such as targeted excavation, and / or a watching brief during ground works for remains of lesser significance. This would ensure that significant archaeological assets are not removed without record.
- 7.1.6 Any archaeological work would need to be undertaken in accordance with a Written Scheme of Investigation (WSI) and could be carried out under the terms of a standard archaeological planning condition set out with the granting of planning consent.

8 Gazetteer of known historic environment assets

- 8.1.1 The gazetteer lists known historic environment sites and finds within the 250m-radius study area around the site. The gazetteer should be read in conjunction with Fig 2.
- 8.1.2 The Berkshire Archaeology HER data contained within this gazetteer was obtained on 26/07/2018 and is the copyright of Historic England 2018.
- 8.1.3 Historic England statutory designations data © Historic England 2018. Contains Ordnance Survey data © Crown copyright and database right 2018. The Historic England GIS Data contained in this material was obtained in March 2018. The most publicly available up to date Historic England GIS Data can be obtained from <http://www.historicengland.org.uk>.

Abbreviations

BAU – Berkshire Archaeological Unit

DGLA – Department of Greater London Archaeology (Museum of London)

FA – Foundations Archaeology

HER – Historic Environment Record

JMHS – John Moore Heritage Services

MoLAS – Museum of London Archaeology Service (now MOLA)

NHL – National Heritage List for England (Historic England)

OA – Oxford Archaeology

TVAS – Thames Valley Archaeological Services

WA – Wessex Archaeology

HEA No.	Description	Site code/HER/NHL No.
1	Saxon Reading Possible extent of Saxon town as shown in G.G. Astill's 'Historic Towns in Berkshire.'	MRD15634
2	Reading Civic Headquarters <i>Evaluation. OA, 2008</i> Trench 1 demonstrated that the western edge of the evaluation area had been removed during the groundworks for the construction of the Civic Centre and Hexagon in the 1960's. However, Trench 2 revealed a number of archaeological finds and features. Although there was no certain evidence for any Saxon activity, a possible early medieval/Saxon knife and very abraded human remains were recovered from intercutting postmedieval pits. The human remains were likely to have been disturbed by the post-medieval pitting. It is possible that the graveyard associated with the Minster extended beyond St. Mary's Butts, into the proposed development area. Alternatively the human remains may derive from isolated prehistoric or Roman burials. It is likely that prehistoric, Roman or Saxon burials are located in close proximity to the evaluation trenches. The large assemblage of residual medieval roof tiles indicates that properties lined Hosier Street during the medieval period. It is possible that the area formed waste land at the edge of the medieval town, with the roof tile having originated from elsewhere in the town and been dumped on the site. The 16th century pits and large amount of material remains indicate that Hosier Street was certainly occupied in the early post-medieval period, a fact supported by 16th and 17th century cartographic evidence. The infilled cellar and the later walls with relieving arches may have formed part of the 16th to 18th century properties and the ceramic assemblage would indicate that the residents were of above average status	ERM826 MRM16212 – 5
3	St Mary the Virgin Church <i>Watching brief. TVAS, 1995</i> During the watching brief six areas were observed. A new path 4m wide was cut and within or just outside the line of the path twenty one gravestones were lying on the ground. These were all recorded and twelve of the stones were lifted and re-laid elsewhere. The gravestones were of 18th and 19th century date. The removal of the gravestones produced a number of artefacts all of twentieth century date. A small quantity of redeposited human remains was also revealed. A number of disarticulated remains were retrieved along with a semi-articulate individual and a complete human skeleton, aligned east-west. This individual was flexed, supine, with the hands crossed over the pelvis. The head faced south.	ERM575

HEA No.	Description	Site code/HER/NHL No.
4	55-56 St Mary's Butts <i>Evaluation. FA, 2010</i> In conclusion, archaeological deposits of 12th-15th century date in the form of a ditch, which could be a re-cut of an earlier linear feature, and a probable pit were revealed in the test pit during the evaluation. The artefact and ecofact assemblage was small, comprising seven sherds of pottery, 16 fragments of tile, two clay pipe stems and 12 animal bone fragments. The natural deposits comprised pale yellow grey sand over orange yellow clay sand with 20% flint gravel inclusions which were encountered at a depth of 1.30m (42.59m OD) from the modern ground surface.	ERM1135 MRM16505
5	Water Pressure Manager, St Mary's Butts <i>Watching brief. TVAS, 2011</i> Overall, despite the site being located in the historic core of Reading, no archaeological features or finds were observed in the trench. The only deposits observed comprised modern service trenches and modern made ground.	ERM1224
6	The United Reform Chapel, Broad Street <i>Watching brief. TVAS, 1994</i> The initial brief was to record a number of brick-lined vaults and overlying stones which had been uncovered under the floor of the vestry and behind the pulpit. The vaults were believed to have been emptied when the burial ground was deconsecrated in the second half of the 19th century. However, human remains were found within the vaults, and the subsequent brief consisted of the recording of the vaults and burials during the exhumation of the burials. In total 47 vaults and 148 burials were revealed.	ERM279
7	99 - 105 Friar Street, Reading <i>Evaluation. TVAS, 1995</i> Trench 1 revealed eight subsoil features pre-dating the 18th century comprising pits/scoops and a posthole; five features of 12th-13th century date and a pit of 13th-14th century date; a posthole of 14th-15th century date and a pit of 16th-17th century date. Evaluation Trench 2 was subsumed within trench Z1A during the subsequent excavation and revealed floor deposits, pits a scoop and postholes of 14th-15th century date. <i>Excavation. TVAS, 1995</i> Excavated evidence shows the development of 2 adjoining properties fronting Friar Street with open plots of land to the rear. The excavators suggest that the presence of a single hearth along the street frontage in each phase may show a single structure across both plots. The size of the buildings and the nature of the finds indicate a low status site. The first structural evidence is dated to the 12th - 13th century, with six structural phases in total up to the 20th century.	ERD33 ERD34 MRD15512–3 MRD15529 MRD15534 MRD15546
8	The Vicarage, 64 Friar Street <i>Watching brief. TVAS, 2006</i> A soakaway (1.45m by 1.70m and 1.30m deep) was excavated and the stratigraphy shown was turf/topsoil 0.1m deep over various bands of made ground still visible at the formation level of 1.3m below the present landsurface. Only modern artefacts such as brick rubble, slate, glass and animal bone, all of which date from the 19th century or later were observed but not retained.	ERM643

