EIA SCOPING REPORT

BRIGHTON GAS WORKS

JULY 2020

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1 Introduction

Purpose

1.1 The purpose of this report is to inform a request for an Environmental Impact Assessment (EIA) Scoping Opinion from Brighton & Hove City Council ('BHCC') in relation to St William Homes LLP (the 'Applicant') proposals for the redevelopment of the former Brighton Gas Works, Marina Way, Brighton (the 'Site').

1.2 Proposals are being developed for a planning application for the redevelopment of the Site (hereafter referred to as the 'Development'), which include demolition of buildings and structures, ground remediation (where required) and construction of a new residential-led development.

1.3 An EIA is a systematic process that aims to prevent, reduce or offset the significant adverse environmental effects of development proposals and enhance beneficial effects. It ensures that planning decisions are made considering the likely significant environmental effects of the Development and with engagement from statutory bodies, local and national groups and the public.

1.4 This report sets out the findings of an EIA scoping study undertaken by the project team and accompanies a request for a Scoping Opinion submitted to BHCC in accordance with Regulation 15 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017[1] (as amended)[2] (the "EIA Regulations"). In line with the EIA Regulations, this report identifies the Site location, the nature and purpose of the Development (including its location and technical capacity) and the likely significant effects on people and the environment. The report also outlines the proposed content, approach and scope of the Environmental Statement ("ES"). The ES will present an assessment of the likely significant effects of the Development associated with demolition, remediation and construction works and once the Development is completed and operational. The ES will be 'based on' the Scoping Opinion from BHCC will .

1.5 Figure 1.1 and Figure 1.2 show the Site's location and indicative extent of the planning application boundary. The continuous solid red line on Figure 1.2 shows land owned by the Applicant and the dotted red line shows land outside of the Applicant's ownership. It has not yet been decided whether the planning application boundary will include land outlined by the dotted red line as this land is outside of the Applicant's ownership. The ES will assess the relevant boundary at the time of making the application. For the purposes of this report, the Site includes the maximum extent of land within both the solid and dotted red lines in Figure 1.2. In addition to the Site extent shown in Figure 1.2, off-site improvement works may be proposed, including to Boundary Road, directly west of the Site. These would be described in the planning application and secured by the subsequent planning permission as necessary.

1.6 Brief descriptions of the Site and the Development are provided within Sections 2 and 3 respectively.

Figure 1.1: Site Location

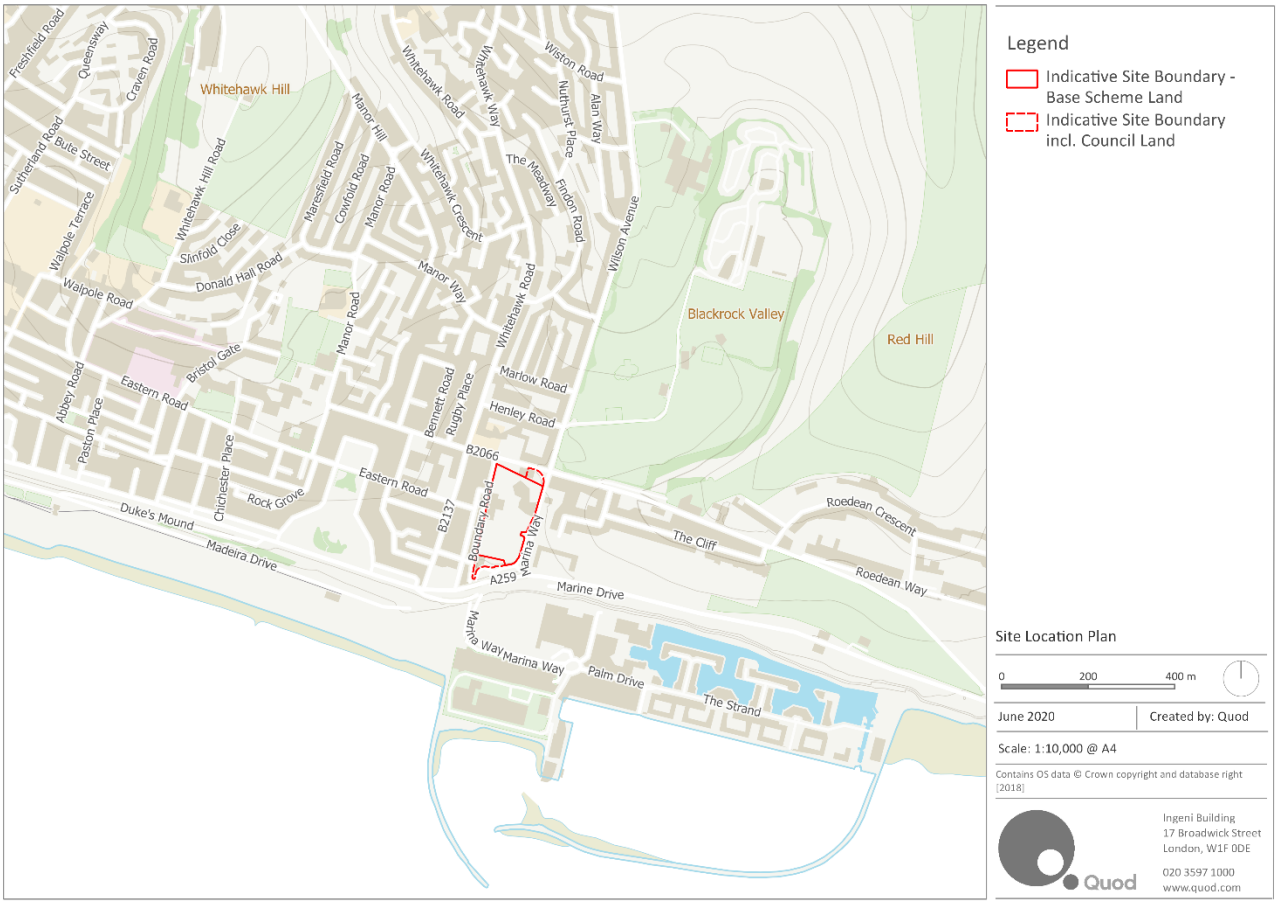
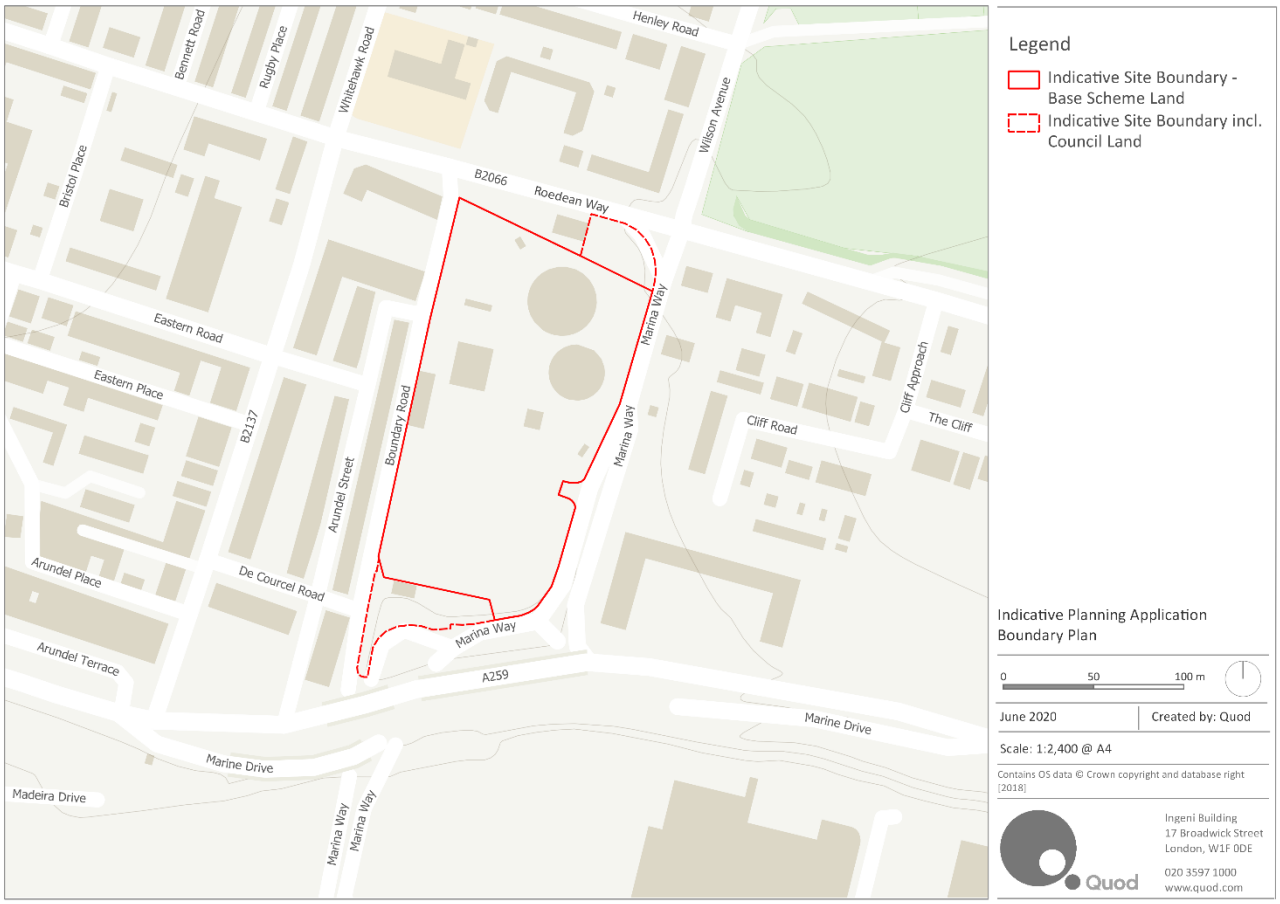


Figure 1.2: Indicative Planning Application Boundary



Planning and EIA Context

1.7 Brighton & Hove City Plan Part One[3] ('CPP1') was adopted on 24th March 2016, superseding the Brighton & Hove Local Plan[4] ('BHLP') which was adopted in July 2005. The CPP1 sets out the Council's vision, objectives, strategy and policies to guide development within the administrative area of BHCC over the plan period up to 2030. The following local planning designations relate to the Site:

- Development Area Boundary (CPP1);
- Strategic Allocation Policy DA2.C.2 (CPP1 and draft CPP2); and
- Identified Housing Sites Policy HO1 (BHLP).

1.8 There are eight Development Areas allocated within the CPP1 which account for 45% of the planned new housing for BHCC. Within these Development Areas, the CPP1 makes strategic allocations to secure the delivery of approximately 3,235 new dwellings over the plan period.

1.9 Policy DA2 'Brighton Marina, Gas Works and Black Rock Area' refers to a designated Development Area within the vicinity of Brighton Marina and encompasses the Site. The CPP1 states that the aspiration of the Council is to facilitate the creation of a new mixed-use destination to include optimising brownfield sites with support for retail, leisure and commercial uses in addition to delivering substantial amounts of new homes. With respect to the Site, this has been allocated for redevelopment under Policy DA2.C.2 to provide *"…approximately 2,000 sqm of business floor space to the north of the site, a minimum of 85 residential units and some ancillary retail development."* Under saved Policy HO1 of the BHLP, the southern half of the Site was allocated for housing and was expected to provide 80 units of which 30% would be allocated for affordable housing. On adoption of the BHCC City Plan Part Two (CPP2), the saved policies will be replaced, therefore the 85 unit allocation will fall away (Policy HO1). Within the CPP2, the Site remains within the DA2.C.2 boundary, albeit BHCC has also shown a 'Waste and Mineral' allocation. No further designations exist for the Site, although the Bell Tower Industrial Estate, located adjacent and to the west of the Site, is a protected employment site.

1.10 The Development falls within Category 10(b) of Schedule 2 of the EIA Regulations, which is applicable to 'Urban Development Projects'. A formal screening opinion has not been requested from BHCC. Instead, the Applicant has committed to undertaking an EIA and submitting an ES with the planning application voluntarily.

1.11 Under the EIA Regulations, the ES will be required to be "based on" the Scoping Opinion provided by the BHCC and will be prepared by competent experts (see below).

Project Team

1.12 In accordance with Regulation 18(5) of the EIA Regulations, it is confirmed that this Scoping Report has been prepared by competent experts from the organisations listed in Table 1.1. These specialists will also undertake the EIA and their relevant expertise and qualifications will be stated within each technical chapter of the ES.

Table 1.1: Project Team

Organisation	Role
St William Homes LLP	Applicant
EPR Architects	Architect
Andy Sturgeon Design	Landscape Architect
Quod	Planning Consultant, EIA Project Manager, Socio-Economic Consultant
Royal Haskoning DHV	Transport
Gravity	Flood Risk and Drainage
Ecology Solutions	Biodiversity
Atkins	Ground Conditions and Contamination
RPS	Archaeology
WYG	Air Quality and Odour
WYG	Noise and Vibration
Anstey Horne	Daylight, Sunlight and Overshadowing
WindTech	Wind Microclimate
CityDesigner	Townscape, Heritage and Visual
Miller Hare	Verified Views

1.13 Quod will be the lead editor of the ES and author of certain chapters. Quod is a member of the Institute of Environmental Management and Assessment EIA Quality Mark Scheme, an accreditation scheme which sets high standards for EIA practice and demonstrates a commitment to excellence in EIA activities.

Structure of the Report

1.14 The remainder of the Scoping Report is structured as follows:

- Section 2: Site and Setting;
- Section 3: Description of Development;
- Section 4: EIA Methodology;
- Sections 5-12: Significant Effects to be Scoped in the EIA;
- Section 13: Cumulative Effects; and
- Section 14: Non-Significant Topics.

1.15 The following appendices are also provided:

- Appendix A: Cumulative Schemes and Map;
- Appendix B: Structure of ES Technical Chapters;
- Appendix C: Ground Conditions Methodology
- Appendix D: List of Townscape Viewpoints;
- Appendix E: Archaeological Desk Based Assessment;
- Appendix F: Existing Health Baseline Profile; and
- Appendix G: Preliminary Ecological Appraisal.

2 Site and Setting

Site Description

2.1 The Site location is shown in Figures 1.1 and 1.2. The land within the continuous solid red line in Figure 1.2 extends to approximately 1.46 hectares (ha), with the land to the north and south defined by the dotted red line approximately 0.56 ha. The maximum extent of the Site would therefore be approximately 2.02 ha and is wholly located within the BHCC administrative boundary. The Site is situated approximately 2.5 kilometres (km) east of Brighton town centre, at Ordnance Survey (OS) National Grid Reference (NGR) TQ 33566 03542. The Site is immediately north of the A259 coastal road and located in the vicinity of Black Rock, Brighton Marina and East Brighton Park. Marina Way forms the eastern boundary of the Site.

2.2 The north eastern part of the Site is occupied by two gas holders, which are now redundant and have been purged of gas and isolated. One gas holder frame remains. Directly south of the gas holders, there is operational gas equipment across several small buildings. Below ground, low, medium and high pressure gas mains cross the Site.

2.3 The wider Site comprises largely hardstanding/bare ground occupied for short-term uses mostly associated with vehicle parking, storage and maintenance. In the centre of the Site is a warehouse style building used in association with these uses. There are some areas of scrub and emerging vegetation on the Site.

2.4 Vehicular access to the Site is via three points on Boundary Road to the west and one point on Marina Way to the east, although the Site is not currently publicly accessible.

Planning Context of the Site

2.5 A prior notification application was submitted to BHCC in September 2013 for the 'demolition of the holders and associated structures' (ref. BH2013/02188) and prior approval was granted on 30th September 2013. The prior approval expired on 30th September 2018.

2.6 A second prior notification application was submitted to BHCC in August 2018 for the 'dismantling of redundant gas holders and associated structures' (ref. BH2018/02571). On 7th September 2018, BHCC noted that prior approval was required and the application was refused, as insufficient information was provided to the BHCC to assess the proposed method of demolition and the proposed restoration of the Site.

History of the Site

2.7 The Site has been occupied as a gas works since 1818 when it was developed for gas production and storage. Gas production ceased in 1860 and thereafter the Site was used for gas storage and distribution.

2.8 The gas works and gas holders historically occupied a larger area of the Site than currently present on the Site, including the southern part, however, only gas holders No's 5 and 7 remain. Gas holder No. 5, built in 1935, comprises the below ground frame guided gas holder located in the north western corner of the Site. The tank is understood to have been built or replaced later in 1957. Gas holder No. 7, a more recent addition to the Site constructed in 1946/1947, comprises the below ground spiral guided gas holder located in the north eastern corner of the Site. Both gas works are later examples of their types.

2.9 Due to changes in the way gas is now stored, the gas holders are now redundant and only a small area of the Site is now required for operational use. A small area of the Site is proposed to be retained for operational use as part of the Development.

Surrounding Context

Land Uses

2.10 A brick built electricity substation and vegetated road verge are located to the north of the Site, beyond which is Roedean Road (B2066), residential dwellings and The Brighton Waldorf School. Marina Way forms the Site's eastern and southern boundary, with residential dwellings situated along the length of Marina Way to the east of the road, with Roedean Fire Station situated behind these residential dwellings. The coast road, Marine Drive (A259) is located to the south of Marina Way. The Site is separated from Marine Drive by retaining wall and significant difference in ground level. Boundary Road forms the Site's western boundary, with Bell Tower Industrial Estate situated at the northern end of Boundary Road immediately adjacent to the Site with residential dwellings along the remaining length of Boundary Road. The closest residential properties are located along Boundary Road, east of Marina Way and north of Roedean Road.

2.11 East Brighton Park is located approximately 145m north east of the Site. The South Downs National Park extends to the north eastern corner of the Site beyond Roedean Road, approximately 70m from the Site.

2.12 At the closest point, the coast and English Channel is approximately 250m south of the Site. Brighton Marina is located approximately 345m south east of the Site.

2.13 The Site is currently served by one vehicular access point from Marina Way to the east and three points of vehicular access from Boundary Road to the west. Both Boundary Road and Marina Way provide vehicular access onto the B2066 (Roedean Road), with Marina Way also providing access to the A259 (Marine Drive). The A259 is recognised as a sustainable transport corridor and bus priority route running along the Brighton seafront, linking the town centre with the port of Newhaven to the east and Shoreham to the west.

2.14 The Site benefits from being close to a number of bus stops, although the closest train station is the Brighton Railway Station, located 3km north west of the Site. The main cycle route from the Site towards Brighton town centre is located to the south of Marine Drive and forms part of National Cycle Network (NCN) Route 2.

Site and Surrounding Sensitivities

2.15 Figure 2.2 shows the key environmental sensitivities surrounding the Site.

2.16 The Site does not lie within an Archaeological Notification Area (ANA) as defined by East Sussex County Council (ESCC). The Roedean Prehistoric and Roman funerary landscape (ANA DES9043), however, is located to the east of the Site on the other side of Marina Way.

2.17 The Site does not contain any heritage assets designated as being of national importance, such as listed buildings or Parks and Gardens of Special Historic Interest. There are no Scheduled Monuments within the Site, with the closest being Whitehawk Camp causeway enclosure situated approximately 1.1km to the north west. There are also no Registered Parks and Gardens within the Site, however, the Grade II listed Kemp Town Enclosures Registered Park and Garden is located approximately 130m to the south west of the Site. The closest listed buildings are the Grade II listed French Convalescent Home and Attached Wall and Railings and the Boundary Stone on the Corner with Roedean Road, situated approximately 50m and 75m to the south west and north west respectively. Kemp Town Conservation Area, the nearest to the Site, is located 100m west of the Site which includes several Grade I and II listed buildings.

2.18 The locally listed Marine Gate is located adjacent to the south eastern corner of the Site on Marine Drive.

2.19 South Downs National Park is situated approximately 70m to the north east of the Site beyond Roedean Road. The part of the South Downs National Park nearest to the Site comprises two football pitches.

2.20 The Site is located within the Brighton and Lewes Biosphere Reserve. However, the Site does not fall within any Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites, Sites of Special Scientific Interest (SSSI), Natural Nature Reserves (NNR) or Local Nature Reserves (LNR). There are four statutory designated sites within 2km of the Site boundary, the closest of which is Brighton to Newhaven Cliffs SSSI located approximately 50m south east of the Site and Beachy Head West Marine Conservation Zone located approximately 300m to the south of the Site. Whitehawk/Race Hill LNR is approximately 700m to the north west of the Site. There are ten non-statutory sites of nature conservation importance within a 2km radius of the Site, the closest of which is Sheepcote Valley Local Wildlife Site (LWS) situated approximately 130m to the north east.

2.21 In August 2013, BHCC established the Brighton Portslade & Rottingdean Air Quality Management Area (AQMA), which is an area identified as having poor air quality owing to exceedances of the annual mean nitrogen dioxide (NO_2) objective and the 24-hour mean particulate matter (PM_{10}) objective. The Site is not located within the AQMA, with the AQMA is located approximately 830m to the west of the Site at the junction of Eastern Road and Bristol Gate, at the closest point.