HEA No.	Description	Site code/ HER/NHL No.
9	Land at Greyfriars Church The evaluation has identified the presence of Medieval and Post-medieval/Modern stratified deposits within the site. A large cut feature [3019] probably dated to the Medieval period was found in Trench 3, although its form and function remain unclear. In Trench 2 another cut feature [208] was revealed. This was poorly dated, although it was visually distinct from Feature [3019] and was not necessarily related to it. Numerous tip layers were excavated in Trenches 1 and 3 which suggested that the site had been utilised as a dump and/or had been intentionally levelled-up. The associated dating evidence indicated that this activity was likely to have occurred in the later Medieval to Post-medieval/modern periods. Feature [3020] and associated fill (313), (312) and (311) were poorly dated, however the occurrence of Medieval pottery sherds within Fill (313) suggested the possibility that these features represented the top of archaeologically significant deposits, which were located at a depth of approximately 0.86m (42.51m OD) below modern ground. Also the occurrence of natural gravels in Trench 3, at height of 4240m OD, indicated the potential for the presence of areas of preservation, at approximately 1m below modern ground.	ERM1648
10	Chatham Street, Reading <i>Evaluation. WA, 2006</i> All of the trenches suggested significant modern truncation and disturbance across the site. None of the trenches contained any archaeological deposits, features or finds.	ERM511
11	Almshouses, Castle Street <i>Watching brief. TVAS, 2002</i> No archaeological features were located. Remains of a cow skull and several horn cores were excavated from humic layers but not retained.	ERD95
12	41 Castle Street, Reading <i>Evaluation. FA, 2005</i> The site appeared to have previously been heavily truncated and subsequently built up. This most likely occurred during the demolition of 41 Castle Street, which was extant on the 1931 Ordnance Survey. The infilled cellar present in Trench 1 was most likely for No. 41. Overall, the evidence of the evaluation suggests that there is a potential for survival of further archaeological deposits within the study area, however, any contained within the footprint of No.41 are likely to be in a truncated form.	ERM426
13	Replacement of Drainage Channel Minster of St Mary-the Virgin <i>Watching brief. OA, 2007</i> The watching brief revealed deposits relating to the Victorian refurbishment of the Minster, but revealed no deposits relating to any earlier phases of construction.	ERM1025 ERM1041 ERM650
14	Land rear 31-37 Castle Street, Reading <i>Evaluation. TVAS, 2000</i> All five trenches revealed archaeological deposits of medieval 11th- late 12th century date. Trenches 1, 2, 3 and 5 contained medieval pits and postholes. Trench 4 contained a series of medieval floor layers and Post-medieval garden features.	ERD59
15	31-37 Castle Street, Reading <i>Excavation. TVAS, 2000</i> Several phases of activity revealed on the site prior to redevelopment. Stray finds of Mesolithic, Neolithic/Bronze Age and Saxon date. The earlier features of 12-13th century comprised reclamation of low-lying land and a possible channel of the Holy Brook, with pit digging elsewhere. 13-14th century a poorly preserved building was constructed along with further pit digging. Subsequent post-medieval use of the site was less intense until the construction of 19th century workshops.	ERD103

HEA No.	Description	Site code/ HER/NHL No.
16	The Greyfriars Day Nursery, 64 Friar Street <i>Evaluation. JMHS, 2011</i> In conclusion, the test pits have helped to determine the archaeological potential of the site and depths of below ground deposits. The suspected articulated skeleton in Test Pit 4 was the most important archaeological discovery from the site. Although it had been truncated by modern services some bones seemed to survive <i>in situ</i> . This burial was assumed to be associated with the old Friary's cemetery (dated sometime from the 13th to 16th Century). However, no direct dating evidence was obtained from the burial and it could therefore have been later in date. It would seem that the skeleton was located on the edge of the cemetery as only a few pieces of disarticulated bone were found within the three test pits (1-3) located within the area closest to the existing eastern boundary wall. The possible grave cut seen protruding from the northern baulk section in Test Pit 5 may have been part of the same grave cut, which contained the suspected articulated skeleton in Test Pit 4.	ERM1267
17	The Vicarage Site, St Mary's Butts <i>Trial excavation. BAU, 1978</i> One trench measured 4m x 2m and was hand excavated to a depth of 0.5m. A thick destruction level of tightly packed brick and cobbling was encountered. The disturbance associated with the services leading to the vicarage and/or its demolition, continued to a depth of 1.20m. Below this was a homogeneous, well -sorted brown sandy soil with a well-developed crumb structure. This measured at least 0.70m thick and became more yellow and gravelly at the bottom. It contained small pieces of charcoal and flecks, with occasional pieces of bone and oyster shell. Nine sherds of pottery and a worked flint were encountered at this level. Below this was an orange-yellow gravel and a sandy soil layer merging from sandy soil above to the natural gravel below. The natural gravel was encountered at 2.20m. No archaeological features or occupation levels were observed. The second trench was machine cut (due to the difficulty in removing the destruction layer as described above). This trench measured. 1m x 4m and the observed stratigraphy was similar to that in the first trench. In total 9 sherds of pottery were found. Six of these were body sherds of a grit-tempered grey/black fabric which had been quite highly fired. Three of the sherds were of a cream, grit-tempered fabric. These sherds were probably products of the Surrey kilns c. 14th century. A single worked flint was also found. It was a badly-struck waste flint with an oblique platform.	ERM1112
18	Civil War Defences at Reading Civil Defences as shown on the 1643 siege of Reading map. A substantial redoubt is shown at Castle Stroate Hill (the southwest salient). Part of the defences in the south of the town would have included the natural obstacle of the River Kennet. In 1642 part of the town was encircled by defences for the first time, consisting of bastions linked by earth banks. The town was first under Royalist control, and attacked in April 1643 by the Parliamentarians first on the south and west of the town and then by Lord Grey from the north-east. The siege lasted 10 days with the Parliamentarians successful, although they withdrew from the town only five months later. Royalist defences were re-fortified but abandoned soon after and ordered to be slighted in May 1644.	MRD15703
19	Greyfriars , Reading A Franciscan friary was founded near Caversham Bridge in 1233. But because of regular flooding the site was moved to Reading in c1282-85. The friary was surrendered to the crown in 1538 and by 1613 it had become a prison. The existing church (built 1863) incorporates the nave and west window of friary.	MRD3938
20	38, Oxford Road, 3 and 5, Cheapside Grade II listed 20th century houses.	1113436
21	The Allied Arms Inn Grade II listed early 19th century gable end to road over 16th century building of timber framing.	1156940
22	55 and 55A , St Mary's Butts Grade II early 19th century buildings.	1113572
23	Queen Victoria Jubilee Fountain Grade II listed late 19th century fountain.	1113571