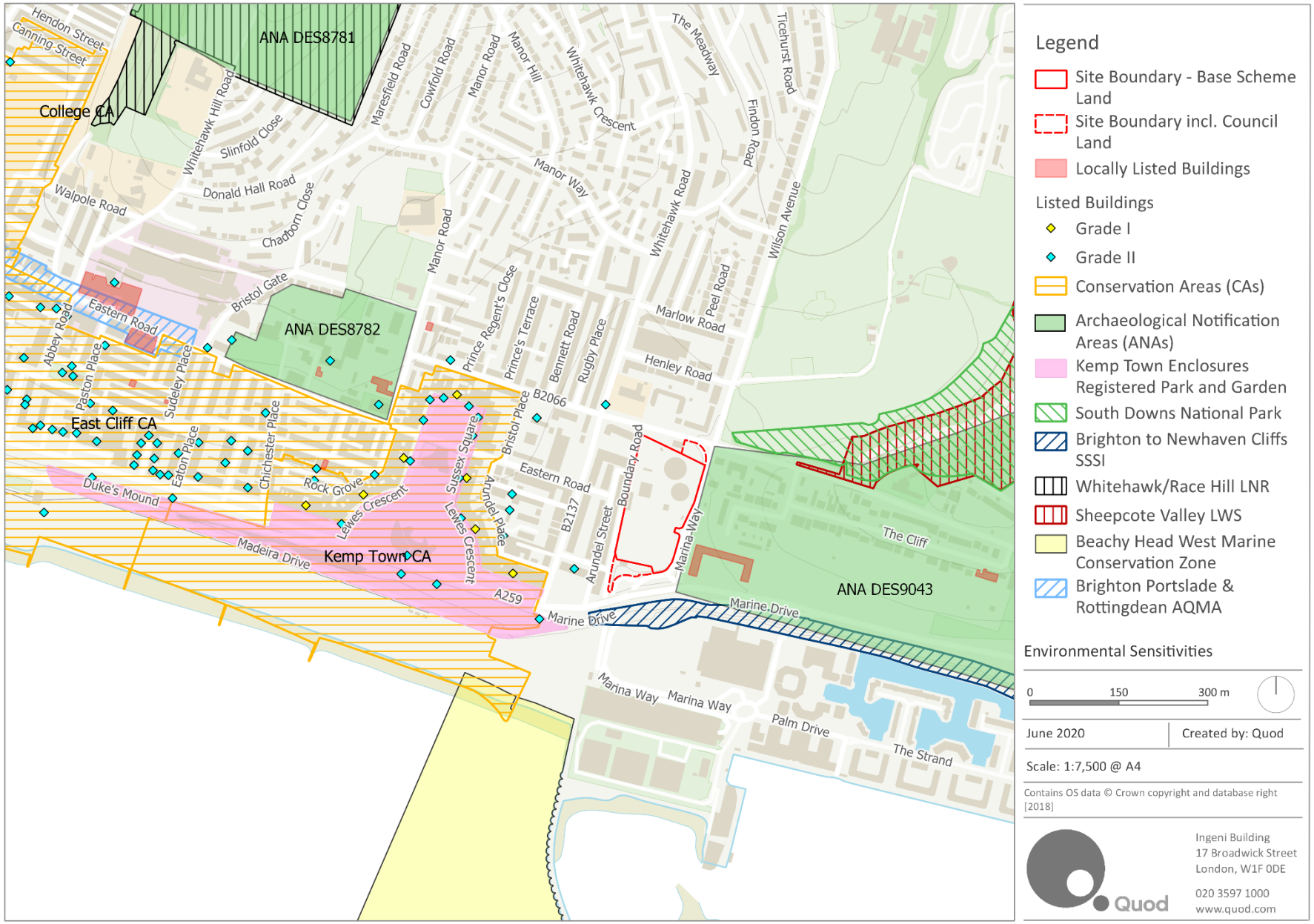
2.22 The Site lies within Flood Zone 1, meaning the Site has a low probability of flooding from river/tidal sources. The Site is not located within a groundwater Source Protection Zone (SPZ). The Site is underlain by Newhaven Chalk, a Principal Aquifer.

Future Development

2.23 The Brighton Marina Outer Harbour development is proposed on land to the south of the Site within Brighton Marina where full (Phase Two) and outline (Phase Three) planning permission is sought for a residential led mixed use development (ref. No. BH2019/00964) (see Appendix A for further details). This mixed use development proposes up to 1,000 residential units and 1,561m^2 of flexible commercial floor space in buildings ranging from 8 to 28 storeys in height, undercroft car and cycle parking; servicing; landscaping; public realm works; and infrastructure works. At the time of writing, no decision has been made on this application. Phase One has been built out.

2.24 The Black Rock site to the south of the Site is allocated within the Council's CPP1 for *'7,000 sq.m of leisure and recreation use in addition to ancillary retail and café uses associated with the primary leisure use'*. BHCC has secured funding for enabling works to prepare the Black Rock site for redevelopment, for which it received resolution to grant on 10 June 2020 (ref. No. BH2020/00442).

Figure 2.2: Environmental Sensitivities Map



3 Description of Development

Overview of the Application

3.1 The Applicant proposes the comprehensive redevelopment of the Site and, to facilitate construction of the Development, the buildings and structures on the Site will be demolished and ground remediation undertaken, where required. Permission for the works set out below may come forward under one or two applications although all works would be subject to EIA and covered by a single ES and the scope set out in this report.

3.2 It is expected that a full (detailed) planning application will be submitted for the Development. The precise description of Development has not been finalised, however, is likely to include:

- demolition of existing buildings and structures;
- enabling works including but not limited to: ground remediation and decontamination; removal of below ground obstructions; consolidation of existing gas equipment including erection of a new Pressure Reduction Station (PRS)[1] compound;
- construction of:
  - up to 700 new dwellings and ancillary residential floorspace – this may be set out in the planning application by a number of homes or equivalent GEA figure;
  - circa 2,000sqm non-residential floorspace (use classes B1, A1-A4 and/or D1);
  - new public open space, and semi-private and private residential open space;
  - car and cycle storage predominately within podium(s);
  - pedestrian, car and cycle and access and circulation works;
  - landscape and public realm works; and
- associated infrastructure and interim works.

3.3 The buildings of the Development would range in heights and massing. Heights and massing have not been finalised but are anticipated that they could come forward within a range of between ground plus 3 and ground plus 16 storeys.

3.4 The Development proposals are at an early stage of design and will be developed further with input of technical analysis as part of the EIA process and in consultation with BHCC and other stakeholders. Mitigation measures will be incorporated and designed into the Development, where possible, to avoid or reduce likely significant adverse effects on the environment and local community.

Demolition, Remediation and Construction

3.5 Demolition of the existing structures on the Site and ground remediation will be required to facilitate construction and such works may overlap. An indicative of the likely demolition, remediation and construction programme and methodology will be provided in the ES once the proposals have been further developed. Timescales and methods are likely to be comparable with other developments of a similar nature and scale. At this point in time, we estimate the overall construction programme could last approximately 8-10 years but a worst case scenario of circa 15 years may be assessed, with works likely to commence in 2021/2022 subject to planning permission. This may be updated in the ES.

[1] A Pressure Reduction Station is required as part of the gas network to regulate gas pressure.

3.6 The ES will include measures necessary to mitigate construction effects. The nature of these documents and other measures would be discussed further with BHCC through pre-application discussion.

4 EIA Methodology

Introduction

4.1 The ES will be prepared in accordance with the EIA Regulations and reference will be made to current EIA good practice guidance.

4.2 A single ES will be prepared to accompany the planning application(s). The assessment of likely significant effects in the ES will set out the effects associated with the demolition and remediation works, construction works and once the Development is completed and operational. The general approach to the EIA process is outlined below, although some assessments may deviate from the general approach owing to methodologies and technical guidance specific to the topic.

Consultation and Scoping Opinion

4.3 A programme of consultation with key stakeholders will be undertaken with statutory and non-statutory consultees throughout the design and in the lead up to submission of the planning applications. Key stakeholders include BHCC, South Downs National Park Authority and the Environment Agency.

4.4 In line with the EIA Regulations, the ES will be 'based on' the Scoping Opinion provided by BHCC in light of this report. Each ES technical chapter will set out key points made during the scoping and consultation process between the project team and stakeholders and will clearly explain how these have been addressed by the EIA process.

Alternatives

4.5 In accordance with the EIA Regulations, the ES will provide *"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 a comparison of the environmental effects"*.

4.6 The ES will describe the reasonable alternatives to the Development which have been considered by the Applicant, including:

- the 'do-nothing' scenario - this will outline the consequences of no Development taking place and the Site remaining in its current form; and
- alternative designs – for example, alternative uses, building layouts, heights and massing, together with the main reasons for selecting the final design, including a comparison of effects.

4.7 Alternative sites have not been considered by the Applicant and as such will not be considered in the ES.

EIA Methodology

Significant Effects and Scope of the EIA

4.8 As highlighted by the UK Government Online Planning Practice Guidance[5] (PPG), when considering the scope of EIA, local planning authorities *"should limit the scope of the assessment to those aspects of the environment that are likely to be significantly affected"*.

4.9 With respect to identifying the likely significant environmental effects associated with the Development, consideration will be given to potential effects associated with the demolition and remediation works, construction works and the Development once completed and operational. These effects could be both beneficial and adverse and deemed to be 'significant' on the basis of:

- the value/importance of the resources and receptors that could be affected;
- the predicted magnitude of environmental change and/or impact experienced by these resources and receptors, accounting for their size, duration and spatial extent;
- the susceptibility or sensitivity of resources/receptors; and
- options for avoiding, reducing, offsetting or compensating for any potentially significant adverse effects and the likely effectiveness of such mitigation measures.

4.10 Sections 5 to 12 set out those aspects of the environment that are likely to be significantly affected by the Development. Potential effects deemed to be non-significant within topics that are scoped into the ES are also included within these sections. Section 14 sets out those likely effects on the environment that are unlikely to be significant and therefore the topics that will clearly be scoped out of the relevant chapter of the ES.

Determining the Significance of Effects

4.11 Determining the significance of environmental effects is intended to inform decision making. The significance of effects will be determined by specialists with reference to generic assessment criteria or specific criteria for each environmental topic being considered. These criteria will apply a common terminology, classifying whether the effects are major, moderate or minor, as well as, adverse, negligible or beneficial, temporary or permanent, in line with standard practice. In general, likely residual effects reported as moderate or major significance are considered to be 'significant'. Where there is deviation from this owing to specific criteria or guidance relating to an environmental topic, this will be set out in the ES.

Study Area

4.12 The study area for each environmental topic will be based on the geographical scope of the potential for significant effects relevant to the topic or the information required to assess the likely significant effects, as well as specific guidance and consultation with stakeholders.

Baseline and Future Baseline Conditions

4.13 Baseline environmental conditions need to be established to enable an accurate assessment of potential changes to such conditions that may occur and to assess the likely significant environmental effects of the Development. Understanding baseline conditions is also important for the identification of the most appropriate mitigation which could be employed to reduce any likely significant adverse effects.

4.14 Baseline conditions will be taken as the current conditions on the Site. Baseline information will be gathered through desk-based research and Site surveys undertaken in 2020 to define and describe the existing environmental characteristics and receptors for each environmental topic that will be provided within the ES. Where environmental information and data is not available for 2020, it will be necessary to use data which pre-dates 2020. The ES will set out what year the baseline data is sourced from.

4.15 In addition to the current baseline conditions, the EIA Regulations require an outline of the likely evolution of the baseline condition 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 (i.e. future baseline). The future baseline will also take into account climate change and other developments that will be built out that may affect the Site. The future baseline conditions will be described in each chapter of the ES.

Demolition and Remediation Assessment

4.16 The ES will outline the likely demolition and remediation activities and provide an indication of the likely duration of works. The likely significant effects of the demolition and remediation works will be presented in the ES. For some environmental topics, potential effects are not considered likely during the demolition and remediation works and therefore these have been scoped out (see Sections 5 to 12). Appropriate mitigation measures will also be defined to avoid, reduce or mitigate potential adverse effects.

Construction Assessment

4.17 An indicative construction programme for the Development will be presented in the ES. This will include all parts of construction including preparation, construction and landscaping works.

4.18 The ES will outline the main activities associated with the construction works, together with the likely duration of the main activities. Topics which have identified likely significant effects from construction activities are outlined in the sections below. Mitigation measures will be set out in the ES to avoid, reduce or mitigate potential adverse effects.

4.19 In line with Institute of Environmental Management and Assessment ('IEMA') best practice[6], 'tertiary' mitigation is defined as that which *"will be required regardless of any EIA assessment, as it is imposed, for example, as a result of legislative requirements and/or standard sectoral practices. For example, considerate contractor practices that manage activities which have potential nuisance effects"*. As such, the ES will rely on standard practice in the management of the demolition and construction works of the Development that will be detailed in the ES. These measures will therefore be taken into account and form the basis of the assessment of likely significant effects. As such, any effects that might have arisen without this mitigation will not be identified as 'likely effects', as there should be no potential for them to arise. This should result in a simpler and more proportionate ES. Where such measures have been taken into account this will clearly be identified within the ES.

4.20 An interim assessment of construction works, which considers the effects of the Development partway through construction is not proposed, although the assessment will consider the effects of construction on future receptors.

Completed Development Assessment

4.21 The likely significant effects of the completed Development will be assessed for the anticipated year of completion. The assessment will assume that the Development is fully completed and occupied and will take into account environmental design that has been embedded into the Development.

Cumulative Effects Assessment

4.22 Cumulative effects can occur either when different effects from the Development interact to exacerbate effects on sensitive receptors, or, when the magnitude of an effect is exacerbated by other future neighbouring developments, thus creating a more significant effect, on a receptor.

4.23 The potential for cumulative effects to arise will be considered in each technical chapter for demolition and remediation, construction and once the Development is completed and operational. Further details including the proposed cumulative schemes are provided in Section 13 and Appendix A.

Structure of the ES Technical Chapters

4.24 Each environmental topic scoped into the EIA will be structured as set out in Appendix B.

Scoping Summary

4.25 This scoping exercise has been informed by desk-based research, Site visit, professional judgement and other information available for the Site and surrounding area. Table 4.1 provides a summary of the scoping exercise. In accordance with the EIA Regulations, all assessments will be prepared by consultants considered to have competent expertise in their discipline.

Table 4.1: EIA Scoping Summary

Technical Topics	Potential Significant Demolition/Remediation Effects	Potential Significant Construction Effects	Potential Significant Completed Development Effects	Comments
Socio-Economic	✓ - T	✓ - T	✓ - P	ES Chapters to be prepared
Transport	✓ - T	✓ - T	✓ - P	
Air Quality and Odour	✓ - T	✓ - T	✓ - P	
Noise and Vibration	✓ - T	✓ - T	✓ - P	
Wind Microclimate	X	X	✓ - P	
Daylight, Sunlight & Overshadowing	X	X	✓ - P	
Ground Conditions and Contamination	✓ - T	✓ - T	X	
Townscape, Heritage and Visual Impact Assessment	✓ - T	✓ - T	✓ - P	
Archaeology	X	X	X	Topics scoped out of the ES
Biodiversity	X	X	X	
Water Resources, Flood Risk & Drainage	X	X	X	
Human Health	X	X	X	
Waste	X	X	X	
Climate Change and Greenhouse Gas Emissions	X	X	X	

Technical Topics	Potential Significant Demolition/Remediation Effects	Potential Significant Construction Effects	Potential Significant Completed Development Effects	Comments
Vulnerability to Major Accidents or Disasters	X	X	X	
Energy and Sustainability	X	X	X	
Light Pollution	X	X	X	
Solar Glare	X	X	X	
Telecommunications	X	X	X	
Electromagnetic Fields	X	X	X	

Key: ✓ Likely Significant Effect / x No Likely Significant Effect. T – Temporary Effect / P – Permanent Effect

5 Socio-Economics

Establishing Baseline Conditions and Study Area

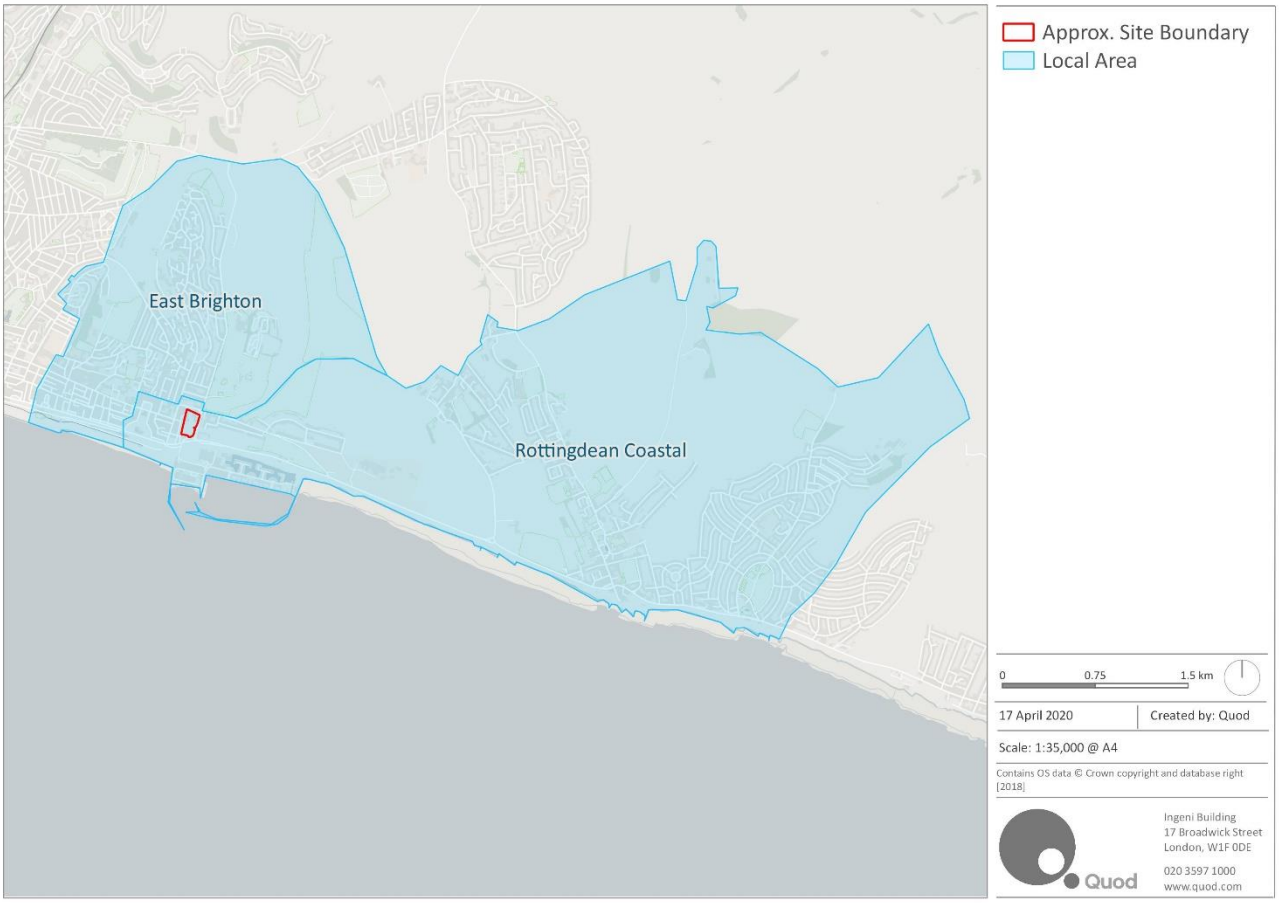
5.1 The Site is located within Rottingdean Coastal ward within Brighton and Hove, and comprises two (redundant) gas holders, a warehouse, vehicle service centre and car parking.

5.2 A baseline review will be undertaken as part of the socio-economic assessment within the ES to establish the existing socio-economic conditions in the area surrounding the Site. Demographic, housing and economic baseline data for the Local Area (defined as Rottingdean Coastal ward and East Brighton ward as shown in Figure 5.1) will be put in context against the wider district (Brighton and Hove) and regional (South East) profile.

5.3 Assessment of existing social infrastructure will be assessed based on the provision within reasonable travel times of the Site:

- within 720m for open space and play space in line with the accessibility standards set out within Policy CP16 of BHCC's City Plan Part 1 (2016);
- within 1km for primary schools and primary healthcare services (General Practitioner (GP)); and
- District wide for secondary schools.

Figure 5.1: Socio-Economics – Local Area



5.4 The socio-economic baseline will utilise data from sources including (but not limited to):

- 2011 Census;
- Business Register and Employment Survey (2018);
- Claimant Count (2020);
- Indices of Multiple Deprivation (2019);
- Annual Schools Census (2019) data and information from relevant Local Education Authority school admission documents; and
- Data on healthcare services from NHS Choices (2020).

5.5 Where more up to date data is available than stated above, this will be utilised.

5.6 The future baseline will establish projected population growth using Office for National Statistics (ONS) data and will consider any planned future provision/capacity of social infrastructure e.g. school places.

Potential Effects

Likely Significant Effects

5.7 On the basis of the proposed uses, the Development is expected to generate a range of socio-economic effects during the demolition and remediation works, construction works and once the Development is completed and operational.

Demolition, Remediation and Construction:

5.8 For the purposes of the assessment of socio-economics, demolition, remediation and construction phases will be considered together, as follows:

- displacement of existing on-Site employment; and
- generation of temporary employment during the demolition and remediation works and during the construction works.

Completed Development:

5.9 The assessment of the Development once completed and operational will consider the following:

- net effect on permanent employment opportunities;
- delivery of new homes;
- the effects of the population accommodated by these new homes on social infrastructure – specifically primary healthcare, education, open space and play space provision; and
- spending effects associated with the residents and net employees brought to the Site by the Development.

Non-Significant Effects

5.10 In line with the 2017 EIA Regulations, the impacts of human health have been considered. The 2017 EIA Regulations require the consideration of the potential effects on population and human health where significant effects are likely to occur. The assessment should be proportionate to the project being considered. It is proposed that human health is scoped out of the ES for reasons set out in Section 14.

Assessment Methodology

5.11 The assessment of the likely significant effects will be undertaken using the following methodology and/or tools:

- displacement of existing employment - if data on existing employment levels for the Site is not available, standard job density ratios from the Homes and Communities Agency Guidance (2015) will be applied to the existing floorspace in order to assess the potential employment capacity of the Site;
- demolition and construction-related employment effects will be assessed using the Construction Industry Training Board (CITB) Labour Forecasting Tool;
- operational employment effects will be assessed by applying standard job density ratios from the Homes and Communities Agency Guidance (2015). The assessment will also consider the net employment effect over the baseline position on the Site;
- delivery of housing will be assessed against policy targets for Brighton and Hove;
- total population will be calculated using the occupancy levels set out within BHCC's Developer Contributions Technical Guidance (2017);
- demand for education will be assessed by considering primary and secondary age child yield against existing capacity in schools surrounding the Site. Child yield will be calculated by the applying the pupil yield assumptions set out in BHCC's Developer Contributions Technical Guidance (2017);
- the Healthy Urban Development Unit (HUDU) benchmark of 1,800 registered patients per NHS GP will be used to assess existing GP capacity against demand arising from the Development;
- play space and open space will be assessed in line with the open space standards set out in Policy CP16 of BHCC's CPP1 (2016); and
- an estimate of spending generated from the completed Development will be calculated using average household spending figures for the south east of England and an average figure for daily worker spending.

5.12 The assessment of socio-economic effects will be made in line with the standard EIA significance criteria terminology. The socio-economic assessment will also include a cumulative assessment in line with the methodology set out in Section 13.

5.13 It is not envisaged that any specific socio-economic consultation with stakeholders will be required in addition to what is carried out as standard as part of the pre-application process.

6 Transport

Establishing Baseline Conditions and Study Area

6.1 The Site is currently served by one point of vehicular access from Marina Way (to the east) and three points of access from Boundary Road (to the west). The land is bound by Roedean Road to the north and the A259 Marine Drive to the south. The A259 is recognised as a sustainable transport corridor and bus priority route[7] (see Gas Works Marina Development Site Schedule update, 2014) running along the Brighton seafront, linking the town centre with the port of Newhaven to the east and Shoreham to the west.

6.2 The Site is located in the vicinity of Black Rock and Brighton Marina, of which all three sites (the Site, Black Rock and Brighton Marina) are earmarked for redevelopment within CPP1[8]. The Site is surrounded by primarily residential land uses; however, there are some small industrial units located to the north west of the Site associated with Bell Tower Industrial Estate. The Site has excellent access to public transport links and is well situated with regards to potential connections with local walking and cycling infrastructure.

6.3 The baseline conditions of the Site and surrounding area will be appraised by undertaking a combination of a desk-based study and Site visits. The study area and scope of the baseline conditions appraisal will be confirmed following pre-application discussions with BHCC Highways Officers and will consider:

- existing Site land uses, including quantum of parking;
- local demographic, employment and economic information;
- local highway network layout, connections, traffic flows and accident analysis;
- pedestrian and cycle amenities layout, connections, flows and footway capacities; and
- public transport accessibility, connections, service frequencies and capacities.

Potential Effects

Likely Significant Effects

6.4 The following likely significant transport and access related effects have been identified and will be addressed in the ES:

Demolition, Remediation and Construction

- temporary disruption to pedestrians, cyclists and road vehicle users during the demolition and remediation works and during the construction works; and
- temporary increase of heavy goods vehicles (HGV) and worker vehicle movements during the demolition and remediation works and during construction works.

Completed Development

- effects of the Development once completed and operational upon traffic flows and capacities of the local highway network;
- effects of the Development once completed and operational upon pedestrian and cycle journeys, accessibility and facilities; and
- effects of the Development once completed and operational upon public transport capacity and accessibility.

Assessment Methodology

6.5 The transport chapter will consider the likely significant effects, as described above, which could arise on the transport network as a result of the Development during the demolition and remediation works, construction works and once the Development is completed and operational. The assessment will draw on details from the Transport Assessment (TA) which will be submitted with the planning application. The TA will be based on a separate TA Scoping Report that will be submitted to BHCC for discussion to agree the study area and scope of the TA. The Development would accord with cycle and vehicle parking standards in line with the requirements of BHCC Supplementary Planning Document 14 (SPD14)[9].

6.6 Due to COVID-19 restrictions, it is possible that representative traffic surveys may not be able to be undertaken to establish the typical baseline traffic flows within the planning application submission timescales. As such, an alternative methodology will be agreed with BHCC Highways to obtain baseline traffic data to allow for this possibility. Manual classified traffic count data surveyed in 2018 at nearby junctions associated with the adjoining Brighton Marina planning application (ref. No. BH2019/00964) would be utilised in the first instance.

6.7 It is anticipated that traffic flows from demolition and remediation works from the Development will be derived from a first principles approach and from information provided by the wider project team. The construction traffic flows would be calculated from the TRICS Construction Traffic – Research Report[10].

6.8 A multi-modal trip assessment will be undertaken based upon a review of appropriate comparable TRICS and 2011 Census (Brighton ward travel to work data). A review of National Travel Survey data will also be undertaken to establish mode share by journey type. The TA will contain detailed operational analyses of travel characteristics associated with the Development.

6.9 The methodology follows current best practice by assessing the impacts on the hierarchy of transport modes: pedestrians; cyclists; public transport users; and vehicle drivers and passengers. The approach adopted for the transport assessment in the ES will be based on the Institute of Environmental Assessment (now IEMA) Environmental Assessment of Road Traffic (1993) (IEMA Guidance)[11], which recommends screening criteria of:

- roads where traffic flow would increase by more than 30% as a consequence of a proposed development; or
- roads where traffic flows would increase by 10% and pass close to or through sensitive areas.

6.10 For the purposes of the assessment, the majority of the routes in the vicinity of the Site are considered to be sensitive as there are residential properties fronting onto the carriageways and there is also the potential for high volumes of pedestrian and cycle movements within the urban area. The significance of each effect will be considered against the criteria within the IEMA Guidance, where possible. However, this states that:

"…for many effects there are no simple rules or formulae which define the thresholds of significance and there is, therefore, a need for interpretation and judgement on the part of the assessor, backed-up by data or quantified information wherever possible. Such judgements will include the assessment of the numbers of people experiencing a change in environmental impact as well as the assessment of the damage to various natural resources".

6.11 The degree of each potentially significant effect will be considered and an assessment will be made as to whether the Development would result in minor, moderate or major adverse impacts or would be beneficial. The criteria used to determine the significance of each of the traffic-related environmental effects will be based on the advice given in the IEMA Guidance as summarised below.

Severance

6.12 Severance is the perceived division that can occur within a residential area if it becomes separated by a major traffic artery and is used to describe the factors that separate people from other people and places. For example, severance may be created as a result of an increase in traffic that could affect the difficulty of crossing a road. The effects of severance can be applied to motorists, pedestrians or residents.

6.13 The IEMA Guidance suggests that changes in traffic flow of 30%, 60% and 90% are regarded as producing ”minor”, ”moderate” and “major” changes in severance respectively. However, there are no predictive formulae which give simple relationships between traffic factors and levels of severance. The IEMA Guidance states that marginal changes in traffic flow are unlikely to create or remove severance.

Driver Delay

6.14 Delays to existing traffic can occur at several locations within the local highway network as a result of the additional traffic that would be generated by a development. The IEMA Guidance states that delays are only likely to be significant when the traffic on the network surrounding the development is already at, or close to, the capacity of the system. The theoretical capacity of a particular junction can be determined by assessing the Ratio of Flow Capacity (RFC) for priority-controlled junctions and Degree of Saturation for signal-controlled junctions. When an RFC value of 0.85 or more is experienced, or a degree of saturation of 90%, queuing and congestion are likely to occur during busy periods.

Pedestrian Delay

6.15 Changes in the volume, composition or speed of traffic may affect the ability of people to cross roads, and therefore increases in traffic levels are likely to lead to greater increases in delay. Delays are dependent upon the general level of pedestrian activity and general physical conditions of the crossing location. Given the range of local factors and conditions which can influence pedestrian delay, the IEMA Guidance does not recommend that thresholds be used as a means to establish the significance of pedestrian delay but recommends that reasoned judgements be made instead. However, the IEMA Guidance does note that, when existing traffic flows are low, increases in traffic of around 30% can double the delay experienced by pedestrians attempting to cross a road.

Pedestrian Amenity

6.16 Pedestrian amenity is broadly defined as the relative pleasantness of a journey and is considered to be affected by traffic flow, traffic composition and pavement width/separation from traffic. The IEMA Guidance notes that changes in pedestrian amenity may be considered significant where the traffic flow is halved or doubled, with the former leading to a beneficial effect and the latter to an adverse effect.

Fear and Intimidation

6.17 The scale of fear and intimidation experienced by pedestrians is dependent on the volume of traffic, its HGV composition, its proximity to people or the lack of protection caused by such factors as narrow pavement widths, as well as factors such as the speed and size of vehicles.

6.18 There are no commonly agreed thresholds by which to determine the significance of this effect. However, the IEMA Guidance notes previous work that has been undertaken which puts forward thresholds that define the degree of hazard to pedestrians by average traffic flow, 18 hour/day heavy vehicle flow and average speed over an 18 hour day in miles per hour.

6.19 The IEMA Guidance also notes that special consideration should be given to areas where there are likely to be particular problems, such as high speed sections of road, locations of turning points and accesses. Consideration should also be given to areas frequented by school children, the elderly and other vulnerable groups.

Accidents and Safety

6.20 Where a proposed development is expected to produce a change in the character of the traffic on the local road network, as a result of increased HGV movements for example, the IEMA Guidance states that the implications of local circumstances or factors which may elevate or lessen risks of accidents, such as junction conflicts, would require assessment in order to determine the potential significance of accident risk.

7 Air Quality and Odour

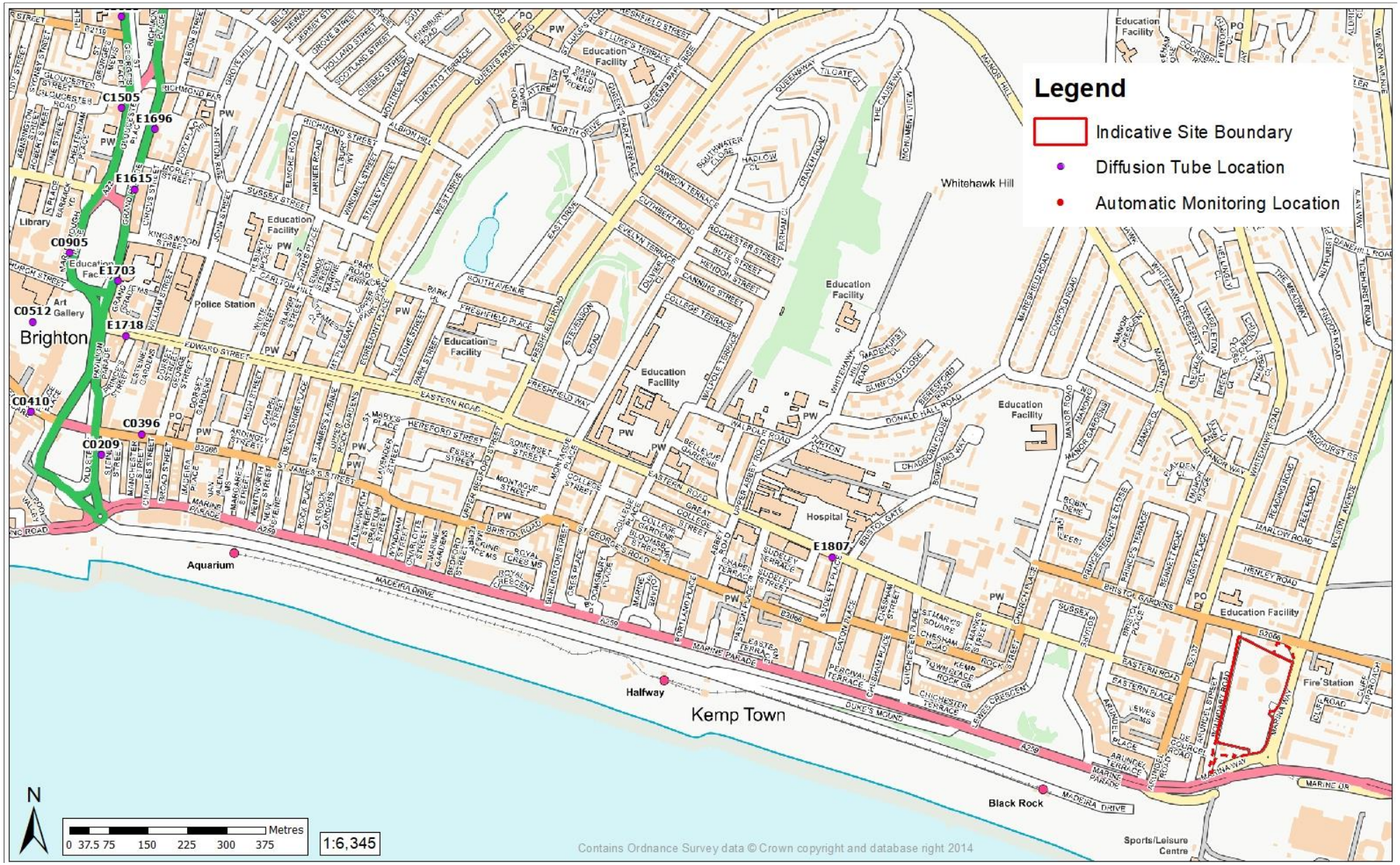
Establishing Baseline Conditions and Study Area

Study Area

7.1 Although there is no set guidance to determine the extent of the study area for an air quality assessment, there are factors within guidance which aid in defining the study area. Table 6.2 within the Institute of Air Quality Management, Land Use Planning and Development Control: Planning for Air Quality, January 2017[12], provides the criteria for undertaking an air quality assessment. Air quality assessments should be undertaken where there is expected to be a change in light development vehicles of 100 annual average daily traffic (AADT) within or adjacent to an AQMA, or 500 AADT elsewhere. The air quality assessment study area should also include locations where there are expected to be changes in heavy duty vehicle (HDV) movements of 25 AADT within or adjacent to an AQMA, or 100 AADT elsewhere. Understanding the additional traffic flows from the Development informs the judgement to determine the road networks which need to be modelled as part of the air quality assessment and the extent of the study area.

7.2 Additionally, in order to create a robust model, verification will be undertaken to compare the results of modelling against those from monitoring. As a result, the modelled road network will extend out to include the nearby monitoring undertaken by BHCC. Figure 7.1 provides an illustration of the study area for the air quality assessment, which extends approximately 3km across the local area.

Figure 7.1: Air Quality Assessment Area



Baseline Conditions

Local Air Quality Management (LAQM)

7.3 As required under Section 82 of the Environment Act 1995, BHCC reviews and assesses air quality within its area of jurisdiction. Due to high pollutant levels of NO_2, BHCC has designated two AQMA within the city which are listed below:

- Brighton & Hove, Portslade AQMA No. 1: an area encompassing the A259 (along the beachfront) and the A270. It also extends to Brighton Railway Station and London Road.
- Brighton & Hove, Rottingdean AQMA No. 2: a smaller AQMA which incorporates a junction off the A259, High Street.

7.4 The closest AQMA to the Site is Brighton & Hove, Portslade AQMA No. 1 which is located approximately 830m west of the Site boundary. As part of the air quality assessment, receptors within the AQMA will be assessed to determine any effects on air quality as a result of the Development.

Air Quality Monitoring

7.5 Monitoring of air quality within BHCC is undertaken through both continuous and non-continuous monitoring methods. These have been reviewed in order to provide an indication of existing air quality in the area surrounding the Site. Monitoring locations are shown in Figure 7.1.

Continuous Monitoring

7.6 BHCC operated five automatic monitoring stations in 2018. The closest automatic monitoring stations to the Site are BH6 and BH10, which are located just over 2.5 km north west and west of the Site boundary respectively. The most recently available automatic monitoring data is from 2018, which is presented in Table 7.1.

Table 7.1: Monitored Annual Mean NO_2 Concentrations at Automatic Monitoring Stations

Site ID	Location	Site Type	Distance from Kerb (m)	Inlet Height (m)	2018 Annual Mean NO_2 Concentration	2018 Annual Mean $PM_{2.5}$ Concentration
BH6	Lewes Road	Roadside	1.5	3	37.8	5.8
BH10	North Street Near Ship Street	Roadside	6	3.5	49.5	10.3
BH0	Preston Park AURN	Urban Background	200	5.0	16.3	8.9
LL	Lulington Health AURN	Rural	N/A	3	7.6	-
UB	University of Brighton	Suburban	~150	3.5	-	-

7.7 As indicated in Table 7.1, all identified NO_2 automatic monitoring stations monitored a concentration below the air quality objective for NO_2 (40 µg/m^3 annual mean) during 2018, other than BH10. BH10, BH6 and BH0 monitored a concentration below the air quality objective for PM_{10} (40 µg/m^3 annual mean) during 2018.

Non-Continuous Monitoring

7.8 BHCC operated a network of 61 diffusion tubes during 2018. Reference should be made to Figure 7.1 for the locations of the diffusion tubes within the extent of the air quality study area. The closest diffusion tube to the Site is E18-07, which is located 850m west of the Site boundary. The most recently available diffusion tube monitoring data is from 2018, which is presented in Table 7.2 below.

Table 7.2: Monitored Annual Mean NO_2 Concentrations

Site ID	Location	Site Type	Distance from Kerb (m)	Inlet Height (m)	2018 Annual Mean NO_2 Concentration
C02-09*	Old Steine	Roadside	5.2	2.7	30.8
E07-12*	Lewes Road Elm Grove Junction	Roadside	2.9	2.8	55.5
E16-96*	Grand Parade Middle	Roadside	4.4	2.6	41.4
E16-15*	37 Grand Parade Middle West Façade	Roadside	5.0	3.2	44.8
E17-03*	Grand Parade University Building	Roadside	3.2	2.8	46.8
E17-18*	181 Edward Street North Facing Façade	Roadside	2.9	2.7	40.4
E18-07*	Astern Road near Hospital	Roadside	3.5	2.9	35.0

*Located within the AQMA

7.9 As indicated in Table 7.2, all diffusion tubes monitored exceedances of the NO_2 air quality objective (40µg/m^3 annual mean) in 2018, except for CO2-09 and E18-07; the latter of which is closest to the Site. The diffusion tubes above are considered worst case within the study area.

Potential Effects

Likely Significant Effects

Demolition and Remediation

7.10 The effects during the demolition and remediation works have the potential for dust nuisance complaints and surface soiling from deposition, as opposed to the risk of exceeding any air quality objectives. The impacts will be direct as they occur as a result of activities associated with the Development, temporary as they will only potentially occur during demolition and remediation activities, short-term because these will only arise at particular times when certain activities and meteorological conditions for creating the level of magnitude predicted combine, and will be reversible.

7.11 Temporary vehicle movements (particularly HGV movements) associated with the demolition and remediation works have the potential to generate exhaust emissions, such as NO_2, PM_{10} and $PM_{2.5}$ on the local road network.

7.12 The level of significance of each likely effect will be determined by combining the magnitude of change with the sensitivity of the receptor. Table 7.3 shows how the interaction of magnitude and sensitivity produces the significance of an environmental effect. This table has been developed by WYG, but the matrix combinations and terms used correlate with the significance matrix recommended by the Land Use Planning and Development Control: Planning for Air Quality (2017) guidance. If the magnitude of change is moderate or substantial, then the change is considered to have a significant effect on the local air quality.

Table 7.3: Impact Significance Matrix

Sensitivity of Receptor	Magnitude of Impact				
	Large	Medium	Small	Imperceptible	Neutral
Very High	Substantial	Substantial	Substantial	Moderate	Negligible
High	Substantial	Substantial	Moderate	Moderate	Negligible
Medium	Substantial	Moderate	Moderate	Slight	Negligible
Low	Moderate	Moderate	Slight	Negligible	Negligible
Negligible	Moderate	Slight	Negligible	Negligible	Negligible

7.13 The likely significant effects identified for the demolition and remediation works for assessment in the ES are as follows:

- temporary generation of dust arising from demolition and remediation works leading to potential impacts on dust soiling/deposition within 500m of the Site boundary;
- temporary localised increases in traffic-related emissions (NO_2, PM_{10} and $PM_{2.5}$) during demolition and remediation works and as a result of any temporary vehicles operating on the Site and/or local road network, should HDV movements be greater than 25 AADT within or adjacent to an AQMA, or 100 AADT elsewhere; and
- odour from the excavation and remediation works, albeit short term and temporary, owing to the historical uses of the Site and ground contamination (see Section 11).

Construction

7.14 The effects during the construction works also have the potential to result in dust nuisance complaints and surface soiling from deposition, as opposed to the risk of exceeding any air quality objectives. The impacts will be direct as they occur as a result of construction activities associated with the Development, temporary as they will only potentially occur during the construction works, short-term because these will only arise at particular times when certain activities and meteorological conditions for creating the level of magnitude predicted combine, and will be reversible.

7.15 Temporary vehicle movements (particularly HGV movements) associated with the construction works have the potential to generate exhaust emissions, such as NO_2, PM_{10} and $PM_{2.5}$ on the local road networks.

7.16 The level of significance of each likely effect will be determined by combining the magnitude of change with the sensitivity of the receptor. Table 7.3 above shows how the interaction of magnitude and sensitivity produces the significance of an environmental effect.

7.17 The likely significant effects identified for the construction assessment in the ES are as follows:

- temporary generation of dust arising from construction works leading to potential impacts on dust soiling/deposition within 500m of the Site boundary; and
- temporary localised increases in traffic-related emissions (NO_2, PM_{10} and $PM_{2.5}$) during construction works and as a result of any temporary vehicles operating on the Site and/or local road network.

Completed Development

7.18 Vehicle movements associated with the Development once completed and operational will generate additional exhaust emissions, such as NO_2, PM_{10} and $PM_{2.5}$ on the local road network. Any likely significant changes will be a result of long-term changes in local air quality due to emissions from vehicles associated with the operation of the completed Development.

7.19 In accordance with the Institute of Air Quality Management Guidance 'A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites 2019', the following ecological designated sites located within 2km of the Site boundary will be reviewed as part of the air quality assessment:

- Brighton to Newhaven Cliffs SSSI;
- Whitehawk/Race Hill LNR; and
- Sheepcote Valley LWS.

7.20 The level of significance of each likely effect identified above will be determined by combining the magnitude of change with the sensitivity of the receptor. Table 7.3 above shows how the interaction of magnitude and sensitivity produces the significance of an environmental effect.