9 Planning framework

9.1 Statutory protection

Human remains

- 9.1.1 Development affecting any former burial ground is regulated by statute, principally the *Burial Act 1857*, the *Disused Burial Grounds Act 1884* and 1981, and the *Pastoral Measure 1983*.
- 9.1.2 The exhumation of any human remains requires approval from either the Secretary of State or the Church of England, depending on the current location of the remains. Exhumations from land which is subject to the Church of England's jurisdiction will need the Church's authorisation (Faculty consent or the approval of a proposal under the *Care of Cathedrals Measure 2011*). This includes consecrated ground in cemeteries.
- 9.1.3 Exhumations from land which is not subject to the Church of England's jurisdiction will need a licence from the Secretary of State, under Section 25 of the *Burial Act 1857* as amended by the *Church of England (Miscellaneous Provisions) Measure 2014*. A licence is required from the Secretary of State if the remains are not intended for reburial in consecrated ground (or if this is to be delayed, for example where archaeological or scientific analysis takes place first).
- 9.1.4 Under the *Town and Country Planning (Churches, Places of Religious Worship and Burial Grounds) Regulations 1930*, the removal and re-interment of human remains should be in accordance with the direction of the local Environmental Health Officer.

9.2 National Planning Policy Framework

- 9.2.1 The Government issued the National Planning Policy Framework (NPPF) in March 2012 (DCLG 2012) and supporting Planning Practice Guidance in 2014 (DCLG 2014). This has been reviewed and the current document is now NPPF 2018 (MHCLG). NPPF 2012 Section 12: Conserving and enhancing the historic environment, is replaced by NPPF 2018 Section 16: Conserving and enhancing the historic environment, produced in full below:

Para 184. Heritage assets range from sites and buildings of local historic value to those of the highest significance, such as World Heritage Sites which are internationally recognised to be of Outstanding Universal Value⁶¹. These assets are an irreplaceable resource, and should be conserved in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the quality of life of existing and future generations⁶².

Para 185. Plans should set out a positive strategy for the conservation and enjoyment of the historic environment, including heritage assets most at risk through neglect, decay or other threats. This strategy should take into account:

- a) the desirability of sustaining and enhancing the significance of heritage assets, and putting them to viable uses consistent with their conservation;
- b) the wider social, cultural, economic and environmental benefits that conservation of the historic environment can bring;
- c) the desirability of new development making a positive contribution to local character and distinctiveness; and
- d) opportunities to draw on the contribution made by the historic environment to the character of a place.

Para 186. When considering the designation of conservation areas, local planning authorities should ensure that an area justifies such status because of its special architectural or historic interest, and that the concept of conservation is not devalued through the designation of areas that lack special interest.

Para 187. Local planning authorities should maintain or have access to a historic environment record. This should contain up-to-date evidence about the historic environment in their area and be used to:

- a) assess the significance of heritage assets and the contribution they make to their environment; and

- b) predict the likelihood that currently unidentified heritage assets, particularly sites of historic and archaeological interest, will be discovered in the future.

Para 188. Local planning authorities should make information about the historic environment, gathered as part of policy-making or development management, publicly accessible.

Proposals affecting heritage assets

Para 189. In determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the assets' importance and no more than is sufficient to understand the potential impact of the proposal on their significance. As a minimum the relevant historic environment record should have been consulted and the heritage assets assessed using appropriate expertise where necessary. Where a site on which development is proposed includes, or has the potential to include, heritage assets with archaeological interest, local planning authorities should require developers to submit an appropriate desk-based assessment and, where necessary, a field evaluation.

Para 190. Local planning authorities should identify and assess the particular significance of any heritage asset that may be affected by a proposal (including by development affecting the setting of a heritage asset) taking account of the available evidence and any necessary expertise. They should take this into account when considering the impact of a proposal on a heritage asset, to avoid or minimise any conflict between the heritage asset's conservation and any aspect of the proposal.

Para 191. Where there is evidence of deliberate neglect of, or damage to, a heritage asset, the deteriorated state of the heritage asset should not be taken into account in any decision.

Para 192. In determining applications, local planning authorities should take account of:

- a) the desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation;
- b) the positive contribution that conservation of heritage assets can make to sustainable communities including their economic vitality; and
- c) the desirability of new development making a positive contribution to local character and distinctiveness.

Considering potential impacts

Para 193. When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation (and the more important the asset, the greater the weight should be). This is irrespective of whether any potential harm amounts to substantial harm, total loss or less than substantial harm to its significance.

Para 194. Any harm to, or loss of, the significance of a designated heritage asset (from its alteration or destruction, or from development within its setting), should require clear and convincing justification. Substantial harm to or loss of:

- a) grade II listed buildings, or grade II registered parks or gardens, should be exceptional;
- b) assets of the highest significance, notably scheduled monuments, protected wreck sites, registered battlefields, grade I and II* listed buildings, grade I and II* registered parks and gardens, and World Heritage Sites, should be wholly exceptional⁶³.

Para 195. Where a proposed development will lead to substantial harm to (or total loss of significance of) a designated heritage asset, local planning authorities should refuse consent, unless it can be demonstrated that the substantial harm or total loss is necessary to achieve substantial public benefits that outweigh that harm or loss, or all of the following apply:

- a) the nature of the heritage asset prevents all reasonable uses of the site; and
- b) no viable use of the heritage asset itself can be found in the medium term through appropriate marketing that will enable its conservation; and
- c) conservation by grant-funding or some form of not for profit, charitable or public ownership is demonstrably not possible; and
- d) the harm or loss is outweighed by the benefit of bringing the site back into use.

Para 196. Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal including, where appropriate, securing its optimum viable use.

Para 197. The effect of an application on the significance of a non-designated heritage asset should be taken into account in determining the application. In weighing applications that directly or indirectly affect non-designated heritage assets, a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset.

Para 198. Local planning authorities should not permit the loss of the whole or part of a heritage asset without taking all reasonable steps to ensure the new development will proceed after the loss has occurred.