7.21 The likely significant effects identified for assessment of the Development once completed and operational are as follows:

- long term increase in traffic related emission (NO_2, PM_{10} and $PM_{2.5}$) from the completed Development from additional trips on the road network in relation to air quality on human health and ecological designated sites identified above (if required).

Non-Significant Effects

Demolition, Remediation and Construction

7.22 The Institute of Air Quality Management (IAQM) 'Guidance on the Assessment of the Impacts of Dust from Demolition and Construction' states that *"…any receptors outside of 500m are not expected to experience a significant impact from the proposed development and the impacts considered 'negligible'".*

7.23 During the demolition, remediation and construction works only road links and receptors adjacent to road links where there is a potential increase in 25HGV and 100AADT in the AQMA or 100HGV and 500AADT outside the AQMA will be scoped into the assessment. All other road links that do not fall within the criteria determined by the IAQM Land-Use Planning and Development Control: Planning for Air Quality guidance will not require assessment.

7.24 Likely significant odour effects on the nearby sensitive receptors during the construction works are not anticipated because the Site would have been remediated and be suitable for use. The assessment of odour is therefore scoped out in relation to the construction works.

Completed Development

7.25 The following potential effects of the Development once complete are not likely to be significant and therefore will not be considered for further assessment:

- receptor locations outside the road modelled network where there is not expected to be an increase in AADT of 25 HGV and 100 AADT in the AQMA or 100 HGV and 500 AADT outside the AQMA will not be included within the air quality assessment;
- any ecological designated sites located beyond 2km from the Development or beyond 200m from an affected road network;
- Air Source Heat Pumps (ASHP) are proposed to be installed at the Development with gas boilers as worst case. Emergency back-up boilers will only be used in the event of emergencies and therefore will not be in use short to long term. The installation of ASHP will result in no building emissions and no further assessment required; and
- odour effects on the nearby sensitive receptors once the Development is completed and operational are not anticipated because the Site would have been remediated and be suitable for use.

Assessment Methodology

7.26 The existing NO_2 monitoring network described above, which is undertaken by BHCC, is considered sufficient for determining air quality conditions at the Site for the purposes of the air quality assessment and therefore, no independent NO_2 diffusion tube monitoring will be undertaken for the purposes of the ES.

Demolition, Remediation and Construction

7.27 A semi-quantitative assessment of the air quality effects of the demolition and remediation works and construction works of the Development will be undertaken in accordance with the Institute of Air Quality Managements (IAQM) 'Guidance on the Assessment of the Impacts of Dust from Demolition and Construction'[13]. For the purposes of the demolition, remediation and construction works, a worst-case assessment will be undertaken with regard to demolition, earthworks and track out.

7.28 Appropriate Site-specific mitigation will be recommended in accordance with IAQM. Appropriate mitigation measures in line with this guidance will be determined based on the significance of the dust generating activities. The implementation of this mitigation will ensure that the overall dust generating activities will have a negligible effect on the surrounding sensitive receptors.

7.29 Computer based modelling of the predicted changes of traffic emissions from demolition, remediation and construction traffic within the study area will be undertaken using an approved atmospheric dispersion modelling package (ADMS Roads 4.1), should the demolition, remediation and construction traffic exceed the criteria of HDV movements of greater 25 AADT within or adjacent to an AQMA, or 100 AADT elsewhere. The model will provide predicted annual average concentrations of NO_2, PM_{10} and $PM_{2.5}$ at receptors within the study area. Specifically, the air quality assessment will be undertaken with reference to the UK Air Quality Standards and will describe the significance of the air quality changes within the Development with reference to non-statutory guidance.

7.30 Specific locations will be assessed along the modelled road network including the B2066, Boundary Road, Eastern Road, Edward Street, Grand Parade, Gloucester Place, Marina Way, A270 and any additional roads where there is expected to be an increase of AADT based on the criteria above. As a worst-case assessment, locations on junctions and roads where there is expected to be an increase in AADT will be included within the model. The assessment will take into account the impact on Royal Sussex County Hospital, residential and educational receptors on the roads mentioned above.

7.31 The odour screening assessment for the likely excavation and remediation works will be undertaken qualitatively using the following guidance:

- Guidance on the assessment of odour for planning, IAQM, July 2018[14]; and
- H4 Odour Management, How to comply with your environmental permit, March 2011.[15]

7.32 The odour screening assessment will be informed by a review of historical land quality reports, where available and odour complaints will also be obtained, where available. It is unlikely the residual odour will cause adverse odour effects and a detailed odour assessment is considered to be able to be scoped out of the assessment.

Completed Development

7.33 Although there is no set guidance to determine the extent of the study area for an air quality assessment, there are factors within the guidance which aid in defining the study area. Table 6.2 within the Institute of Air Quality Management, Land Use Planning and Development Control: Planning for Air Quality, 2017 provides the criteria for undertaking an air quality assessment. Air quality assessments should be undertaken where there is expected to be a change in light vehicles of 100 AADT within or adjacent to an AQMA, or 500 AADT elsewhere. The air quality assessment study area will include locations where there are expected to be changes in HDV movements of 25 AADT within or adjacent to an AQMA, or 100 AADT elsewhere. Understanding the additional traffic flows helps inform judgements to determine the road networks which need to be modelled as part of the air quality assessment and the extent of the study area.

7.34 Computer based modelling of the predicted changes of traffic emissions from the Development once completed and operational within the study area will be undertaken using an approved atmospheric dispersion modelling package (ADMS Roads 4.1). The model will provide predicted annual average concentrations of NO_2, PM_{10} and $PM_{2.5}$ at receptors within the study area for the Development once completed. Specifically, the air quality assessment will be undertaken with reference to the UK Air Quality Standards and will describe the significance of the air quality changes within the Development with reference to non-statutory guidance.

7.35 Specific locations will be assessed along the modelled road network including the B2066, Boundary Road, Eastern Road, Edward Street, Grand Parade, Gloucester Place, Marina Way, A270 and any additional roads where there is expected to be an increase of AADT based on the criteria above. As a worst-case assessment, locations on junctions and roads where there is expected to be an increase in AADT will be included within the model. Only sensitive receptors in line with Local Air Quality Management Technical Guidance[16] will be assessed as part of the air quality assessment, including the Royal Sussex County Hospital, residential properties and educational facilities on the roads mentioned above.

7.36 A baseline air quality dispersion model will be developed for the study area and verified using the latest monitoring data published by BHCC for 2018. The following monitoring locations from the BHCC monitoring network are proposed to verify the air quality dispersion model:

- Monitoring Location BH6 (37.80 µg/m^3);
- Monitoring Location E18-07 (35.00 µg/m^3);
- Monitoring Location C02-09 (30.80 µg/m^3);
- Monitoring Location E17-18 (40.4 µg/m^3);
- Monitoring Location E16-96 (41.40 µg/m^3);
- Monitoring Location E07-12 (55.5 µg/m^3);
- Monitoring Location E17-03 (46.80 µg/m^3); and
- Monitoring Location E16-15 (44.80 µg/m^3).

7.37 The verification will be undertaken in accordance with guidance in Section 7 of the LAQM Technical Guidance TG(16). The baseline and assessment year of the Development once completed and operational will include traffic data for the local road network and representative local meteorological data. Additionally, the background concentrations used within the verification and assessment will be determined through an analysis of the background pollution data from the Department for Environment, Food and Rural Affairs (DEFRA) and local monitoring. The most representative background concentration will be utilised throughout the assessment.

7.38 Traffic data will be used in the assessment with emissions factors for the 2018 baseline year and anticipated completion year of the Development will be obtained from the Emissions Factor Toolkit v9 from the DEFRA website. Should additional traffic data be required, any traffic will be sourced from the Department for Transport (DfT) website.

7.39 Meteorological data to be used in the assessment will be from Shoreham Weather Station during 2018, which is considered representative of conditions at the Site. Additionally, a review of the Sussex Air Quality and Emissions Mitigation Guidance will be undertaken to determine the extent and level of mitigation required.

7.40 The methodology to review ecological designated sites will be in line with the IAQM 'A Guide to the Assessment of Air quality Impacts on Designated Nature Conservation Sites 2019'[16]. The computer model will provide predicted annual average concentrations of NOx at receptors within the study area for the Development once completed. The potential increase in emissions as a result of the Development will be quantified to determine the significance of impacts (if any). This significance will be in line with Table 7.3 above.

7.41 As requested by the EHO and stated within the Sussex Air Quality and Emissions Mitigation Guidance[17], a damage costs assessment will be undertaken to calculate the costs of emission from the Development, which will be provided separately and standalone from ES.

8 Noise and Vibration

Establishing Baseline Conditions and Study Area

8.1 The predominant noise sources in the vicinity of the Site are from vehicle traffic on the surrounding road network, notably from Roedean Road (B2066), Marine Drive (A259) and Marina Way. Additional noise sources include operational noise from the existing PRS on the Site, the electricity substation to the north of the Site and operational noise from existing businesses at Bell Tower Industrial Estate to the north west of the Site. Roedean Community Fire Station is also to the north east of the Site. There are no significant existing sources of vibration in the vicinity of the Site.

8.2 Existing noise sensitive residential receptors are located on Marina Way to the east, Boundary Road to the west and north of Roedean Road and include the Brighton Waldorf School to the north east.

Potential Effects

Likely Significant Effects

Demolition, Remediation and Construction

8.3 Noise levels from demolition, remediation and construction works will be assessed in accordance with BS 5228-1: 2009 +A1:2014 criteria, which indicates if a significant effect is likely to occur at noise sensitive receptors. The noise emissions for any plant likely to be used during the works will been obtained from Annex C of BS 5228-1: 2009 + A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1: Noise.

8.4 The assessment will be undertaken to establish the maximum external noise levels at neighbouring properties from the proposed activities within the Site and whether typical plant, along with the demolition and construction traffic and other activities will be within criteria. In order to present a worst-case assessment, the model will assume all sources will be operating together on the Site.

8.5 Vibration from potential demolition activities and construction works will be assessed in accordance with BS 5228-2: 2009 +A1:2014 fixed limit criteria.

Completed Development

8.6 Operational traffic associated with the Development once completed and operational will potentially result in significant effects on noise sensitive receptors surrounding the Site and residents within the Development. Effects are considered likely to be most significant on 'local' roads feeding into the Site, particularly where roads pass close to existing noise sensitive receptors, such as residents along Boundary Road, Roedean Road and Marina Way.

Non-Significant Effects

Completed Development – Plant

8.7 Given the separation distances between the Development and off-Site receptors, and relative ease with which process/plant noise can be controlled with conventional noise control engineering techniques, it is considered unlikely that new process or fixed plant installations within the Development will have the potential for significant effects on noise sensitive receptors within or adjacent to the Development. Furthermore, it is considered entirely appropriate that full planning control over future process/plant installations can be effectively retained through the use of planning conditions (e.g. imposition of an operative noise limit or imposing a need for details of plant and any attendant noise control to be submitted to BHCC for their approval prior to use). The baseline noise data will be used to establish appropriate noise control limits compatible with the aims of paragraph 180 of the National Planning Policy Framework (NPPF)[18]. Therefore, it is not anticipated that new process or fixed plant installations within the Development will result in significant effects on noise sensitive receptors and therefore noise from operational plant within the Development will be scoped out of the EIA.

Completed Development - Vibration

8.8 Owing to no likely significant sources of vibration within the Development once completed or near to the Site to create significant levels of vibration, vibration effects on residents within or surrounding the Development will likely not be significant and, as such, will be scoped out of the ES.

8.9 It is considered unlikely that vibration associated with traffic generated by the Development will have any significant effect on surrounding residents or buildings. This is primarily informed by the following considerations:

- the majority of additional traffic generated by the Development will be "light" vehicle movements (i.e. passenger cars and vans). Such vehicles do not generally result in significant vibration effects; and,
- higher vibration levels are generated by HGV movements. However, traffic vibration is considered unlikely for a situation where HGV traffic already exists, where additional HGV traffic generation will constitute a small percentage of additional vehicular activity and where such activity is not near to existing vibration sensitive receptors.

8.10 Guidance in the Highways Agency's 'Design Manual for Roads and Bridges' (Part 7: HD213/11 – Revision 1: Noise and Vibration) states *"If ground-borne vibration on existing routes is considered to be a potential problem, calculations or measurements of vibration at the foundations of typical buildings considered to be at high risk may be taken in order to establish whether increasing vibration levels would be likely to exceed the threshold values (see 3.5). Based on these results at a sample of dwellings, an estimate can be made of the number of buildings likely to be exposed to perceptible vibrations along the affected route. This will only apply in rare cases where, for example, traffic is expected to pass very close to buildings. The number of buildings and an estimate of peak vibration levels (PPVs) should be included in the assessment"*. There are no vibration sensitive receptors located 'very close' to the local or strategic road network. As such, the special circumstances for a vibration assessment of road traffic is not considered to be triggered.

8.11 New process and fixed plant installations of the Development could generate localised sources of vibration. Notwithstanding this, it is considered that there is a low risk of such effects occurring in practice and that any risk could be readily controlled through the use of appropriate management provisions within the lease agreements for the Development to prevent adverse impacts from one tenant on an adjoining tenant.

8.12 In light of the above, it is intended that an assessment of vibration effects of the Development once completed and operational is scoped out of the EIA.

Assessment Methodology

8.13 The assessment of noise will be undertaken to the requirements of the Government noise policy as outlined in the Noise Policy Statement for England (NPSE) and PPG – Noise (2014) and relevant British Standards. The assessment of noise effects will include the following key work stages:

- a detailed baseline noise survey will be undertaken to ascertain existing background noise levels across the Site and identify existing sources of transportation and commercial noise. This data will be processed, analysed and used to identify the constraints for the Site and mitigation that is likely to be required to ensure good acoustic conditions are achieved in line with the NPPF, BS 8233: 20141920, World Health Organisation (WHO) Guidelines[21] and other relevant polices, to avoid significant effects, where possible;
- although a number of local noise sources may have been affected by the restrictions related to COVID-19, baseline noise measurements will be undertaken following the resumption of activities at non-essential businesses. However, the assessment process will consider the joint Institute of Acoustics (IOA) and the Association of Noise Consultants (ANC) guidance note[22] with respect to combining a set of baseline measurements with other sources of data such as published DfT traffic flow data or local planning applications that have been submitted and in the public domain and library noise measurements of commercial sources (where appropriate);
- as the package of construction works is not yet finalised, details of construction activities can only be estimated; therefore a semi-quantitative assessment of construction noise and vibration activities and associated traffic will be undertaken to identify the effects of typical construction activities and suitable mitigation measures to be implemented at the Site with reference to methodologies within BS 5228+A1:2014 Parts 1 and 2;
- construction of a computational noise model of the Development (utilising CadnaA® noise modelling software), which will be verified against the results of the baseline environmental noise monitoring; existing baseline noise levels will be modelled across the existing Site configuration and the proposed layout of the Development will be used within the model to undertake an assessment of the suitability of the Site for the Development will be undertaken. Reference will be made to the guidance of BS 8233: 2014 and WHO Guidelines to determine the likely effects and if any mitigation is required to achieve the requirements of the criteria and reduce the likely effects;
- the Development will incorporate the re-design and relocation of some existing noise sources within the Site (including the existing gas PRS); the results of the baseline survey and noise modelling will be analysed to determine appropriate design targets for any noise mitigation measure, taking into account the identification of existing and future noise sensitive receptors within and neighbouring the Site. These will be agreed with BHCC through consultation; and
- an assessment of changes in road traffic noise levels as a result of traffic generated by the Development will be undertaken. The long-term change in noise levels will be assessed by comparing existing baseline traffic flows with future traffic flows for all road links identified in the Transport Assessment. The significance of any noise change will be assessed in accordance with Part 7: LA 111 Noise and Vibration of the 'Design Manual for Roads and Bridges'[23].

8.14 The ES chapter will explain the categorisations used to determine receptor sensitivity, how the magnitude of impacts will be assessed, and how the significance of effects will be defined.

9 Wind Microclimate

9.1 Due to the scale of the Development and its location within an established urban area close to the coast, it is possible that undesirable wind speeds could be generated. Therefore, the wind microclimate assessment will consider potential changes to the wind environment in terms of pedestrian amenity, considering all areas both within, and immediately surrounding the Site that the public and users of the Site would be reasonably expected to utilise. This includes, but is not limited to:

- thoroughfares;
- entrances;
- balconies and amenity spaces;
- podium/roof top terraces;
- pick-up/drop-off points;
- bus Stop/other public transport infrastructure;
- cycle lanes/roadways; and
- pedestrian crossings.

Establishing Baseline Conditions and Study Area

9.2 The baseline conditions across the Site and the immediate surroundings will be quantified as part of the assessment. The study area will include a radius of 375m from the centre of the Site, but locations will be focused on the Site and its immediate surrounding areas.

9.3 The Site currently comprises two (redundant) gas holders, low-rise buildings and associated surface-level car parking. There is limited massing with which winds could interact. Surrounding the Site is also predominantly low-rise buildings, providing little to no shielding from south-westerly or northerly winds.

9.4 For the Brighton area, the prevailing winds generally occur from a south westerly direction and are strongest in the winter. There is a secondary peak of northerly winds that occur throughout the year. During the summer season, winds are lighter.

Potential Effects

Likely Significant Effects

Completed Development

9.5 Tall buildings and certain other building forms can induce wind effects that increase local wind speeds. The primary effects that may lead to increased wind speeds include downwash, side streaming and funnelling. Due to the size and form of the Development, it is possible that these effects may lead to uncomfortable or unsafe conditions and this will be investigated in the studies proposed.

9.6 The assessment of likely significant wind effects of the Development once completed and operational will include:

- increased wind speeds on pedestrian areas within or surrounding the Development;
- a change in the pedestrian activity/comfort within or around the Development; and
- an impact on the safety and comfort of pedestrians using the Development, notably within new areas of public realm, private outdoor spaces and at building entrances.

Non-Significant Effects

Demolition, Remediation and Construction

9.7 Potential wind effects during demolition, remediation and construction works are not likely to be significant and therefore proposed to be scoped out of the assessment owing to:

- temporary and transitory conditions with wind being highly variable as existing buildings and structures are demolished and the Development is constructed;
- the wind effects will be lessened by building façades that are incomplete and therefore have greater porosity; and
- buildings will be at a lower height compared to when the Development is completed and therefore wind conditions for the completed Development can be considered the worst-case scenario.

Assessment Methodology

9.8 A pedestrian comfort wind assessment will be undertaken through a fully quantitative computational fluid dynamics (CFD) testing methodology to provide an accurate and quantifiable assessment of wind comfort conditions prevailing in the critical outdoor areas within and adjacent to the Development. For project of this scale, it is considered that a study carried out through CFD would be suitable and can provide accurate and robust assessment on wind conditions in terms of pedestrian safety and comfort.

9.9 A 1:1 scale detailed 3D model, comprising the buildings that comprise the Development and surrounding buildings, shall be modelled for the pedestrian wind comfort and safety assessment. The buildings shall be modelled with the Development located near the centre of a circular domain of 375m radius. CFD Simulations will be used to model the airflows for the external and elevated areas of the Development. The wind velocity inside and outside the Development will be evaluated.

9.10 The study will be conducted initially in the absence of any hard or soft landscaping to provide a conservative result. The results of this analysis will then be compared with the well-established Lawson Comfort Criteria to determine the suitability of the wind environment at critical outdoor areas, including criteria for sitting, standing and walking. The potential for strong winds in excesses of Beaufort Scale 6 will also be assessed.

9.11 Climatology data for the Site is not available so data will be taken from nearby meteorological stations at Shoreham Airport and Brighton City Airport and transposed for local conditions, considering the effect of changes in the upwind terrain roughness for each wind direction.

9.12 The CFD assessment will include the following scenarios:

- the Baseline; and
- the Development with existing surrounding buildings.

9.13 Should mitigation measures be required, the areas requiring mitigation can be identified through further testing, and measures can be developed so wind microclimate in all area is suitable for the intended use. The residual likely significant effects after mitigation will be provided and the assessment summarised.

Table 9.1: Table of Lawson Comfort and Safety Criteria

Activities (Comfort Category for Assessment)	Mean and Gust Equivalent Mean Wind Speed (5% exceedance)	Description
Frequent Sitting	< 2.5 m/s	Acceptable for frequent outdoor sitting use, e.g. restaurant, café.
Occasional Sitting	< 4.0 m/s	Acceptable for occasional outdoor seating, e.g. general public outdoor spaces.
Standing	< 6.0 m/s	Acceptable for entrances, bus stops, covered walkways or passageways.
Walking	< 8.0 m/s	Acceptable for external pavements, walkways.
Uncomfortable	> 8.0 m/s	Not comfortable for regular pedestrian access.
Safety Category	Threshold*	Description
Unsafe	>15 m/s	Winds above this threshold will pose safety risks, particularly for more vulnerable pedestrians (elderly, cyclists, etc.).

* Safety threshold is set for the wind speed exceeded once a year (0.022% of the time) from any wind direction.

10 Daylight, Sunlight and Overshadowing

Establishing Baseline Conditions and Study Area

10.1 The Site currently retains two existing (redundant) gas holders, which are both currently collapsed to their lowest height save for the remaining gas holder frame, in the north east of the Site. The remainder of the Site is currently covered in hardstanding/bare ground, with some areas of scrub and emerging vegetation, and a warehouse and yard, vehicle service centre and a large open vehicle storage yard/car park. As a result, the Site currently receives virtually all the sunlight and daylight that is available and therefore very little existing overshadowing occurs. There is no existing residential accommodation on the Site.

10.2 The existing buildings surrounding the Site are low rise in nature, with one medium rise development (Marine Gate) located to the south east. There is a mixture of residential, commercial and industrial uses surrounding the Site. Residential properties and open space close to the Site that could potentially be affected by the Development include residential units located along Boundary Road (adjacent to the west and south west), Marina Way (adjacent to the east), B2066 (adjacent to the north), and the Marine Gate development (adjacent to the south east).