Para 199. Local planning authorities should require developers to record and advance understanding of the significance of any heritage assets to be lost (wholly or in part) in a manner proportionate to their importance and the impact, and to make this evidence (and any archive generated) publicly accessible⁶⁴. However, the ability to record evidence of our past should not be a factor in deciding whether such loss should be permitted.

Para 200. Local planning authorities should look for opportunities for new development within Conservation Areas and World Heritage Sites, and within the setting of heritage assets, to enhance or better reveal their significance. Proposals that preserve those elements of the setting that make a positive contribution to the asset (or which better reveal its significance) should be treated favourably.

Para 201. Not all elements of a Conservation Area or World Heritage Site will necessarily contribute to its significance. Loss of a building (or other element) which makes a positive contribution to the significance of the Conservation Area or World Heritage Site should be treated either as substantial harm under paragraph 195 or less than substantial harm under paragraph 196, as appropriate, taking into account the relative significance of the element affected and its contribution to the significance of the Conservation Area or World Heritage Site as a whole.

Para 202. Local planning authorities should assess whether the benefits of a proposal for enabling development, which would otherwise conflict with planning policies but which would secure the future conservation of a heritage asset, outweigh the disbenefits of departing from those policies.

9.3.3 The Draft Local Plan also states:

4.2.12 Planning is an important instrument for maintaining and enhancing the environment, and preserving the built and natural heritage. Planning policy must therefore reconcile the need for development with the need to protect the natural and historic environment.

4.2.13 Heritage Statements will be expected to:

- i) describe the significance of the asset and its setting, using appropriate expertise; at a level of detail proportionate to its significance and sufficient to understand the potential impact of the proposal; using appropriate references such as the Historic Environment Record and, if necessary, original survey (including, for assets of archaeological interest, an appropriate desk-based assessment and, where necessary, a field evaluation); and
- ii) set out the impact of the development on the heritage assets and a suggested mitigation that is proportionate to the impact and the significance of the heritage asset, including where possible positive opportunities to conserve and enjoy heritage assets as well as recording loss and advancing knowledge.

9.3 Local planning policy

9.3.1 Following the Planning and Compulsory Purchase Act 2004, Planning Authorities have replaced their Unitary Development Plans, Local Plans and Supplementary Planning Guidance with a new system of Local Development Frameworks (LDFs). UDP policies have been either 'saved' or 'deleted'. In most cases archaeology policies are likely to be 'saved' because there have been no significant changes in legislation or advice at a national level.

9.3.2 Reading Borough Council has produced a Draft Local Plan (2017), which includes Policy EN1: Protection and Enhancement of the Historic Environment:

Historic features, areas of historic importance and other elements of the historic environment, including their settings will be protected and where appropriate enhanced.

This will include:

- Listed Buildings;
- Conservation Areas; and
- Other features with local or national significance, such as sites and features of

archaeological importance, Ancient Monuments, historic parks and gardens and locally listed assets.

Planning permission will only be granted where the new development makes a positive contribution to local character and distinctiveness and has no adverse impact on heritage assets and their settings. All proposals will be expected to protect and where appropriate enhance the historic character and local distinctiveness of the area in which they are located. Proposals should seek to avoid harm in the first instance. Any harm to or loss of a heritage asset should require clear and convincing justification.

Applications which affect, or have the potential to affect, the significant features of heritage assets should be justified by a Heritage Statement.

The Council will monitor buildings or other heritage assets at risk through neglect, decay or other threats, proactively seeking solutions for assets at risk including consideration of appropriate development schemes that will ensure the repair and maintenance of the asset, and, as a last resort, using its statutory powers.

10 Determining significance

10.1.1 ‘Significance’ lies in the value of a heritage asset to this and future generations because of its heritage interest, which may be archaeological, architectural, artistic or historic. Archaeological interest includes an interest in carrying out an expert investigation at some point in the future into the evidence a heritage asset may hold of past human activity, and may apply to standing buildings or structures as well as buried remains. Known and potential heritage assets within the site and its vicinity have been identified from national and local designations, HER data and expert opinion. The determination of the significance of these assets is based on statutory designation and/or professional judgement against four values (EH 2008):

- *Evidential value*: the potential of the physical remains to yield evidence of past human activity. This might take into account date; rarity; state of preservation; diversity/complexity; contribution to published priorities; supporting documentation; collective value and comparative potential.
- *Aesthetic value*: this derives from the ways in which people draw sensory and intellectual stimulation from the heritage asset, taking into account what other people have said or written;
- *Historical value*: the ways in which past people, events and aspects of life can be connected through heritage asset to the present, such a connection often being illustrative or associative;
- *Communal value*: this derives from the meanings of a heritage asset for the people who know about it, or for whom it figures in their collective experience or memory; communal values are closely bound up with historical, particularly associative, and aesthetic values, along with and educational, social or economic values.

10.1.2 Table 2 gives examples of the significance of designated and non-designated heritage assets.

Table 2: Significance of heritage assets

Heritage asset description	Significance
World heritage sites Scheduled monuments Grade I and II* listed buildings Historic England Grade I and II* registered parks and gardens Protected Wrecks Heritage assets of national importance	Very high (International/ national)
Historic England Grade II registered parks and gardens Conservation areas Designated historic battlefields Grade II listed buildings Burial grounds Protected heritage landscapes (e.g. ancient woodland or historic hedgerows) Heritage assets of regional or county importance	High (national/ regional/ county)
Heritage assets with a district value or interest for education or cultural appreciation Locally listed buildings	Medium (District)
Heritage assets with a local (i.e. parish) value or interest for education or cultural appreciation	Low (Local)
Historic environment resource with no significant value or interest	Negligible
Heritage assets that have a clear potential, but for which current knowledge is insufficient to allow significance to be determined	Uncertain

10.1.3 Unless the nature and exact extent of buried archaeological remains within any given area has been determined through prior investigation, significance is often uncertain.

11 Non-archaeological constraints

11.1.1 It is anticipated that live services will be present on the site, the locations of which have not been identified by this archaeological report. Other than this, no other non-archaeological constraints to any archaeological fieldwork have been identified within the site.

11.1.2 The exhumation of any human remains from land which is not subject to the Church of England’s jurisdiction will need a licence from the Secretary of State, under Section 25 of the *Burial Act 1857* as amended by the *Church of England (Miscellaneous Provisions) Measure 2014*.

11.1.3 Note: the purpose of this section is to highlight to decision makers any relevant non-archaeological constraints identified during the study, that might affect future archaeological field investigation on the site (should this be recommended). The information has been assembled using only those sources as identified in section 2 and section 13.4, in order to assist forward planning for the project designs, working schemes of investigation and risk assessments that would be needed prior to any such field work. MOLA has used its best endeavours to ensure that the sources used are appropriate for this task but has not independently verified any details. Under the Health & Safety at Work Act 1974 and subsequent regulations, all organisations are required to protect their employees as far as is reasonably practicable by addressing health and safety risks. The contents of this section are intended only to support organisations operating on this site in fulfilling this obligation and do not comprise a comprehensive risk assessment.

12 Glossary

<i>Alluvium</i>	Sediment laid down by a river. Can range from sands and gravels deposited by fast flowing water and clays that settle out of suspension during overbank flooding. Other deposits found on a valley floor are usually included in the term alluvium (e.g. peat).
<i>Archaeological Priority Area/Zone</i>	Areas of archaeological priority, significance, potential or other title, often designated by the local authority.
<i>Brickearth</i>	A fine-grained silt believed to have accumulated by a mixture of processes (e.g. wind, slope and freeze-thaw) mostly since the Last Glacial Maximum around 17,000BP.
<i>B.P.</i>	Before Present, conventionally taken to be 1950
<i>Bronze Age</i>	2,000–600 BC
<i>Building recording</i>	Recording of historic buildings (by a competent archaeological organisation) is undertaken <i>‘to document buildings, or parts of buildings, which may be lost as a result of demolition, alteration or neglect’</i> , amongst other reasons. Four levels of recording are defined by Royal Commission on the Historical Monuments of England (RCHME) and Historic England. Level 1 (basic visual record); Level 2 (descriptive record), Level 3 (analytical record), and Level 4 (comprehensive analytical record)
<i>Built heritage</i>	Upstanding structure of historic interest.
<i>Colluvium</i>	A natural deposit accumulated through the action of rainwash or gravity at the base of a slope.
<i>Conservation area</i>	An area of special architectural or historic interest the character or appearance of which it is desirable to preserve or enhance. Designation by the local authority often includes controls over the demolition of buildings; strengthened controls over minor development; and special provision for the protection of trees.
<i>Cropmarks</i>	Marks visible from the air in growing crops, caused by moisture variation due to subsurface features of possible archaeological origin (i.e. ditches or buried walls).
<i>Cut-and-cover [trench]</i>	Method of construction in which a trench is excavated down from existing ground level and which is subsequently covered over and/or backfilled.
<i>Cut feature</i>	Archaeological feature such as a pit, ditch or well, which has been cut into the then-existing ground surface.
<i>Devensian</i>	The most recent cold stage (glacial) of the Pleistocene. Spanning the period from c 70,000 years ago until the start of the Holocene (10,000 years ago). Climate fluctuated within the Devensian, as it did in other glacials and interglacials. It is associated with the demise of the Neanderthals and the expansion of modern humans.
<i>Early medieval</i>	AD 410–1066. Also referred to as the Saxon period.
<i>Evaluation (archaeological)</i>	A limited programme of non-intrusive and/or intrusive fieldwork which determines the presence or absence of archaeological features, structures, deposits, artefacts or ecofacts within a specified area.
<i>Excavation (archaeological)</i>	A programme of controlled, intrusive fieldwork with defined research objectives which examines, records and interprets archaeological remains, retrieves artefacts, ecofacts and other remains within a specified area. The records made and objects gathered are studied and the results published in detail appropriate to the project design.
<i>Findspot</i>	Chance find/antiquarian discovery of artefact. The artefact has no known context, is either residual or indicates an area of archaeological activity.
<i>Geotechnical</i>	Ground investigation, typically in the form of boreholes and/or trial/test pits, carried out for engineering purposes to determine the nature of the subsurface deposits.
<i>Head</i>	Weathered/soliflucted periglacial deposit (i.e. moved downslope through natural processes).
<i>Heritage asset</i>	A building, monument, site, place, area or landscape positively identified as having a degree of significance meriting consideration in planning decisions. Heritage assets are the valued components of the historic environment. They include designated heritage assets and assets identified by the local planning authority (including local listing).
<i>Historic environment assessment</i>	A written document whose purpose is to determine, as far as is reasonably possible from existing records, the nature of the historic environment resource/heritage assets within a specified area.
<i>Historic Environment Record (HER)</i>	Archaeological and built heritage database held and maintained by the County authority. Previously known as the Sites and Monuments Record
<i>Holocene</i>	The most recent epoch (part) of the Quaternary, covering the past 10,000 years during which time a warm interglacial climate has existed. Also referred to as the ‘Postglacial’ and (in Britain) as the ‘Flandrian’.
<i>Iron Age</i>	600 BC–AD 43