Potential Effects

Likely Significant Effects

Completed Development

10.3 The Development will introduce new buildings onto the Site of various heights and massing, that could range between ground plus 3 and ground plus 16 storey in height. These new buildings will have the potential to affect levels of daylight and sunlight to existing surrounding buildings, as well as overshadowing to amenity spaces. As such, the likely significant effects to be considered are the potential loss of daylight and sunlight to the surrounding residential buildings, and potential overshadowing of amenity areas.

Non-Significant Effects

Demolition, Remediation and Construction

10.4 The effects of demolition and remediation within the Site and construction-related works such as the presence of tower cranes and construction activity would not have long-term daylight, sunlight or overshadowing effects on sensitive receptors and therefore will not be assessed within the ES. Effects would only be temporary and short term and as such are unlikely to be significant.

10.5 In addition, potential effects on daylight, sunlight or overshadowing during construction of the buildings that form the Development would gradually transition from the existing Site conditions to those of the completed Development and therefore would not be specific to construction. As such, construction effects would be scoped out of the ES.

Completed Development

10.6 The levels of daylight and sunlight experienced by new residents would be carefully considered as part of the design process for the Development, as would the overshadowing of proposed amenity spaces. Commentary on the alternative designs and influence of initial daylight and sunlight analysis would be included in the ES. However, the analysis of the levels of daylight, sunlight and overshadowing within the Development (internal) will not be included in the ES but will be presented as a stand-alone Internal Daylight, Sunlight and Overshadowing report which will accompany the planning application(s).

Assessment Methodology

10.7 Desk top analysis, using mapping and online resources, will be undertaken in accordance with scoping guidance provided in the BRE Guidelines[24] to identify the existing sensitive receptors which need to be considered by the assessment. The baseline levels of daylight, sunlight and overshadowing to the relevant existing surrounding receptors will be quantified to inform the design and to allow the likely effects of the Development to be measured against that baseline.

10.8 Daylight and sunlight amenity tests will be carried out in accordance with the BRE Guidelines to assist in the consideration of the relationship of new and existing buildings.

10.9 The criteria for protecting daylight and sunlight to existing buildings are contained in the BRE Guidelines where it sets out various methods for measuring and assessing daylight and sunlight. The BRE Guidelines suggest that all windows and rooms within habitable dwellings should be assessed. The BRE Guidelines place particular emphasis on daylight and sunlight availability to main habitable spaces which include living rooms and kitchens, with a lower emphasis on bedrooms. The BRE Guidelines state that circulation spaces and bathrooms need not be tested as they are not considered to require good levels of daylight. In addition, for rooms with more than one window, secondary windows do not require assessment if it is established that the room is already sufficiently lit through the main principal window. However, it is often sensible to consider secondary windows which will contribute to the distribution of light within the space.

10.10 The assessment undertaken by the consultant will establish the usage of each of the properties surrounding the Site to ascertain whether the neighbouring properties require assessment in accordance with the methodology explained above.

10.11 A 3D computer model will be constructed of the baseline and Development scenario, which will be based on land survey information, floor plans for the relevant existing surrounding properties (where publicly available) and the architect's 3D model and 2D drawings of the Development. Where plans of the neighbouring buildings are not available the internal layouts will be based on reasoned assumptions.

10.12 Cumulative schemes which are under construction or have received planning permission are set out in Section 13 and Appendix A. The cumulative schemes identified are considered too far removed from the Site to interact with the daylight and sunlight availability to the neighbouring properties and therefore no assessment of a cumulative scenario will be undertaken.

10.13 Using computer analysis, the levels of daylight, sunlight and overshadowing to the existing surrounding residential buildings and amenity spaces will be quantified using the following tests recommended in the BRE Guidelines:

- vertical sky component (VSC) at the centre point of windows;
- no-sky line/daylight distribution inside the rooms;
- percentage of annual probable sunlight hours (APSH) achieved on both an annual and winter basis at the centre point of windows that face within 90 degrees of due south; and
- two-hours sun-on-ground contour for main back gardens and amenity spaces.

10.14 The assessment will be carried out in both the baseline and Development scenario, so the magnitude of impact can be quantified, and the significance of effect can be assessed.

11 Ground Conditions and Contamination

11.1 This section considers the potential effects the Development in relation to ground conditions and contamination. In accordance with best practice the following aspects have been considered:

- physical effects of the Development e.g. changes in soil compaction, soil erosion, ground stability etc;
- effects on mineral resources: e.g. mineral resource sterilisation, loss or damage to Local Geological Sites (formerly known as Regionally Important Geological Sites (RIGS)), geological SSSI etc;
- effects on soil as a valuable resource: e.g. loss or damage to soil of good agricultural quality;
- effects associated with ground contamination that may already exist on Site: e.g. introducing/changing pathways and receptors;
- effects associated with the potential for polluting substance used (during construction/ operation) to cause new ground contamination issues on Site e.g. introducing/changing the source of contamination and/or pathways; and
- effects associated with re-use of soils and generation of waste soils: e.g. re-use of Site-sourced materials on or off the Site, disposal of Site sourced materials off the Site, importation of materials to the Site etc.

Establishing Baseline Conditions and Study Area

11.2 The Site currently retains two existing (redundant) gas holders, which are both currently collapsed to their lowest height save for the remaining gasholder frame, in the north east of the Site. The remainder of the Site comprises a warehouse and yard, vehicle service centre and a large open vehicle storage yard/car park, together with areas of hardstanding/bare ground.

11.3 A review of historical land quality reports for the Site has been undertaken which has enabled a robust conceptual model and evaluation of land condition risks and constraints for the Site to be developed. The previous reports include exploratory boreholes, trial pits and remedial excavation information as well as soil, soil leachability and groundwater sampling data from multiple phases of investigation dating between 1993 and 2019.

11.4 The majority of exploratory holes (57 of 69) progressed outside of the known gas holder footprints indicate an average Made Ground thickness of approximately 1m, although deeper thicknesses of Made Ground is present at the southern boundary and at the position of infilled relict gas works structures. The Made Ground across the Site, excluding the material in the former gas holders', was not described as stained or odorous, but does include slag, ash, clinker, metal fragments and/or coke chips. A number of exploratory holes refused on buried concrete and it is likely that relict gas works structures, foundation and pipes would be uncovered during more extensive earthwork excavations.

11.5 The bedrock comprises the Newhaven Chalk Formation, which was encountered at depths of between 0.3 and 4.7m below ground level (bgl) and was proven in previous investigations to a depth of 32.5m bgl. The stratum comprised orange to off-white coloured, weak to moderately weak, weathered chalk at shallow depth, with occasional flint overlying moderately strong, blocky chalk, with flint cobbles at depth.

11.6 The historical investigations found odours and staining in Chalk fractures in the deep boreholes, predominantly in the south of the Site and at depths between 15 m and 20 m bgl. This contamination appears to have originated from tarry contaminated material used to infill gas holders 1 to 3 in the south-west corner of the Site. Gas holder details are presented below:

- Gas holders 1 to 3 (south-west corner): excavated to between 6.5m and 8m below the pre-existing ground surface in 2004. Infill is indicated to be imported roadstone material. The bases and side walls remain;
- Gas holder No.4 (beneath PRS compound on SGN land): Made Ground thickness approximately 6.5m underlain by Chalk. No free phase tarry material identified in the fill;
- Gas holders 5 and 7 remain and likely to be water-filled; and
- Gas holder No.6 (SGN leased compound north-west corner): likely concrete base at 10.2m bgl.

11.7 The soils from the multiple phases of investigation have been compared to up-to-date generic assessment criteria (GAC) for a residential with open space use. A total of 417 samples from across the Site were screened and the parameters exceeding the GAC are limited to benzo(a)pyrene (13 samples), lead (14 samples) and asbestos (19 samples). The soil quality information shows that the area where the most elevated chemical concentrations was detected was the fill material in gas holders 1 to 3 in the south-west corner.

11.8 The Chalk is a Principal Aquifer and groundwater monitoring has measured the groundwater level to be approximately 20.5m to 22.5m bgl. The inferred groundwater flow is to the south and towards the English Channel. The groundwater is likely to be saline given the proximity to the coast and the Site is not within a groundwater source protection zone for a potable water supply.

11.9 The most recent groundwater sampling round at the Site was undertaken in 2019, which followed eleven previous phases of groundwater sampling dating back to 2001. The 2019 results indicated concentrations of ammonium, sulphate, complex cyanide, iron, naphthalene and benzene exceeded UK drinking water standards and ammonium, chromium, zinc, aromatic hydrocarbons C5 to C7, C10 to C12, naphthalene and benzene exceeded Environmental Quality Standards for coastal waters in three or more samples. The 2019 results are within the within the range of the historical dataset and similar to those from 2016 and 2017. It was acknowledged that residual hydrocarbon and ammonia concentrations existed in the Chalk and the fluctuating concentrations recorded may be attributable to seasonal groundwater level variations. The results supported the continued approach that betterment of groundwater quality by natural attenuation was occurring.

11.10 Atkins previous correspondence with the Environment Agency (dated 28 November 2018) confirms their agreement that, based on the available monitoring information and the commercial land use, that no further monitoring was required, no further remediation was required, and the monitoring wells should be decommissioned. The Environment Agency close their correspondence indicating there may be a requirement for further investigation, monitoring and assessment if redevelopment is proposed.

11.11 During WWII, the Site and surrounding area was subject to bombing. The Archaeological Desk Based Assessment (Appendix E) indicates that the Site was recorded as being bomb damaged in August 1942, and possibly also in 1944.

11.12 The Site is not within a mineral safeguard zone. However, the Brighton to Newhaven Cliffs, located 50m south, are a SSSI, the main interest being geological.

Potential Effects

Likely Significant Effects and Non-Significant Effects

11.13 Table 11.1 outlines potential effects and the topics to be included within the assessment and those scoped out.

Table 11.1: Ground Conditions and Contamination

Effect	Description	Discussion
Physical Effects	Physical effects of the Development e.g. changes in soil compaction, soil erosion, ground stability etc.	The Development has the potential to cause physical effect as such this will be assessed within the assessment.
Mineral Resources	Effects on mineral resources: e.g. mineral resource sterilisation, loss or damage to Local Geological Sites (formerly known as Regionally Important Geological Sites (RIGS)), geological Sites of Special Scientific Interest (SSSIs) etc.	No mineral resources or local geological sites or SSSI are noted within the Site. However, the Brighton to Newhaven Cliffs located 50m south of the Site are a SSSI. The Development will not affect the stability of the cliffs or the visual landscape. Furthermore, significant existing development has occurred immediately adjacent to the cliffs at Brighton Marina. Effects on mineral resource or sites of geological significance have been scoped out and will not be assessed further.
Agricultural Resource	Effects on soil as a valuable resource: e.g. loss or damage to soil of good agricultural quality.	The Site has legacy gas works use and is currently used for commercial purposes. The Site does not have the potential to be used as agricultural land, therefore, the effects on agricultural land has been scoped out and will not be assessed further.
Ground Contamination	Effects associated with ground contamination that may already exist on site: e.g. introducing/changing pathways and receptors.	Potential effects to human health and groundwater from ground contamination have been identified based on the legacy site use. This will be assessed within the EIA.
Polluting Substances	Effects associated with the potential for polluting substance used (during construction/ operation) to cause new ground contamination issues on site: e.g. introducing/changing the source of contamination and/or pathways.	The Development has the potential to introduce new sources of contamination associated with the accidental loss/spillage of fuels and oils. This will be assessed within the EIA.
Soils Re-Use and Waste	Effects associated with re-use of soils and generation of waste soils: e.g. re-use of site-sourced materials on- or off-site, disposal of site-sourced materials off-site, importation of materials to the site etc.	The Development intends to re-use soils within the Site and has the potential to create waste depending on the remediation strategy. This will be assessed within the ground conditions assessment but not as a standalone waste chapter.

11.14 Although a remediation strategy is yet to be confirmed, it is likely that the Site will require some reprofiling and the excavation and removal of buried relict gas works structures and foundations. This will generate soil material that can be reused to infill the two deep existing gas holder voids. Excavated material found to be contaminated can likely be pre-treated on the Site to stabilise and reduce leachability before deposition and capping within the gas holders. A number of studies and regulatory approval are required to support this approach, which has been successfully adopted on many gas works' regeneration schemes. This remediation methodology therefore means that significant soil waste would not be removed from the Site but predominantly retained as engineering fill. The resulting Site surface would be capped with buildings, paving and constructed landscaping. Groundwater sampling indicates that natural attenuation remediation approach will likely be the most appropriate option.

11.15 Based on the findings of historical and recent Site investigation and the location of the Site, it is considered appropriate to scope out the need for a Water Framework Directive (WFD) assessment given that:

- the groundwater at the Site has been sampled on many occasions and therefore the groundwater chemistry and hydraulic conditions are known to a high level of certainty. The potential for the ground conditions to impact controlled waters will be assessed by performing a detailed quantitative risk assessment that will inform the remediation strategy;
- the Site is located at an elevation of >20m AOD and is not in a flood risk zone; and
- the nearest surface water to the Site is the English Channel, which is located approximately 250m south-south east of the site.

Assessment Methodology

11.16 The baseline conditions are already well established and understood to a high degree of certainty based on the available historical information. Therefore, an Environmental Review document will be produced to collate the existing information, evaluate potential contaminant linkages and to construct a conceptual model. The detailed Environmental Review will be used to inform the assessment of the likely significant effects on people and the environment during the demolition, remediation and construction works and will be undertaken qualitatively and accordance with best practice and guidance.

11.17 A supplementary Site investigation is also proposed to collect up to date ground conditions information and geotechnical information for civil engineering design. The Environmental Review and supplementary Site investigation findings will inform the Site remediation strategy, environmental protection and waste management measures during remediation and determine whether a controlled water detailed quantitative risk assessment is required. The supplementary Site investigation will not inform the EIA, however, as stated above baseline conditions are well established and is deemed sufficiently up-to-date and comprehensive to allow a robust assessment of the likely significant effects of the Development to be undertaken.

11.18 The EIA will assess the potential impacts of the Development on ground conditions and contamination over two stages as detailed in Appendix C.

12 Townscape, Landscape, Heritage and Visual Impact Assessment

Establishing Baseline Conditions and Study Area

12.1 The townscape surrounding the Site is varied in scale, age, and urban and architectural quality. It is characterised predominantly by two-three storey 19th century terraced housing and low rise light-industrial sheds to the west of the Site. To the immediate north, is a two-storey pitch roofed courtyard development set down on lower levels. Further north is a mix of 19th and 20th century terraced, semi-detached, and flatted residential development. The three-storey Brighton Waldorf School is directly to the north west of the Site. There are two higher rise residential blocks of around eight storeys in height flanking the Site to the south east and south west along the sea front.

12.2 To the south of the Site lies Brighton Marina located beneath the sea cliffs. It comprises a substantial ASDA car park and multi storey car park, together with the marina village with commercial, leisure, supermarket and residential accommodation. The latter takes the form of three and four storey apartment blocks.

12.3 Vehicular infrastructure dominates the periphery of the Site to the east and the south, where Marina Way drops in levels to form an underpass beneath the A259 coastal road (Marine Drive), providing access to Brighton Marina. To the north east, the South Downs National Park provides a green backdrop to the Site.

12.4 The vacant Black Rock site, Brighton beach and the Kemp Town esplanade and slopes are located to the south west of the Site, forming the base to the Regency set piece of Arundel Terrace, Chichester Terrace, Lewes Crescent and Sussex Square. These groups of Grade I listed terraced houses forming a crescent and square are largely four storeys in height and enclose the Kemp Town Enclosures, a Grade II listed registered historic park and garden.

12.5 The Site falls within the East Brighton neighbourhood according to the Brighton and Hove Characterisation Study[25] (2009), specifically within the 'Bristol Gardens' Character Area. It also adjoins the Black Rock neighbourhood to the south and east.

12.6 The Site is not within a conservation area, however the eastern most boundary of Kemp Town Conservation Area is less than 100m to the west of the Site. The East Cliff Conservation Area is located further to the west of the Site, as shown on the map at Appendix D. The character and appearance of these conservation areas will be assessed, owing to potential changes to their setting.

12.7 The following Grade I and II listed buildings and non-designated heritage assets are located within the vicinity of the Site which will be relevant to the assessment, with their location in relation to the Site shown in the map at Appendix D.

Groups of Listed Buildings and Structures:

i. Lewes Crescent, Sussex Square, Arundel and Chichester Terraces (Grade I);

ii. Kemp Town Place (Grade II)

iii. Arundel Place (Grade II); and

iv. The Esplanade (Grade II).

Listed Buildings:

v. Madeira Terrace, Madeira Walk, Lift Tower and related buildings (Grade II*);

vi. The Palace Pier (Grade II*);

vii. Church of St Mark;

viii. St Mary's School Hall (Grade II);

ix. 9, Bristol Gardens (Grade II);

x. Secret Gardens; boundary stone (Grade II);

xi. French Convalescent Home (Grade II);

xii. Roedean School (Grade II);

xiii. St Dunstan's (Grade II).

Non-Designated Heritage Assets:

xiv. Marine Gate, Marine Drive; and

xv. Nos.40 and 40a White Lodge.

12.8 The Kemp Town Enclosures are designated as a Grade II registered historic park and garden and will be assessed accordingly.

12.9 The Site is located within proximity to the South Downs National Park; its location is shown in Figure 2.2.

Potential Effects

Likely Significant Effects

Demolition and Remediation

12.10 Demolition and remediation effects are temporary and short-term and will be associated with removing the structures and buildings on the Site. This would typically be adverse in terms of townscape, landscape and visual receptors and potentially harmful to the setting of heritage receptors, as there will be the visible use of heavy machinery. The demolition and remediation effects will vary according to their temporary nature and some operations may have more perceptible effects than others. The assessments will be based on a worst-case scenario when demolition and remediation activities are at their peak.

Construction

12.11 Construction effects are likely to vary according to their temporary nature and some operations may have more perceptible effects than others. The assessments in the Townscape, Landscape, Heritage and Visual Impact Assessment (TLHVIA) of the ES will be based on a worst-case scenario when construction activities are at their peak. The effects are likely to vary according to the distance between the receptors and the Site, with those receptors located closer to the Site more exposed to a higher visibility of machinery and infrastructure (e.g. scaffolding around the lower buildings under construction) and likely to experience a larger effect than those located at greater distance. The assessment will be organised according to

receptors located at close, medium and long distances from the Site. The effects will be applicable to townscape and visual receptors.

Completed Development

12.12 Heritage effects will depend principally on the level of visibility of the Development from within the setting of receptors, including conservation areas, listed buildings, registered parks and gardens and the South Downs National Park, as set out above. It is expected that, owing to their location and potential height, the taller elements of the Development will be visible from the setting of, or in conjunction with, a wide range of heritage receptors. The most sensitive of these receptors is expected to be the groups of Grade I listed buildings: Lewes Crescent, Sussex Square, Chichester and Arundel Terraces; the Grade II listed French Convalescent Home; and the National Park.

12.13 The Development will bring about change in the character, massing and height of the Site, which will be transformed into a high density mixed use development. It is therefore expected that the Development will have effects, on the surrounding townscape, landscape, heritage and visual receptors. These effects will be analysed in full in the TLHVIA.

Assessment Methodology

12.14 The TLHVIA will be undertaken by Citydesigner with reference to relevant policy and guidance relating to the ES, design, tall buildings, townscape and heritage at a national, regional and local level.

12.15 The potential visual impacts of the Development from specific viewpoints within the South Downs National Park will be assessed in accordance with the South Downs Integrated Character Assessment[26] (2011) and the South Downs National Park View Characterisation and Analysis[27] (2015), including the potential impact of lighting in night-time and long distance views.

12.16 The potential visual impacts of the Development from local views will be assessed in accordance with the requirements set out in BHCC SPG 15 - Tall Buildings[28] (2004).

12.17 The TLHVIA will be produced as a volume of the ES (Volume II). The assessment will consider the potential impacts and likely significant effects of the Development on the built heritage (above ground) and the townscape and landscape character of the Site and surrounding area, and the visual amenity of people experiencing views from representative viewpoints. Archaeology will not form part of the TLHVIA and is considered separately in Appendix E.

Approach to Assessments

12.18 The assessment will consider the likely effects on close, medium and long distance views across Brighton, along the coast and from the South Downs National Park, as well as effects on the character, appearance and setting of conservation areas and the setting and significance of listed buildings and registered parks and gardens. The assessment of these effects will be undertaken using Accurate Visual Representations (AVRs) of the Development produced by visualisation specialists Miller Hare. The AVRs will be either verified 'wireline' or photo-realistically 'rendered' views (see Appendix D), depicting the Development on a surveyed photograph of the existing situation. The NPPF (February 2019)[18] provides guidance on development affecting such assets. This guidance is also supported in regional and local planning policy. The design and visual relationships of the Development in relation to the settings of nearby listed buildings and relevant conservation areas will, therefore, need to be considered by reference to the tests set out in the NPPF.

12.19 The evolving assessment will be used during the design process to assist the architects in the progress of their designs in order to mitigate, where possible, any potential adverse effects that may arise from Development.

Spatial Scope

12.20 The spatial scope of the assessment will be defined on the basis of visibility of the Development from viewpoints in the surrounding area. The set of viewpoints to be agreed with BHCC will cover a range of points of the compass from which the Development will be visible, a range of distances from the Site and different types of townscape areas.

12.21 Citydesigner has considered the use of Zone of Visual Influence (ZVI) and Zone of Theoretical Visibility (ZTV) studies to inform the visual impact assessment but concluded that AVRs would provide greater accuracy and more detail with which to determine the likely effects of the Development within the existing visual context. ZVI approaches to identifying viewpoints can be less effective in urban townscape and areas with tree coverage and so need to be used critically and in combination with other methods. This is because ZVI modelling tools do not include accuracy in regard to trees and are often not accurate in relation to built structures, as acknowledged in the GLVIA and Historic England's 'The Setting of Heritage Assets'[29] (2nd Edition, 2017). It may however be relevant in relation to the South Downs National Park.