<i>Later medieval</i>	AD 1066 – 1500
<i>Last Glacial Maximum</i>	Characterised by the expansion of the last ice sheet to affect the British Isles (around 18,000 years ago), which at its maximum extent covered over two-thirds of the present land area of the country.
<i>Locally listed building</i>	A structure of local architectural and/or historical interest. These are structures that are not included in the Secretary of State’s Listing but are considered by the local authority to have architectural and/or historical merit
<i>Listed building</i>	A structure of architectural and/or historical interest. These are included on the Secretary of State’s list, which affords statutory protection. These are subdivided into Grades I, II* and II (in descending importance).
<i>Made Ground</i>	Artificial deposit. An archaeologist would differentiate between modern made ground, containing identifiably modern inclusion such as concrete (but not brick or tile), and undated made ground, which may potentially contain deposits of archaeological interest.
<i>Mesolithic</i>	12,000 – 4,000 BC
<i>National Record for the Historic Environment (NRHE)</i>	National database of archaeological sites, finds and events as maintained by Historic England in Swindon. Generally not as comprehensive as the country HER.
<i>Neolithic</i>	4,000 – 2,000 BC
<i>Ordnance Datum (OD)</i>	A vertical datum used by Ordnance Survey as the basis for deriving altitudes on maps.
<i>Palaeo-environmental</i>	Related to past environments, i.e. during the prehistoric and later periods. Such remains can be of archaeological interest, and often consist of organic remains such as pollen and plant macro fossils which can be used to reconstruct the past environment.
<i>Palaeolithic</i>	700,000–12,000 BC
<i>Palaeochannel</i>	A former/ancient watercourse
<i>Peat</i>	A build-up of organic material in waterlogged areas, producing marshes, fens, mires, blanket and raised bogs. Accumulation is due to inhibited decay in anaerobic conditions.
<i>Pleistocene</i>	Geological period pre-dating the Holocene.
<i>Post-medieval</i>	AD 1500–present
<i>Preservation by record</i>	Archaeological mitigation strategy where archaeological remains are fully excavated and recorded archaeologically and the results published. For remains of lesser significance, preservation by record might comprise an archaeological watching brief.
<i>Preservation in situ</i>	Archaeological mitigation strategy where nationally important (whether Scheduled or not) archaeological remains are preserved <i>in situ</i> for future generations, typically through modifications to design proposals to avoid damage or destruction of such remains.
<i>Registered Historic Parks and Gardens</i>	A site may lie within or contain a registered historic park or garden. The register of these in England is compiled and maintained by Historic England.
<i>Residual</i>	When used to describe archaeological artefacts, this means not <i>in situ</i> , i.e. Found outside the context in which it was originally deposited.
<i>Roman</i>	AD 43–410
<i>Scheduled Monument</i>	An ancient monument or archaeological deposits designated by the Secretary of State as a ‘Scheduled Ancient Monument’ and protected under the Ancient Monuments Act.
<i>Site</i>	The area of proposed development
<i>Site codes</i>	Unique identifying codes allocated to archaeological fieldwork sites, e.g. evaluation, excavation, or watching brief sites.
<i>Study area</i>	Defined area surrounding the proposed development in which archaeological data is collected and analysed in order to set the site into its archaeological and historical context.
<i>Solifluction, Soliflucted</i>	Creeping of soil down a slope during periods of freeze and thaw in periglacial environments. Such material can seal and protect earlier landsurfaces and archaeological deposits which might otherwise not survive later erosion.
<i>Stratigraphy</i>	A term used to define a sequence of visually distinct horizontal layers (strata), one above another, which form the material remains of past cultures.
<i>Truncate</i>	Partially or wholly remove. In archaeological terms remains may have been truncated by previous construction activity.
<i>Watching brief (archaeological)</i>	A formal programme of observation and investigation conducted during any operation carried out for non-archaeological reasons.

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13.4 Available site survey information checklist

Information from client	Available	Format	Obtained
Plan of existing site services (overhead/buried)	N	-	-
Levelled site survey as existing (ground and buildings)	Y	pdf	Y / N
Contamination survey data ground and buildings (inc. asbestos)	N	-	-
Geotechnical report	N	-	-
Envirocheck report	N	-	-
Information obtained from non-client source	Carried out	Internal inspection of buildings	
Site inspection	Y	-	

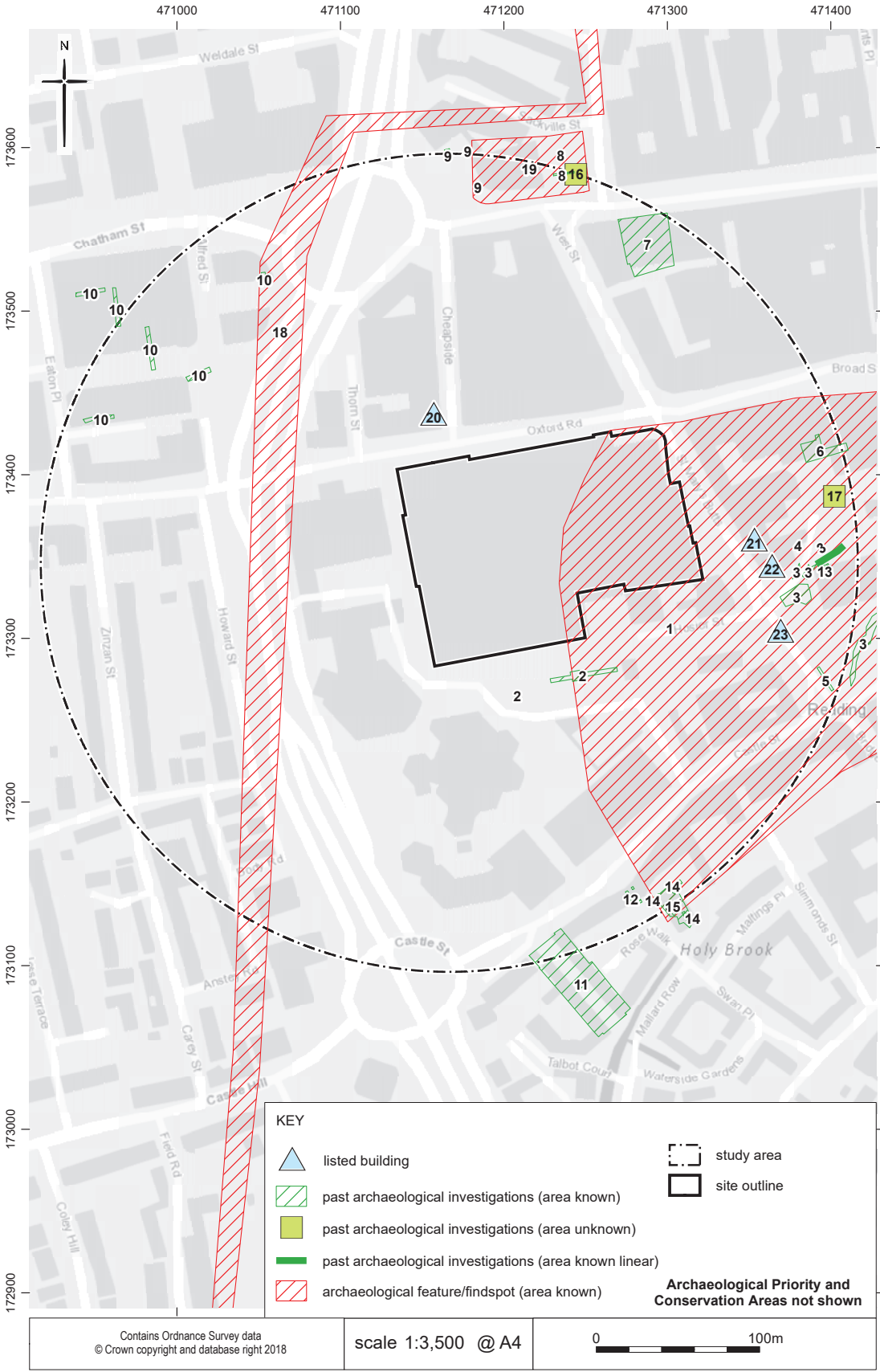
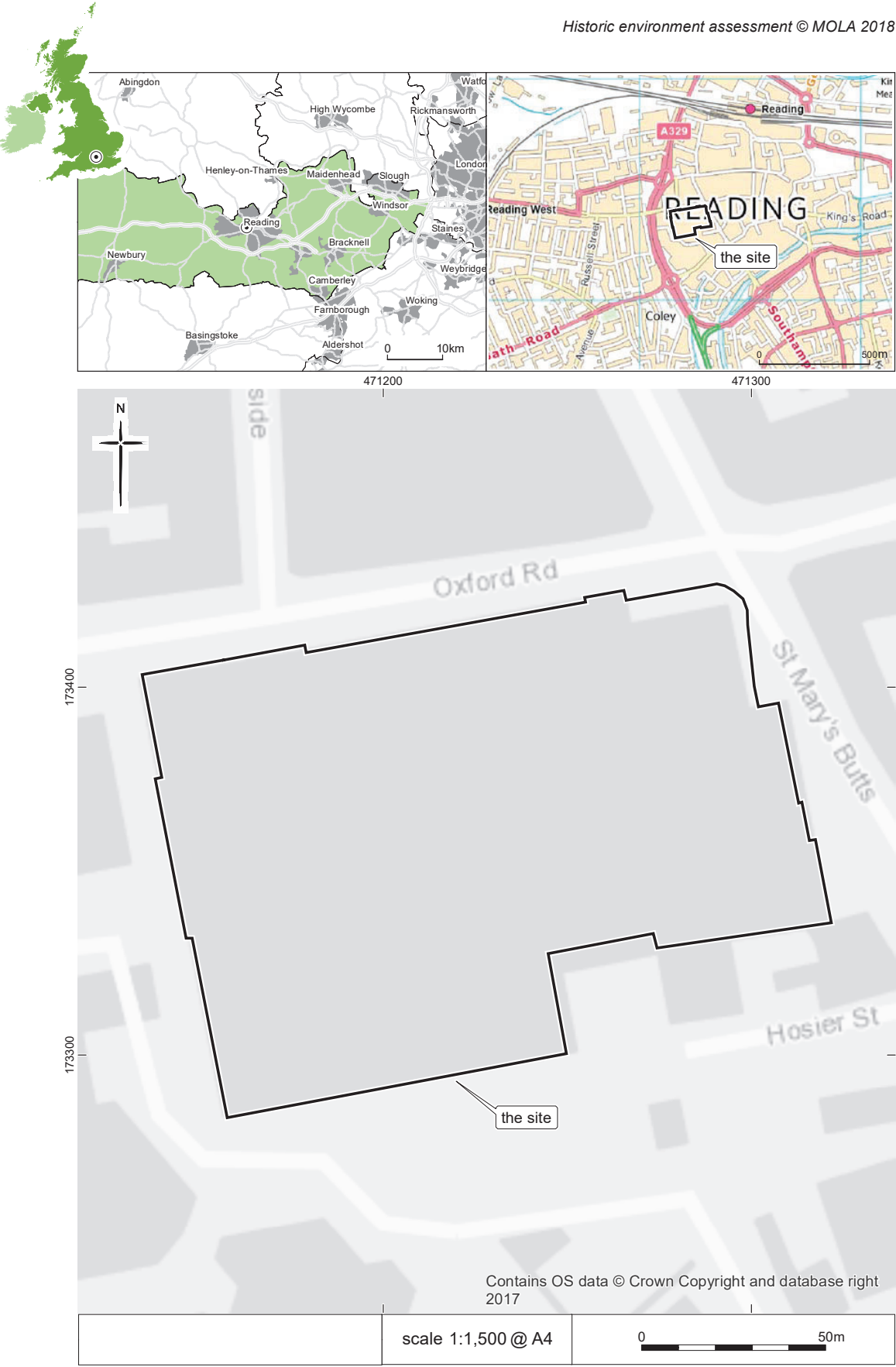




Fig 3 BGS boreholes (BGS digital data)