12.22 A series of viewpoints have been chosen to illustrate the maximum visual conjunction between the Development and the townscape, including heritage assets. The views are taken from and within various environments, some urban and others rural, and include long distance panoramas and up close views. They do not include every position from which the Development will be visible, but are representative views showing the most likely significant effects. Some viewpoints selected have been informed by relevant planning policy and guidance.

12.23 The precise balance of 'wireline' and 'rendered' AVRs to be assessed in the TLHVIA will need to be finalised in discussion with BHCC's planning officers, once each view has been fully surveyed and the level of visibility of the Development is confirmed in each case. 'Rendered' AVRs are generally preferred, unless the distance between the viewpoint and the Site is too large to allow for details to be clearly read. There will be at least two night -time views to be assessed. It is suggested that one should be from the South Downs National Park and one should be from the Palace Pier. This will be subject to consultation with BHCC's planning officers.

12.24 The location of each viewpoint, conservation area and the South Downs National Park in relation to the Site is shown in Appendix D.

Effect Prediction and Assessment of Effect Significance

12.25 The methodology used to undertake the assessment will be based on the best practice set out in the relevant policy and guidance, including the GLVIA[30] (3rd Edition). An assessment of the likely significant effects of the Development on townscape and visual receptors will be made on the basis of quantitative and qualitative information collated as part of the assessment. It includes:

- identification and description of townscape character areas, including consideration of their sensitivity. Reference will be made to any assessments carried out by the local authority, including appraisals and management guidelines for conservation areas etc.;
- consideration of the design of the Development in detail, including its performance in terms of mitigation and enhancement;

- assessment of the effects of Development during demolition and remediation, construction and operation phases, by way of considering: the sensitivity of the receptor, which will be assessed as high, medium or low, depending on the importance, value and quality of the receptor, and the visual amenity of the viewer; and the magnitude of the change resulting from the Development, which will be assessed as large, medium or small depending on the change to the townscape or view. These two measures are combined to provide a measure of the significance of the effect on a receptor, whether major, moderate, minor or negligible. The qualitative nature of the effect, on balance, is then assessed as beneficial, adverse, or neutral or balanced;
- where cumulative schemes e.g. consented developments as yet unbuilt, in the wider area would be visible in combination with the Development to a significant extent, a cumulative assessment of visual effects will be undertaken; and
- there are two ways in which Development can affect the significance of heritage assets: a) by direct changes to the fabric of heritage assets; and b) by changes to the setting of designated heritage assets located in the vicinity of the Site. Only the latter will occur in this case. The effects on the significance of the setting of designated heritage assets can range between enhancement and harm and are rated according to the following criteria, where the Development can:
    - ‘Better reveal its significance’ or ‘enhance its significance’;
    - cause no change to the significance of the heritage asset, hence ‘no effect on its significance’;
    - cause ‘less than substantial harm’ to the significance of the heritage asset; or
    - cause ‘substantial harm’ or ‘loss of significance’ to the heritage asset (not applicable).

12.26 With the exception of ‘no effect’, all the above are considered significant effects in terms of EIA.

12.27 Non-designated heritage assets include built heritage of some historical, architectural or townscape value, though not of sufficient interest to merit designation as a statutory listed building or a conservation area. The effects on these are assessed following the same approach described above for designated heritage assets.

13 Cumulative Effects

13.1 The EIA Regulations specify the information to be included in an ES (Schedule 4) and require that in assessing the effects of a particular development, consideration should be given to cumulative effects. Potential cumulative effects can be categorised into two types:

- **combined effects -** occur when two or more different environmental effects from the Development (e.g. dust, noise, traffic) act together to produce a different level of effect/ impact experienced by a particular receptor. These combined effects (or 'Intra-Project') can be additive or synergistic such that the sum of the impacts can be less or more than the individual impacts (i.e. because they may exacerbate or neutralise one another); and
- **cumulative effects -** are those that accrue over time and space from a number of different development activities and projects in geographical proximity to one another, which individually might be insignificant, but when considered together, could create a significant cumulative effect (also referred to as 'Interproject' effects).

13.2 The cumulative assessment is important to ensure that the combined effects of other schemes with the Development are understood appropriately for decision making. The cumulative effects of the Development and cumulative schemes in the local area will be considered on a topic-by-topic basis with the cumulative assessment methodologies and the cumulative effects reported in a subsection of each ES chapter, along with mitigation measures where necessary. Combined effects will be considered in a separate chapter titled 'Effect Interactions'.

13.3 A set of screening criteria has been developed to identify which cumulative schemes in the area should be subject to assessment, as follows:

- expected to be built-out at the same time as the Development and with a defined planning and construction programme;
- spatially linked to the Development (within 3km of the Site);
- considered an EIA development and for which an ES has been submitted with the planning application;
- those which have received planning consent from the planning authority (granted or resolution to grant) and for robustness and best practice, consideration has also been given to schemes that are reasonable foreseeable (currently being determined); and/or,
- introduces sensitive receptors near to the Site (but are not EIA development).

13.4 A planning search was undertaken considering the above criteria and the cumulative schemes identified are outlined within Appendix A.

14 Non-Significant Topics

Introduction

14.1 As stated within the EIA Regulations, an ES is required to identify only the 'likely significant environmental effects' of a development. The rationale for this scoping exercise has been guided by the current PPG, which highlights the expectation that the ES should focus on the 'main' or 'significant' environmental effects only. The PPG states:

"Whilst every Environmental Statement should provide a full factual description of the development, the emphasis should be on the "main" or "significant" environmental effects to which a development is likely to give rise. The Environmental Statement should be proportionate and not be any longer than is necessary to assess properly those effects. Where, for example, only one environmental factor is likely to be significantly affected, the assessment should focus on that issue only. Impacts which have little or no significance for the particular development in question will need only very brief treatment to indicate that their possible relevance has been considered".

14.2 For the following topics, 'significant' effects are unlikely to arise from the Development. These topics will therefore not be assessed in the ES. Non-significant effects have also been identified within previous topics sections where relevant.

Archaeology

14.3 To inform the archaeological potential of the Site, an archaeological desk-based assessment has been prepared by RPS (Appendix E) in line with the NPPF and local planning policies. This establishes the significance and value of known buried heritage assets and the potential for the presence of unknown buried heritage assets.

14.4 No Scheduled Monuments, World Heritage Sites, Historic Battlefield or Historic Wreck sites have been identified on or within the vicinity of the Site. In addition, there are no listed buildings within the Site. The nearest above ground designated heritage assets are the Grade II listed French Convalescent Home and Attached Wall and Railings and the Boundary Stone on the Corner with Roedean Road, situated 50m and 75m to the south west and north west respectively (see Appendix E). The Development therefore does not include the demolition of any structures that are designated. As such, there would be no direct effects of the Development on above ground designated heritage assets and is proposed to be scoped out. The likely effects of the Development on the setting of heritage assets will be considered in the THVIA (see Section 12).

14.5 With respect to potential archaeological assets, the Site is not located within any Archaeological Notification Area. The available information indicates a low to moderate archaeological potential for the prehistoric, Roman, Post Medieval and Modern periods, which on the basis of the available information is considered likely to be of a generally low significance. Past post-depositional impacts within the Site are considered likely to have had a severe, negative archaeological impact.

14.6 It is considered that given the archaeological potential for the prehistoric, Roman, Post Medieval and Modern periods is considered of low significance and the negative impact of past development on the Site over the 19th and 20th centuries, the Development would be unlikely to have either a significant or widespread archaeological impact on below ground assets and it is therefore proposed that archaeology should be scoped out of the EIA and ES.

Biodiversity

14.7 An Ecological Assessment, dated June 2020, has been prepared by Ecology Solutions (Appendix G). A desk-based study was undertaken to gather baseline ecological data for the Site and surrounding study area to inform the Ecological Assessment. An ecologist has also visited the Site in May 2020 to establish the main habitats on the Site and potential for fauna.

14.8 The majority of the habitats present within the Site are of limited intrinsic nature conservation value, including the buildings, hardstanding, amenity grassland, disturbed ground and tall ruderal. The areas of scrub are of some ecological interest in the context of the Site for the foraging and nest-building opportunities they offer faunal species, as opposed to any significant intrinsic ecological value. Two buildings on the Site, as shown in Appendix G, have low potential to support roosting bats. Further bat surveys of these two buildings will be carried out to confirm the likely absence of any bat roosts.

14.9 The Site offers some opportunities for nesting and foraging birds in the form of scrub, the roofs or suitable buildings and the gas storage tank guide frame. Any potential for conflict with bird nesting during the demolition, remediation and construction works can be avoided by the removal of habitat outside of the bird nesting period (nesting season is typically between March to July inclusive) where possible. Where this cannot be achieved, a check survey for nesting birds should be undertaken by an ecologist immediately prior to clearance, with any confirmed nests left in situ.

14.10 No significant potential effects upon biodiversity within the Site have been identified in the Ecological Assessment. Any potential effects would be avoided or reduced by adherence to legislation and good practice measures during the demolition, remediation and construction works and incorporation of design measures (to be informed by ecological input into the design for the Development, such as lighting orientation, bird boxes and/or habitat creation). Biodiversity enhancement of the Site could also be achieved through landscape planting. Therefore it is proposed that biodiversity is scoped out of the EIA.

14.11 The Site is located in the Brighton and Lewes Biosphere Reserve and falls within the Impact Risk Zone of the Brighton to Newhaven Cliffs SSSI. The Site is not subject to any statutory or non-statutory ecological designations. There are four statutory designated sites within 2km of the Site. Brighton to Newhaven Cliffs SSSI is located approximately 50m south east, Beachy Head West Marine Conservation Zone is 400m to the south and Whitehawk/Race Hill LNR is approximately 480m to the north west. There are ten non-statutory sites of nature conservation importance within a 2km radius of the Site, the closest of which is Sheepcote Valley LWS, situated approximately 100m to the north east. Standard mitigation measures would be implemented during the demolition, remediation and construction works with regard to pollution control and dust that would prevent potential effects on statutory and/or non-statutory ecological designations and therefore it is proposed that this is scoped out of the EIA.

14.12 As set out in Section 7, based on the IAQM 'A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Site, 2019' ecological designations within 2km of the Site and within 200m of the road network will be included within the air quality assessment for operational traffic.

14.13 Should the air quality modelling identify potential effects that are of likely significance from traffic emissions on these ecological designations, then an assessment of traffic emissions on ecological designations will be included in the ES. Similarly, should bat roosts be identified through further surveys, this will be considered in the ES. However, should potential effects not be considered significant following the air quality assessment and no bat roost found, biodiversity will be entirely scoped out of the ES for the reasons above.

Water Resources, Flood Risk and Surface Water Drainage

14.14 There are no fluvial or surface watercourses in the vicinity of the Site. The south coast and English Channel is located approximately 250m to the south of the Site. The Environment Agency's flood risk map locates the whole of the Site within Flood Zone 1. This means that there is a 0.1% (1 in 1000) probability of annual flooding at the Site. Environment Agency maps indicate the majority of the Site is at very low or low risk of surface water flooding. A small parcel in the south west corner of the Site is at a high risk. The Site is also at a low risk of reservoir flooding.

14.15 The Site is currently largely covered in hardstanding. The impermeable area of the Site will not increase significantly following the Development and therefore there will be no increase in flood risk arising from the discharge of surface water drainage from the Site. Surface water runoff will be attenuated using underground attenuate crates and permeable paving. The proposed surface water drainage strategy is to discharge to the public sewer; it is not intended to use infiltration as a drainage solution. Therefore flood risk and the effects on water quality from the completed and occupied Development would be reduced.

14.16 The completed Development will lead to an increased demand for potable water and foul water discharge as a consequence of the residential and employees on the Site, although this is not considered to be significant. In accordance with the Brighton & Hove City Plan, water efficiency measures will be incorporated within the Development, which may include such features as rainwater harvesting, reduced flow taps, smaller cistern sizes and the use of rainwater or grey water for toilets.

14.17 A surface water drainage strategy will form part of the planning application and will set out how the Development will reduce the risk of flooding and restrict all outflows to an acceptable rate of runoff. Consultation with Southern Water will be carried out to know if the capacity of the existing sewers are adequate and what upgrading works are required, if any. These measures would ensure the Development results in no significant effects on flood risk, local watercourses and road or sewer networks.

14.18 In conclusion, the Development is not expected to have a significant effect on local water resources, flood risk or drainage and therefore is intended to be scoped out of the EIA. A Flood Risk Assessment and drainage strategy will be submitted as a standalone document as part of the planning application and will give further consideration to flood risk and drainage. This will outline the drainage control measures incorporated in the Development.

Human Health

14.19 In line with the 2017 EIA regulations, the impacts of human health and wellbeing have been considered in this Scoping Report. The 2017 EIA Regulations require the consideration of the potential effects on human and population health where significant effects are likely to occur. The assessment should be proportionate to the project being considered.

14.20 Where people live and work could have indirect impacts on their personal state of wellbeing. Therefore, new developments could potentially have a beneficial or adverse effect on health, particularly in areas of existing poor health conditions. Poor health outcomes could arise from, for example, construction impacts such as dust or pollution from construction traffic. Poor design and access in end uses could also have effects on health outcomes. However, through appropriate mitigation and design, these effects can be managed and potentially give rise to either neutral or indirect beneficial effects on human health.

14.21 At the system level, greater access to adequate housing and employment may be positively correlated with good health, but these effects will be uncertain and not measurable at the level of an individual site. The incidence of any such health effects will be widely dispersed through marginal changes to the wider housing and employment markets, and so the effect is not significant at any level.

14.22 Despite the indirect links that have been identified between new development and health and wellbeing, the potential effects of a new development on the health and well-being of new and existing residents and workers would be largely determined by the way the development's buildings and spaces are used (rather than constructed) and by lifestyle factors which cannot be accurately quantified or controlled at the planning stage.

14.23 New development cannot enforce how people ultimately use a development. These 'lifestyle factors' cannot be accurately quantified or controlled and are therefore considered to sit outside the role and scope of planning and EIA.

14.24 Appendix F establishes the existing health baseline profile for Brighton and Hove, and the Local Area (where data is available) and indicates that the district has a slightly lower level of good health compared to the region and nation as a whole; although physical activity among adults in Brighton and Hove is higher than the regional and national averages and obesity among both adults and children is lower.

14.25 The following assessments within the EIA will consider the Development's indirect or secondary impacts which could have an effect on health and well-being:

- transport;
- air quality and odour;
- noise and vibration;
- daylight, sunlight and overshadowing; and
- wind; and
- socio-economics.

14.26 Specifically, the socio-economic chapter will consider elements such as housing, employment creation, access to health and education facilities and access to open space and play space. These areas are those which can have the most significant direct socio-economic effects on health arising from a Development.

14.27 Furthermore, the Applicant would implement appropriate environmental management controls to manage the construction of the Development addressing issues related to health and wellbeing, including public safety, noise and vibration controls, and air, dust and odour management.

14.28 The indirect health and well-being effects are therefore already considered comprehensively in the ES as a whole where their assessment has been identified as being proportionate and/or potentially require mitigation. The inclusion of the requirement to consider population and human health effects in the EIA Regulations is met by the robust assessment of the topics listed above. Therefore, a separate health and wellbeing assessment is proposed to be scoped out of this EIA.

Waste

14.29 Waste generation will occur as a result of the demolition, remediation and construction of the Development and once the Development is completed and operational. Waste produced during all activities on Site will be subject to the 'Duty of Care' under the Environmental Protection Act[31].

14.30 It is anticipated that ground remediation would be undertaken on the Site, with contaminated soils and water treated and reused on the Site as engineering fill, although this will be subject to the remediation strategy and regulatory approval. Soil reuse during remediation will be considered in the ground conditions and contamination assessment (see Section 11).

14.31 Demolition and construction waste would be managed by the contractor in line with current legislation and best practices. Waste management will be dealt with in line with legislative requirements, good practice and BHCC policy standards which would ensure that measures are in place to reduce waste generation and minimise material going to landfill.

14.32 A waste and recycling strategy will be implemented for the Development to reduce waste and facilitate recycling in accordance with CPP1 and adequate waste and recycling storage facilities will be provided having regard to the 'Design Guidance for the Storage and Collection of Recyclable Waste' (PAN05, 2007)[32] and other relevant sector guidance.

14.33 Whilst the Development will result in an increase in waste arisings compared to the baseline, waste will be appropriately manged through the measures secured by the planning permission (precise details to be confirmed in the ES) once the Development is completed and operational. Given these measures, it is considered that there would be no significant waste effects and as such, the topic of 'waste' would be scoped out of the EIA.

Climate Change and Greenhouse Gas Emissions

14.34 The 2017 EIA Regulations require consideration of the impact of the project on climate (for example the nature and magnitude of greenhouse gas (GHG) emissions) and the vulnerability of the project to climate change.

14.35 The Development will likely result in an increase in GHG emissions compared to the baseline conditions during demolition and construction works and once the Development is completed and operational, although GHG emissions will already be generated from the current uses and traffic associated with the Site. Primary GHG emission sources during the demolition and construction are likely to be associated with embodied carbon within construction materials, construction traffic, construction plant and energy use. Primary sources of GHG emissions during operation are likely to be associated with the energy use, operational traffic and building maintenance.

14.36 During the design of the Development, consideration will be given to passive design and orientation, biodiversity, use of sustainable materials, energy efficiency measures and low carbon solutions to reduce GHG. Given this and, owing to the size of the Site and Development, it is unlikely that any increase in GHG will have material impact on the Government's target for carbon reduction. The ES will include a section in the project description about climate change adaption and resilience and how the design of the Development has incorporated such measures. A sustainability statement will be submitted in support of the planning application, which will set out the sustainability measures committed to by the Applicant.

14.37 Projected changes to average climatic conditions, as a result of climate change, and an increased frequency and severity of extreme weather events (such as heavy and/or prolonged precipitation, storm events and heatwaves) have the potential to impact the ability of the environment to adapt to climate change. The main impact of the climate change on the Development is considered to be in relation to sea level rise and changing rainfall patterns (increase in surface water run-off), which along with mitigation measures, will be considered in the Flood Risk Assessment and surface water drainage strategy.

14.38 The impacts of temperature change have been scoped out as the Development is within an existing urban area and is unlikely to significantly affect the ability of the surrounding land to adapt to climate change. The impact of climate change may have on the Development in terms of flood risk will be considered in the Flood Risk Assessment and drainage strategy that will be submitted with the planning application. It is considered that a climate change and GHG assessment can be scoped out of the EIA and ES.

Vulnerability to Major Accidents or Disasters

14.39 With reference to Regulation 4(4) and Schedule 4 of the EIA Regulations, this Scoping Report also considers whether there are likely to be any significant effects on the environment or the project arising from the vulnerability of the Development to major accidents or disasters. The EIA Regulations require the ES to consider the inclusion of:

"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".

14.40 Available guidance (IEMA Quality Mark Article 'Assessing Risks of Major Accidents / Disasters in EIA'33) defines major accidents and disasters as:

"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".

14.41 Overall, the vulnerability of the Development to risks of major accidents and/or disasters is considered to be low. The most likely foreseeable vulnerability of the Development relates to flood risk, but the Site lies entirely within Flood Zone 1 which is the lowest flood risk. Risks to fire can also be assumed to be low provided the detailed design and fire strategy is developed in line with the latest fire safety guidance. No other significant effects relating to the vulnerability of the Development to major accidents and disasters have been identified and therefore it is proposed that major accidents and disasters is scoped out of the ES.

Energy and Sustainability

14.42 The planning application will be supported by a standalone Sustainability Statement in accordance with BHCC policy. This negates the need for a further sustainability assessment within the ES and accords with the Department of Communities and Local Government's (DCLG) consultation paper on EIA Good Practice[34] (2006) which states:

"there is no requirement to include a sustainability appraisal within the Environmental Statement. If such an assessment is required by the Local Planning Authority, it should be provided as a separate document supporting the planning application."

14.43 The main sustainability commitments of the Development will be summarised in the ES. As such, all technical assessments will inherently test the principle sustainability design features sought as part of the planning application.

Light Pollution

14.44 The Development would provide a modern, efficient and controlled lighting design, which is expected to reduce any potential adverse effects (taking into account design standards and guidance, but assuming no additional mitigation). Principles of the lighting design would be set out within the Design and Access Statement. Consequently, through mitigation introduced during construction) and completed Development (through targeting the light pollution limitations for an appropriate lighting zone) and best practice design including Guidance Notes for The Reduction of Obtrusive Light[35]), it is unlikely that new lighting installations will result in significant adverse effects. It is therefore considered that light pollution will not be significant and as such would be scoped out of the ES.

14.45 As set out in Section 12, there will be two night-time views assessed in the TLHVIA that will consider lighting, one from the South Downs National Park and one from the Palace Pier.

Solar Glare

14.46 There is no specific criterion for assessing the significance of solar glare and professional judgment has therefore been used in establishing whether the Development is likely to give rise to significant effects. Sensitive receptors would include road users of the adjacent highway network.

14.47 Should the facades of the Development be highly reflective in design, there is a possibility, at certain times of the year, certain times of the day and in particular weather conditions, of significant instances of solar glare. However, based on the emerging design of the Development, the façade treatment of the Development is proposed to be largely brick or similar, which does not include high reflectivity façades. Solar glare is therefore unlikely to be significant and can be considered without the need for detailed technical analysis. Consequently, it is considered that solar glare can be scoped out of the EIA.

Telecommunications

14.48 As no navigational aids or major telecommunication relay stations have been identified in the immediate vicinity of the Site, it is considered unlikely that there will be any significant telecommunications effects as a result of the Development. Analogue television broadcast has now been phased out and replaced by digital television, which is largely unaffected by atmospheric conditions. Given the switch to digital television broadcast, the Development would be unlikely to give rise to significant effects on digital television. In addition, EIA best practice is increasingly recognising that telecommunication issues do not raise environmental considerations which need to be addressed as part of the EIA process and can be addressed through standard mitigation measures, such as adjustment of satellite dishes. Given this, it is considered that telecommunications can be scoped out of the EIA.