BERK2008HEA18#03

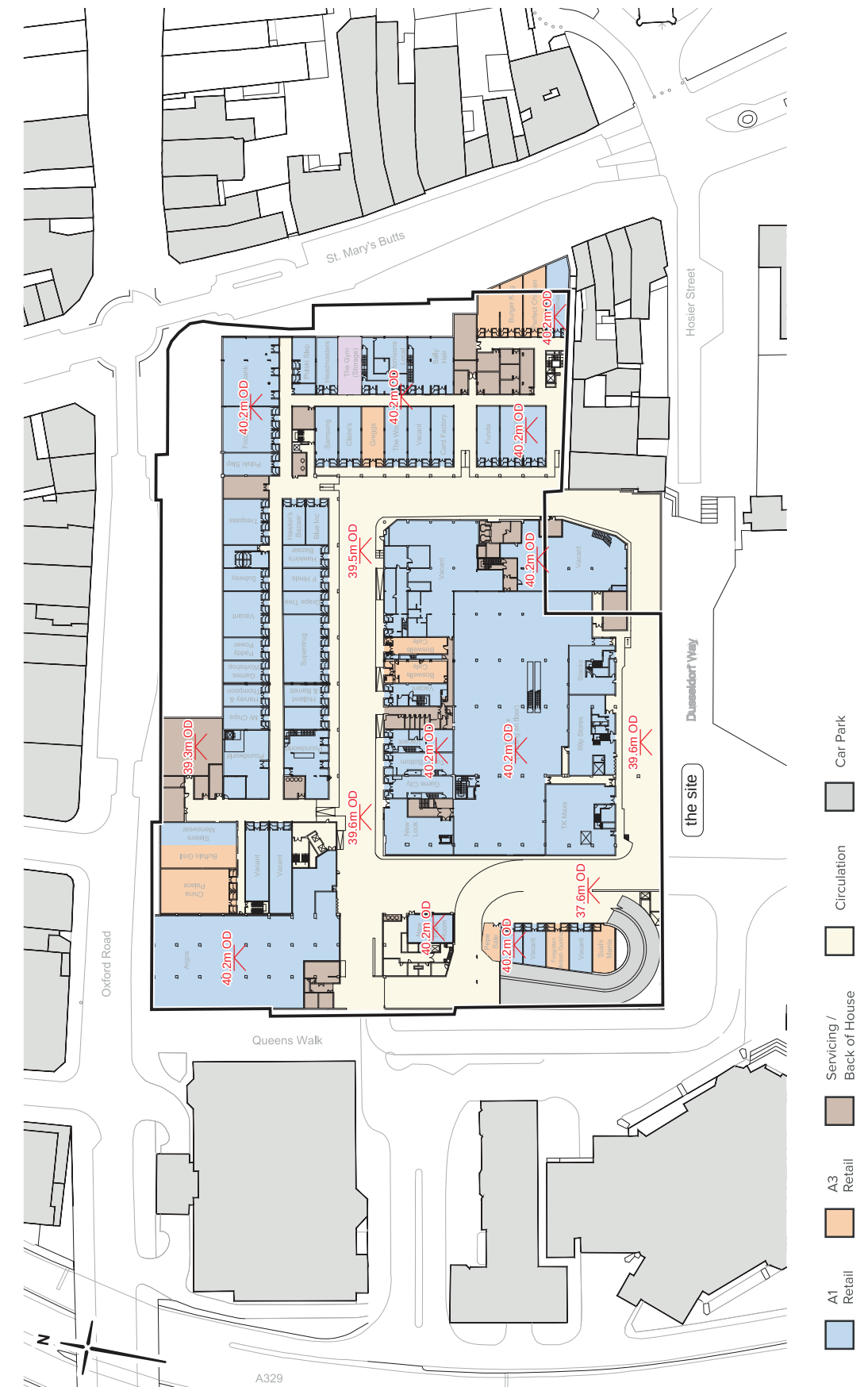


Fig 4 Plan showing levels taken from site survey (Corstorphine and Wright Architects, October 2016; Warner Surveys, Job No.S715/0357, May 2017)

BERK2008HEA18#04



Fig 4a Existing ground floor plan showing levels taken from site survey (Corstorphine and Wright Architects, October 2016; Warner Surveys, Job No.S715/0357, May 2017)

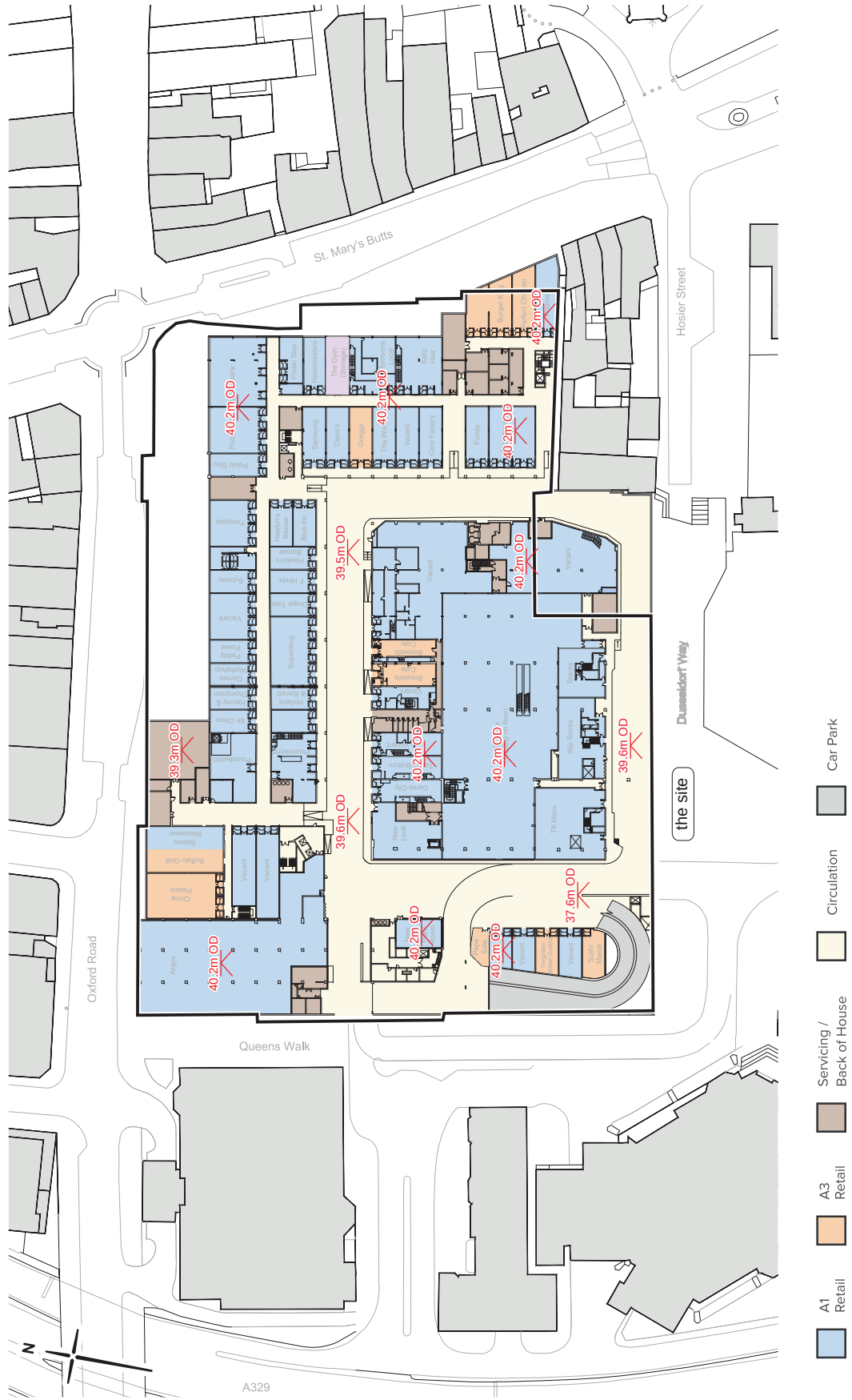


Fig 4b Existing basement plan showing levels taken from site survey (Corstorphine and Wright Architects, October 2016; Warner Surveys, Job No.S715/0357, May 2017)