Electromagnetic Fields

14.49 All new electrical plant will be designed in accordance with the current British Standards (e.g. BS EN 62041:2010) which set the specific limits for electro-magnetic fields.

14.50 No major sources of electro-magnetic fields (such as high voltage transformers or electricity transmission line/cable) are proposed as part of the Development. An electricity sub-station is located to the north of the Site and therefore the Development will be required to comply with relevant guidelines on public exposure to electric and magnetic fields published by the 1998 Internal Commission on Non-Ionizing Radiation Protection (ICNIRP) relating to development close to substations.

14.51 As such, no significant electromagnetic field effects are likely therefore this issue will not be considered further within the ES.

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Appendix A – Cumulative Schemes and Map

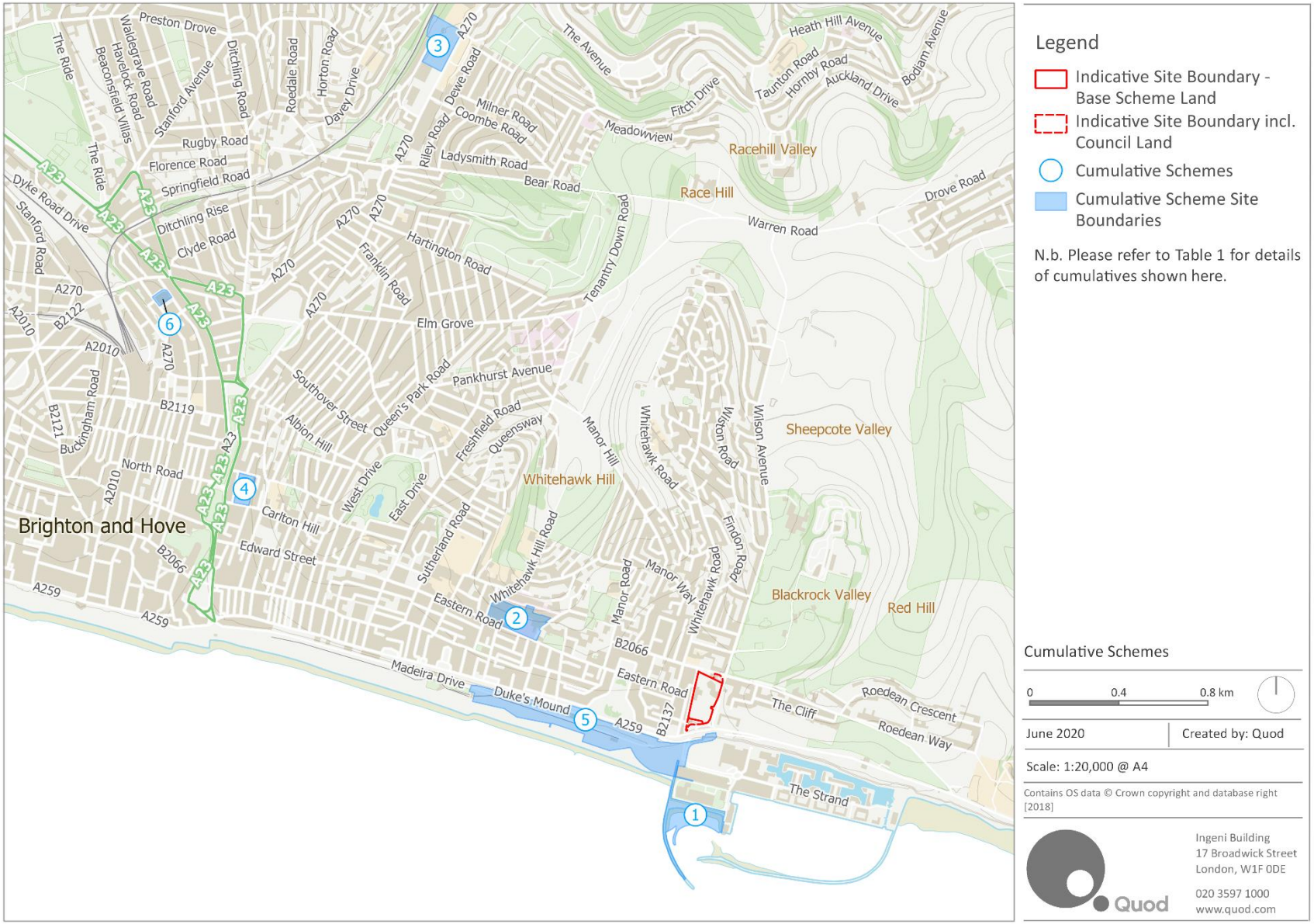
Table 1: Cumulative Schemes

Ref.	Project	Planning Reference	Description of Project	Status
1	Brighton Marina Outer Harbour	BH2019/00964	Hybrid planning application for the phased residential-led mixed-use development of Brighton Marina Outer Harbour. Full Planning Permission for Phase Two of the development comprises: 480no residential units (C3) in 3 buildings ranging from 9-28 storeys plus plant levels, 761 sqm of flexible commercial floor space (A1-A4, B1, C3 Ancillary, D1/D2), works to existing cofferdam, undercroft car and cycle parking, servicing, landscaping, public realm works and infrastructure (harbour wall) works. Outline Planning Permission (all matters reserved apart from access) for Phase Three of the development comprises: up to 520no residential units (C3) in 6 buildings ranging from 8-19 storeys, up to 800 sqm of flexible commercial floor space (A1-A4, B1, C3 Ancillary, D1/D2), construction of engineered basement structure to create a raised podium deck over Spending Beach, installation of Navigation Piles, undercroft car and cycle parking, servicing, landscaping and public realm works. The application is submitted in accordance with extant planning permission BH2006/01124. The extant planning permission was lawfully implemented in August 2008, with Phase 1 of the development completed in 2013. Phase 1 included two buildings on West Quay, made up of 195 flats, a Royal National Lifeboat Institution building and seven restaurants. It is proposed that the above application is considered in the EIA for Brighton Gas Works rather than the extant permission. This is because the ES for Brighton Marina Outer Harbour indicates that the Consented Scheme is not viable and not a reasonable alternative.	Planning Application Submitted.
2	Royal Sussex County Hospital	BH2011/02886 (as amended by BH2011/01558 and BH2014/03449)	Demolition of existing hospital buildings located to the north of Eastern Road and to the south of the existing children's hospital building and Thomas Kemp Tower. Addition of a helicopter landing pad and associated trauma lift on top of Thomas Kemp Tower. Erection of new hospital buildings incorporating Stage 1: Part 10, 11 and 12 storey building including reinstatement of the interior of the Chapel; Stage 2: 5 storey building; and Stage 3: Service yard with single	Implemented. Construction ongoing until winter 2024.

Ref.	Project	Planning Reference	Description of Project	Status
			storey building. Site wide infrastructure including substation, energy centre and flues, 2 floors of underground parking (390 spaces) with new access from Bristol Gate and associated highway works. Cycle parking, external amenity spaces including roof gardens and landscaping on Eastern Road.	
3	Preston Barracks	BH2017/00492 (as amended by BH2018/00636 and BH2018/01002)	(Full application) Preston Barracks Parcel: Demolition of existing buildings and construction of (B1) 7 storey Central Research Laboratory, Student Accommodation (Sui Gen) providing 534 bed spaces within 3 blocks of 13, 11 and 15 storeys, 369 (C3) residential units in 8 Blocks with a range between 2 and 10 storeys, 264sq.m workshop space (B1), 301sq.m flexible commercial space (A1/A3/B1), 334sq.m retail space (A1/A3), parking, public realm works and landscaping. Mithras Parcel: Demolition of existing building (Steam House) and construction of a mixed use Campus Development consisting of Student Accommodation (Sui Gen) providing 804 bed spaces within five blocks, Block 1 (10 storeys), Block 2 (18 Storeys), Block 3 (10 storeys), Block 4 (12 storeys) and Block 5 (9 storeys), 596 sq. m of student services including students union and welfare facilities (Sui Gen), 898 sq. m gymnasium (D2), and associated ancillary development, including provision of 13 disabled parking spaces serving the student accommodation, cycle parking, public realm works and landscaping improvements. Lewes Road: Installation of new signalised crossroads and T Junction, pedestrian crossings and footway improvements, erection of pedestrian and cyclists bridge crossing Lewes Road. (Outline Application) Watts Parcel: Removal of existing Watts House temporary building and erection of a 6 storey (D1) Academic Building for a Business School of 6,400 sq. m of floorspace, linked canopy and provision of 551 space multi storey car park to the rear (maximum 8 storeys) with associated ancillary development, including provision of cycle parking, access and servicing road, public realm and landscaping improvements.	Implemented. Construction ongoing until 2020/2021.
4	Circus Street	BH2013/03461 (as amended by BH2015/03076 and BH2015/04299)	Demolition of existing buildings and replacement with a mixed use development comprising of: a part 5 (6 storey equivalent)/part 7 storey University of Brighton Library and Academic Building (Use Class D1); a 3 storey (4 storey equivalent) Dance Space building (Use Class D2); a 7 storey office building (Use Class B1 incorporating a maximum of 1,360 sq. m Gross Internal Area (GIA) of office Class B1 office, research and development space); student accommodation (Sui Generis) providing up to 450 bed spaces in 4 buildings (Student Cluster E and G part 6/part 8 storey, Student Cluster F part 6,7 and 8 storey and Student Cluster H part 6/part 13 storey (with	Implemented. Construction ongoing until 2020/2021.

Ref.	Project	Planning Reference	Description of Project	Status
			recessed top 13th storey)); 142 residential apartments (Class C3) consisting of 57 x 1 bed, 81 x 2 bed and 4 x 3 bed units in 4 buildings (Building A part 7/part 10 storey, Building B part 7/part 8 storey and Buildings C and D both 6 storey); with ancillary retail (A1) café/restaurant (A3) and/or commercial (B1) within the ground floor of part of student cluster buildings G and H, part of office building and part of residential buildings A, B, C and D; new public realm and associated infrastructure including provision of 38 undercroft parking spaces below the student cluster buildings (including 16 on-site disabled parking spaces), on site cycle parking, and highway works including a narrowing in width of Circus Street.	
5	Black Rock enabling works	BH2020/00442	Replacement of existing sea wall with a realigned free-standing structure; the formation of an access route from Black Rock extending to Brighton Marina; enhancement of highways infrastructure for Duke's Mound at its junctions with Marine Parade and Madeira Drive; restoration of The Old Reading Room and The Temple and change of use for flexible A1, A3, D1 or D2 Use; widespread enhancement of public realm for pedestrians and cyclists via new amenities, facilities and landscaping, with associated ecological enhancement.	Resolution to Grant at Committee (10 June 2020).
6	Longley Industrial Estate New England Street & Elder Place, Brighton	BH2018/02598 BH2019/03113	Demolition of existing buildings and redevelopment to provide: 3,270sqm of office/research/development floorspace (B1 (a)/(b) use), 308sqm of flexible commercial/retail floorspace fronting Elder Place (B1 (a)/(b) and A1-A4 use), 201 residential units (C3 use) in buildings ranging between 3 and 18 storeys plus roof plant level, together with associated car and cycle parking, further plant at lower ground level, supporting facilities and landscaping. MMA: Minor Material Amendment to Planning Permission BH2018/02598 (for mixed use development of up to 18 storeys plus roof plant level including 3,270sqm of B1 use, 308sqm of flexible B1/A1-A4 use and 201 residential units) to allow substitute drawings for: internal layout changes; reduction in shoulder heights; additional floor in the tower whilst maintaining the same overall height; revised external amenity areas and elevational changes. To provide a revised total of 209 residential units (C3 use) and 3,109 sqm of B1 (a) and (b) office/research/development use and 352 sqm of flexible B1 (a) and (b)/A1-A4 retail use.	Approved 26 Sep 2019 MMA – Pending Determination.

Figure 1: Map of Cumulative Schemes



Appendix B – Structure of ES Technical Chapters

Introduction

The introduction will provide a brief summary of what is considered in the chapter and will state the author and/or relevant technical contributor and their competence.

Legislation, Planning Policy and Guidance

This section will summarise the relevant planning policy, legislation and guidance that form the context for the topic in bullet point form to minimise length. A detailed review of relevant planning policy, legislation and guidance will be provided as an appendix to the chapter or within the supporting technical report within Volume III of the ES.

Assessment Methodology

The assessment methodology section in each chapter will provide an explanation of methods used in undertaking the technical assessment and the prediction of effects. Reference will be made to published standards, professional guidelines and best practice of relevance to the topic.

This section will also describe any topic-specific significance criteria applied in the assessment, particularly where these differ from common or generic criteria applied elsewhere in the ES. However, wherever possible, a common scale and language for assessing effects will be applied.

Consultation undertaken as part of the assessment to agree scope or methodology will be set out in the chapter. Where appropriate, it will describe the assumptions and limitations related to the assessment of the topic and any constraints to undertaking the assessment.

Baseline Conditions

A description of the environmental conditions that exist in the absence of the Development both now and, where relevant, those that are projected to exist in the future will be provided. The results of baseline surveys and desk based research will be summarised in this section.

Relevant receptors to the specific topic-based effects (e.g. noise, air quality) will be described, together with an indication of the relative sensitivity of these receptors to such effects. Comment will also be made on the future baseline conditions as required by the EIA Regulations.

Environmental Design and Management

This section will present the embedded design and/or management measures that will form part of the Development to prevent, reduce or offset environmental effects. These measures will be clearly defined to ensure transparency and to ensure that the impact assessment does not assess a scenario that is unrealistic in practice.

Demolition and Remediation

This section will present the assessment of the likely impacts and effects that are predicted to occur during the demolition and remediation works. Mitigation and monitoring measures will also be presented, together with likely residual effects.

Construction

This section will present the assessment of the likely impacts and effects that are predicted to occur during the construction phase. Mitigation and monitoring measures will also be presented, together with likely residual effects.

Completed Development

This section will present the assessment of the likely significant effects that are predicted to occur once the Development is complete and occupied, together with the mitigation over and above embedded design and the likely residual effects.

Cumulative Effects

This section will present the assessment of potential cumulative effects with other projects in the vicinity that are predicted to occur during both the construction and completed Development phases together with the mitigation and likely residual effects.

Summary

This section will include a tabulated summary of the likely significant effects, mitigation measures and likely residual effects. The potential mechanisms by which the proposed mitigation measures will be implemented (e.g. specific planning conditions or Section 106 obligations) will be specified, where appropriate.

Appendix C – Ground Conditions and Contamination Methodology

The EIA will assess the potential impacts of the development on ground conditions and contamination and will be undertaken over two stages:

- Stage 1 - land contamination risk assessment (potential impacts).
- Stage 2 - land contamination and physical environment potential effects.

Stage 1 – Land contamination risk assessment methodology

The approach adopted for the land contamination risk assessment (potential impacts) is based on guidance document LCRM[36] and CIRIA C552[37]. These documents are considered key guidance in the United Kingdom and provide a technical framework for the application of a risk management process through the steps described in this section.

The risk assessment applies the principles given in the NHBC and Environment Agency report R&D Publication 66[38], which provides guidance on the development and application of the consequence and probability matrix (as presented in Tables 1, 2 and 3 below) for contaminated land risk assessment.

The potential risk to a receptor is a function of the probability and the consequence of a SPR. Probability (likelihood of an event occurring Table 1) considers both the presence of the hazard and receptor, and the integrity of the exposure pathway. Consequence (Table 2) considers the potential severity of the hazard and the sensitivity / value of the receptor

Table 1: Classification of probability

Classification	Definition of the probability of harm/pollution occurring
High Likelihood	The contaminant linkage exists and it is very likely to be realised in the short term, and/or will almost inevitably be realised in the long term, and/or there is current evidence of it being realised.
Likely	The source, pathway and receptor exist for the contaminant linkage and it is probable that this linkage will be realised. Circumstances are such that realisation of the linkage is not inevitable, but possible in the short term and likely over the long term.
Low Likelihood	The source, pathway and receptor exist, and it is possible that it could be realised. Circumstances are such that realisation of the linkage is by no means certain in the long term and less likely in the short term.
Unlikely	The source, pathway and receptor exist for the contaminant linkage but it is improbable that it will be realised even in the long term.

Table 2: Classification of consequence

Classification	Definition of consequence
Human health receptors	
Severe	Acute damage to human health based on the potential effects on the critical human health receptor.
Medium	Chronic damage to human health based on the potential effects on the critical human health receptor.
Mild	Minimal short-term effects on human health based on the potential effects on the critical human health receptor.
Minor	No appreciable impact on human health based on the potential effects on the critical human health receptor.
Controlled water receptors	
Severe	Pollution of a Principal aquifer within a groundwater Source Protection Zone (inner and outer) or potable supply characterised by a breach of drinking water standards. Pollution of a surface water course characterised by a breach of an Environmental Quality Standard at a statutory monitoring location or resulting in a change in Generic Quality Assessment grade of river reach. Discharge of a List I or List II substance to groundwater.
Medium	Pollution of a Principal aquifer outside a groundwater Source Protection Zone (inner and outer) or a Secondary A aquifer characterised by a breach of Drinking Water Standards. Pollution of an industrial groundwater abstraction or irrigation supply that impairs its function. Substantial pollution but insufficient to result in a change in the Generic Quality Assessment grade of river reach.
Mild	Low levels of pollution of a Principal aquifer outside a groundwater Source Protection Zone or an industrial abstraction, or pollution of a secondary A or Secondary B aquifer. Low levels of pollution insufficient to result in a change in the Generic Quality Assessment grade of river reach, pollution of a surface water course without a quality classification.
Minor	No appreciable pollution, or pollution of a low sensitivity receptor such as a Secondary (undifferentiated) aquifer or a surface water course without a quality classification.
Ecosystem receptors	
Severe	For sites with designations as follows - Site of Special Scientific Interest, National Nature Reserve, Special Protection Area (and potential sites), Special Area of Conservation (and candidate sites) or Ramsar. Irreversible adverse change in the functioning of the ecological system or any species of special interest that forms part of that system.
Medium	For sites with designations as follows - Site of Special Scientific Interest, National Nature Reserve, Special Protection Area (and potential sites), Special Area of Conservation (and candidate sites) or Ramsar. Substantial adverse change in the functioning of the ecological system or any species of special interest that forms part of that system.
Mild	Harm to ecosystems of a low sensitivity such as sites of local importance. No appreciable harm to ecosystems with statutory designations.
Minor	Limited harm to ecosystems of low sensitivity such as sites of local importance.
Property receptors - buildings, foundations and services	
Severe	Collapse of a building or structure including the services infrastructure from explosion.
Medium	Significant damage to a building or structure including the services infrastructure impairing their function.
Mild	Damage to buildings/structures and foundations but not resulting in them being unsafe for occupation. Damage to services but not sufficient to impair their function.
Minor	No appreciable damage to buildings/structures, foundations and services.

Table 3: Land contamination estimation of the level of risk by comparison of consequence and probability

		Consequence			
		Severe	Medium	Mild	Minor
Probability	High Likelihood	Very high risk	High risk	Moderate risk	Moderate/low risk
	Likely	High risk	Moderate risk	Moderate/low risk	Low risk
	Low Likelihood	Moderate risk	Moderate/low risk	Low risk	Very low risk
	Unlikely	Moderate/low risk	Low risk	Very low risk	Very low risk

Table source: based on R&D66[38]

Risks will be classified for demolition, remediation and construction and completed development.

Stage 2 – Land contamination and physical environment assessment of effects methodology

Land contamination assessment of effects methodology

The land contamination impact assessment is based on the change of risk (identified in Stage 1) between the baseline and the different phases of the Development (i.e. demolition, remediation and construction and completed development). The calculated increase or decrease in risk identifies the significance of effect, as described in Table 4, however professional judgement has been used in instances where a receptor is not present during every phase of the Development.

Table 4: Land contamination impact assessment (significance of effects)

Classification of significance	Effect
Major adverse	An increase in contamination risk from the existing baseline conditions of four or five risk levels in the risk matrix, e.g. land that has a very low contamination risk in the baseline becomes a high or very high risk.
Moderate adverse	An increase in contamination risk from the existing baseline conditions of two or three risk levels in the risk matrix, e.g. land that has a low contamination risk in the baseline becomes a moderate or high risk.
Minor adverse	An increase in contamination risk from the existing baseline conditions of one risk level in the risk matrix, e.g. land that has a low contamination risk in the baseline becomes a moderate/low risk.
Negligible	Negligible change in contamination risks.
Minor beneficial	A reduction in contamination risk from the existing baseline conditions of one risk level in the risk matrix, e.g. land that has a moderate/low contamination risk in the baseline becomes a low risk.
Moderate beneficial	A reduction in contamination risk from the existing baseline conditions of two or three risk levels in the risk matrix, e.g. land that has a high contamination risk in the baseline becomes a moderate/low or low risk.
Major beneficial	A reduction in contamination risk from the existing baseline conditions of four or five risk levels in the risk matrix, e.g. land that has a very high contamination risk in the baseline becomes a low or very low risk.

Table source: Atkins bespoke system for assessing impacts associated with land contamination

Following the classification, a clear statement is made as to whether the effect is 'significant' or 'not significant'. As a general rule major and moderate effects are considered to be significant, and minor and negligible effects are considered to be not significant.

The time-period in which the land contamination impacts may have effect has been prescribed (temporary or permanent).

Physical environment assessment of effects methodology

The value / sensitivity of a geology/physical environment baseline condition has been considered when determining consequence of an effect in geology/physical environment assessment of effects. The sensitivity has been determined using the classifications and criteria given in Table 5.

Table 5: Criteria for classifying the value / sensitivity of physical environment features

Value / Sensitivity	Criteria	Examples
High	Attribute possesses key characteristics which contribute significantly to the distinctiveness, rarity and character of the site / receptor. Attribute has a very low capacity to accommodate the proposed change.	Sensitive topographic features. Major ground stability, soil compaction or erosion hazards present at the site. High potential for encountering unexploded bombs.
Medium	Attribute possesses key characteristics which contribute significantly to the distinctiveness, rarity and character of the site / receptor. Attribute has a low capacity to accommodate the proposed change.	Moderate sensitivity topographic features. Moderate, ground stability, soil compaction or erosion hazards present at the site. Moderate potential for encountering unexploded bombs.
Low	Attribute only possesses characteristics which are locally significant. Attribute has some tolerance to accommodate the proposed change.	Low sensitivity topographic features. Low ground stability, soil compaction or erosion hazards present at the site. Low potential for encountering unexploded bombs.

Table Source: Based on DMRB Volume 11[23]

Following determination of the sensitivity of physical environment baseline conditions, the magnitudes of potential impacts during the construction phase and operational phase have been determined based on the criteria defined in Table 6. Classification of magnitude has been assigned assuming geotechnical design and mitigation measures are implemented.

Table 6: Classification of magnitude of impact of physical environment

Classification of magnitude	Criteria
High	Total loss of major alterations to one of more of the key elements, features or characteristics of the baseline. The post-development situation will be fundamentally different.
Medium	Partial loss or alteration to one of more of the key elements or characteristics of the baseline. The post-development situation will be partially changed.
Low	Minor loss or alteration to one or more of the key elements, features or characteristics of the baseline. Post-development, the change will be discernible but the underlying situation will remain similar to the baseline.
Negligible	Very minor loss or alteration to one of more of the key elements, features or characteristics of the baseline, such that post-development, the change will be barely discernible, approximating to the “no change” situation.

Table Source: Based on DMRB Volume 11[23]

The overall significance of effects has been defined using the matrix presented in Table 7 which describes the relationship between the value/sensitivity of the feature (Table 5) and potential magnitude of impact (Table 6).

Table 7: Physical environment assessment of effects (significance of effects)

		Magnitude of Impact			
		High	**Medium**	**Low**	**Negligible**
Value / Sensitivity of feature	High	Major	Major / moderate	Moderate	Moderate / minor
	Medium	Major / moderate	Moderate	Moderate / minor	Minor
	Low	Moderate	Moderate / minor	Minor	Negligible

Table Source: Based on DMRB Volume 11[23]

The classification of effect for physical environment impacts are described in Table 9

Table 8: Classification of effect for physical environment

Classification	Example of Effect
Major adverse	Major/complete change in topography which negatively impacts the local community. Significant increase in soil erosion, soil compaction or ground instability.
Moderate adverse	Moderate change in topography which negatively impacts the local community. Moderate increase in soil erosion, soil compaction, or ground instability.
Minor adverse	Minor change in topography which negatively impacts the local community. Limited increase in soil erosion, soil compaction, or ground instability.
Negligible	No measurable impact/no change to geomorphology or ground stability baseline conditions.
Minor beneficial	Minor change in topography which has a positive impact on the local community. Minor reduction in existing soil erosion, soil compaction, or ground instability issues.
Moderate beneficial	Moderate change in topography which has a positive impact on the local community. Moderate reduction in existing soil erosion, soil compaction, or ground instability issues.
Major beneficial	Major/complete change in topography which has a positive impact on the local community. Significant reduction in existing soil erosion, soil compaction or ground instability issues.

Table Source: Based on DMRB Volume 11[23]

Following the classification of an effect, a clear statement has been made as to whether the effect is 'significant' or 'not significant'. As a general rule, major and moderate effects are considered to be significant, and minor and negligible effects are considered to be not significant. However, professional judgement has also been applied where appropriate including the classification of the time period of the effect (temporary or permanent).

Appendix D – List of Townscape Viewpoints

CANDIDATE VIEWPOINT STUDY: BRIGHTON GASWORKS

BRIGHTON

MAY 2020

PRELIMINARY CANDIDATE VIEWPOINT STUDY

CITYDESIGNER

CONTENTS

1.0 Introduction 1

2.0 Designations 2

3.0 Candidate viewpoint study 7

1.0 INTRODUCTION

1.1 This preliminary Candidate Viewpoint Study by Citydesigner (the consultancy) was commissioned by St William to assess the townscape, landscape, built heritage and visual effects of their proposed development at Brighton Gasworks, designed by EPR Architects. The development site is located within the Brighton and Hove City Council (BHCC).This document provides an indication of current designations and; an exploration of important viewpoints.

Fig. 1.1: Aerial photograph of Brighton Gasworks, looking north.

2.0 DESIGNATIONS

Groups of Listed Buildings and Structures:

1. Lewes Crescent, Sussex Square, Arundel and Chichester Terraces (Grade I);
2. Kemp Town Place (Grade II)
3. Arundel Place (Grade II); and
4. The Esplanade (Grade II).

Listed Buildings:

1. The Palace Pier (Grade II*);
2. Church of St Mark;
3. St Mary's School Hall (Grade II);
4. 9, Bristol Gardens (Grade II);
5. Secret Gardens; boundary stone (Grade II);
6. French Convalescent Home (Grade II);
7. Roedean School (Grade II);
8. St Dunstan's (Grade II).

Registered Parks and Gardens:

1. Kemp Town Enclosures (Grade II)

Non-designated heritage assets:

1. Marine Gate, Marine Drive; and
2. Nos.40 and 40a White Lodge.

Conservation Areas

1. Kemp Town Conservation Area
2. East Cliff Conservation Area

South Downs National Park

2.0 DESIGNATIONS (CONTD.)

HERITAGE ASSETS LOCATION MAP

2.0 DESIGNATIONS (CONTD.)

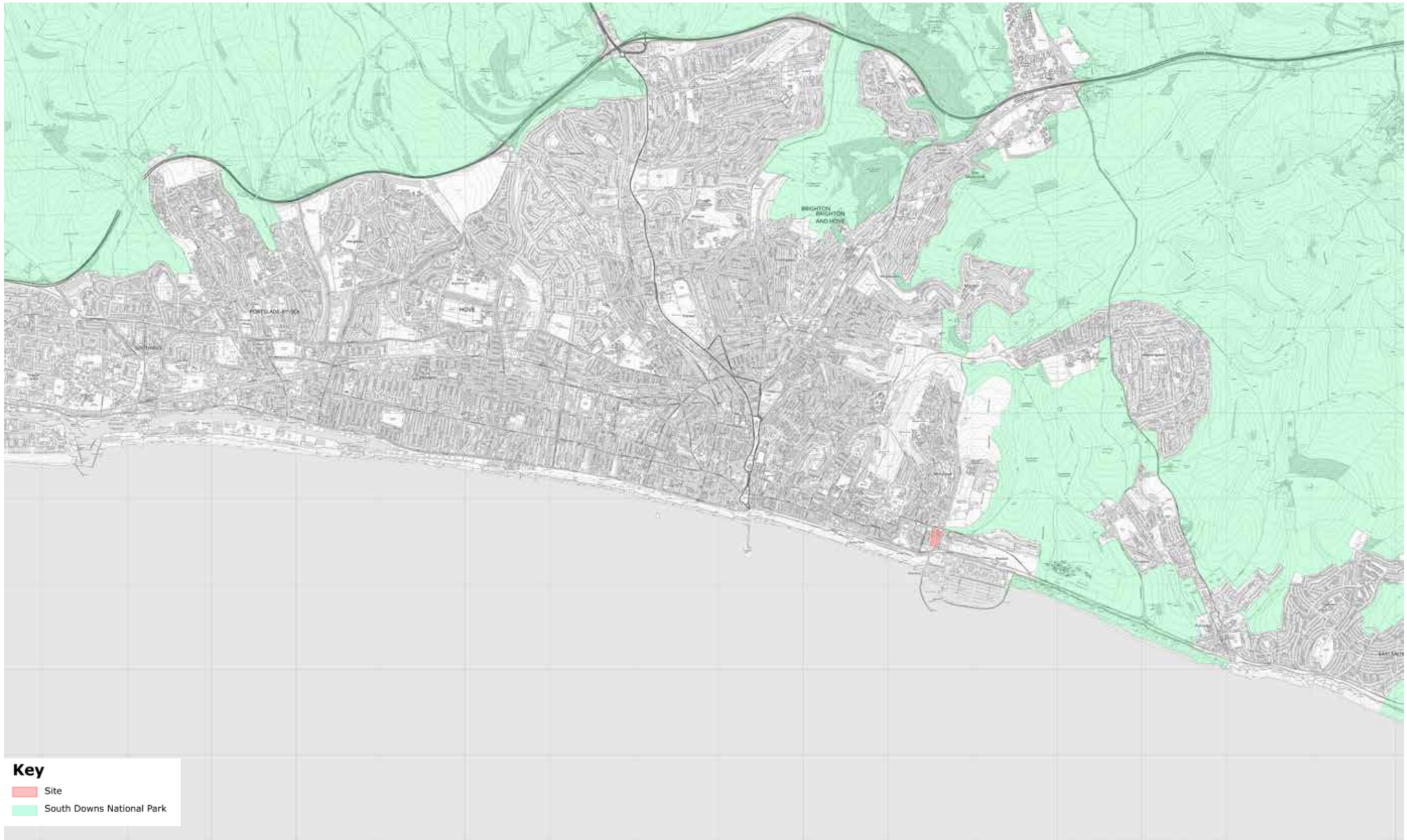


Fig. 5.1: Map showing the extent of the South Downs National Park in relation to the site.

3.0 CANDIDATE VIEWPOINT STUDY

3.1 The purpose of this Candidate Viewpoint Study is to inform the team of viewpoints both from a distance and within the near surroundings of the development site. The views aim to provide the 'maximum exposure / maximum conjunction' of the development in the townscape context.

3.3 The adjacent map shows the viewpoint positions considered in this study:

Short distance views (24mm lens)

View 1: Arundel Road

View 2: South of Marine Parade

View 3: Marine Parade (east)

View 4: Chichester Terrace

View 5: Eastern Road, west of Sudeley Place

View 6: Eastern Road, near St Mark's

View 7: Eastern Road (south side)

View 8: Eastern Road (north side)

View 9: Eastern Road at the corner with Bristol Place

View 10: Bristol Gardens

View 11: Wilson Avenue, at the corner with Henley Road

View 12: North of Roedean Road

View 13: Roedean Road

View 14: Entrance to East Brighton Golf Club

View 15: Marine Drive (east)

View 16: Marine Drive, opposite Marine Gate

View 17: Marina Way (roof of car park)

View 18: Marine Drive at the corner with Boundary Road

View 19: Western Harbour, arm of Marina

Long distance views (50mm lens)

View 20: Whitehawk Hill

View 21: Manor Hill at the corner with Manor Crescent

View 22: Hollingbury Ford (amid golf-course on southern extremity of earth-work)

View 23: Wilson Avenue at the corner with Wadhurst Rise

View 24: Wilson Avenue

View 25: Wilson Avenue (north)

View 26: Woodingdean, off Warren Road, Sheapcoate Carpark, south of the Racecourse

View 27: Blackrock Valley

View 28: Footpath north of Mount Pleasant

View 29: East Brighton Downs

View 30: Roedean Way

View 31: Marine Drive

View 32: Marine Drive (west)

View 33: Brighton Marina

View 34: End of Brighton Pier

3.0 CANDIDATE VIEWPOINT STUDY (CONTD.)

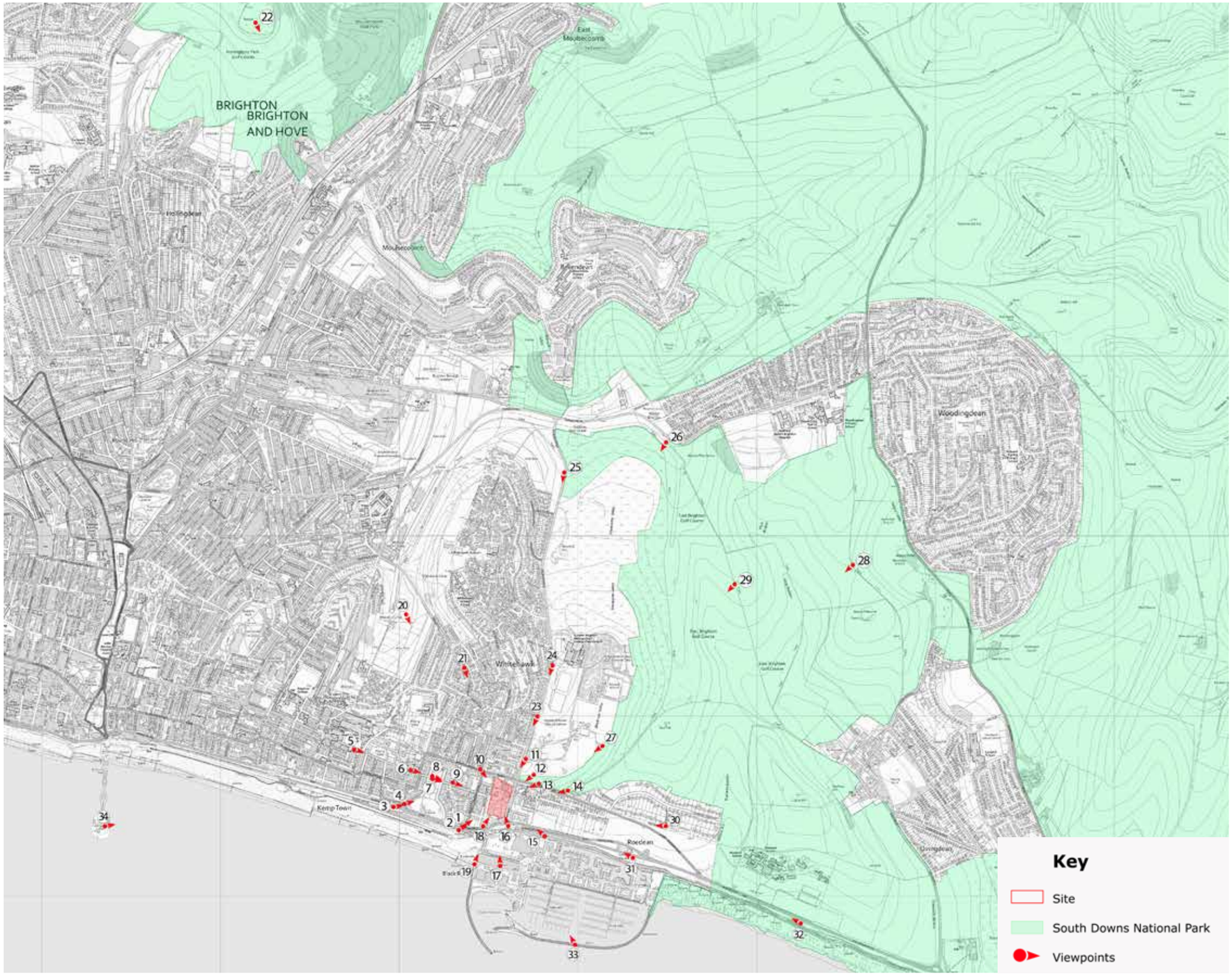


Fig 3.1: Map showing the candidate viewpoints. The site is outlined in red.

3.0 CANDIDATE VIEWPOINT STUDY (CONTD.)

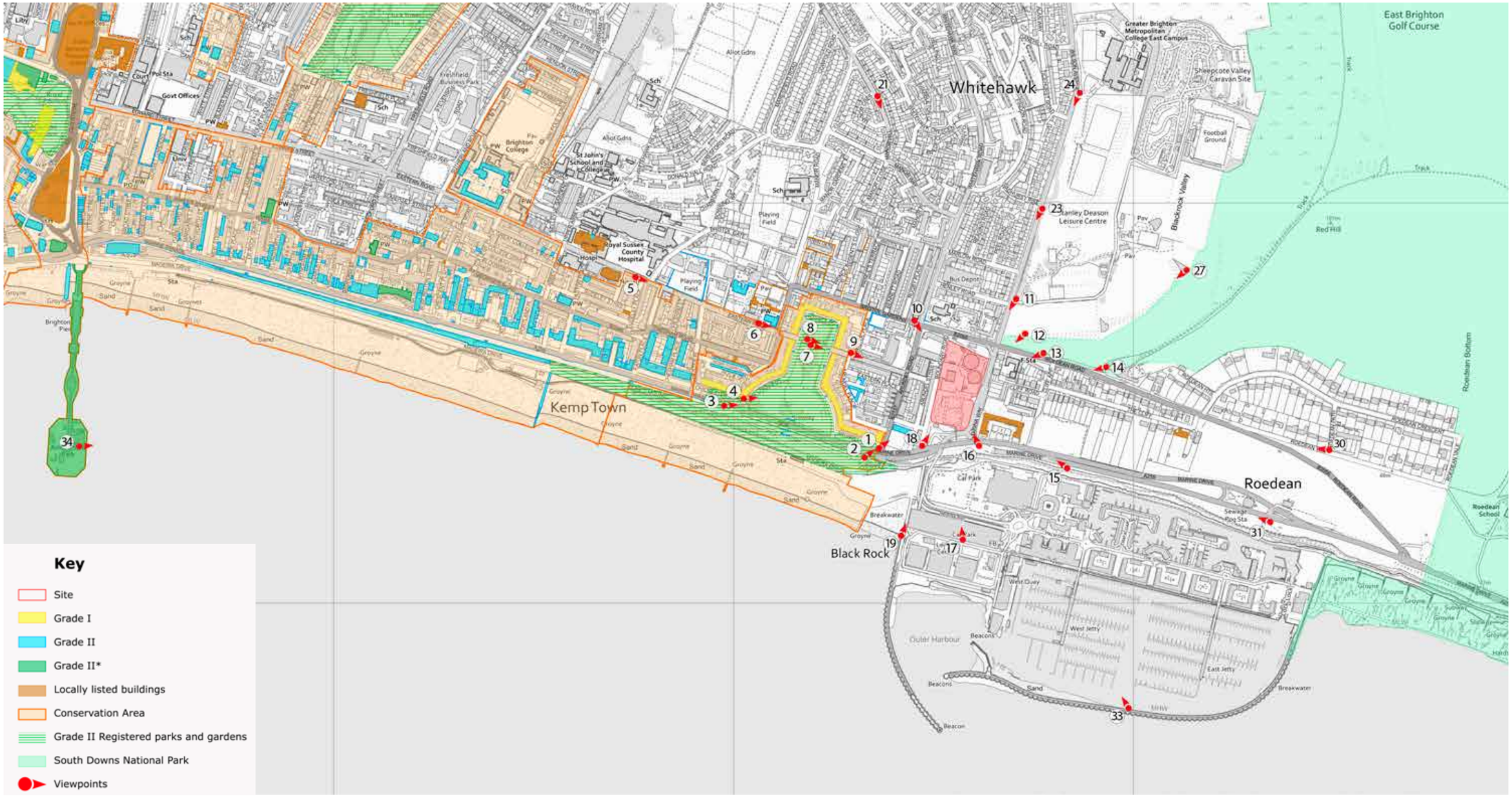
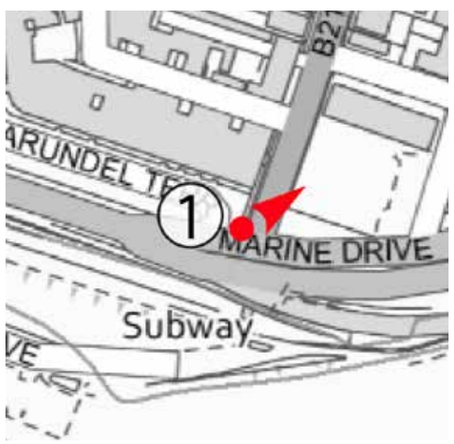


Fig 3.2: Map showing the site in more detail, including nearby heritage assets.

3.0 CANDIDATE VIEWPOINT STUDY (CONTD.)

VIEW 1 ARUNDEL ROAD

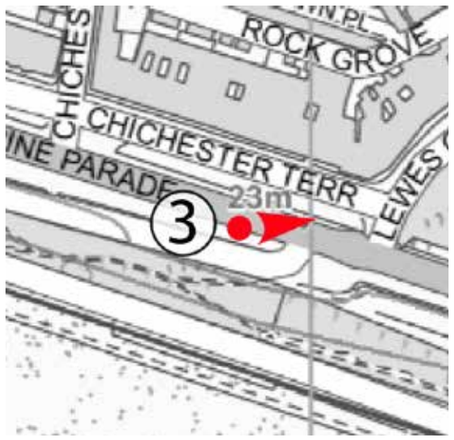


3.0 CANDIDATE VIEWPOINT STUDY (CONTD.)

VIEW 2 - SOUTH OF MARINE PARADE

3.0 CANDIDATE VIEWPOINT STUDY (CONTD.)

VIEW 3 - MARINE PARADE (EAST)



3.0 CANDIDATE VIEWPOINT STUDY (CONTD.)

VIEW 4 - CHICHESTER TERRACE

3.0 CANDIDATE VIEWPOINT STUDY (CONTD.)

VIEW 5 - EASTERN ROAD, WEST OF SUDELEY PLACE

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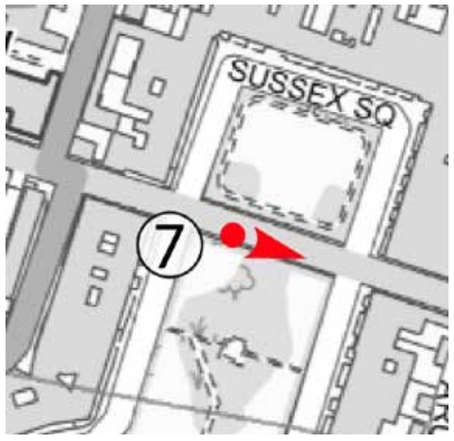
VIEW 6 - EASTERN ROAD, NEAR ST MARK'S

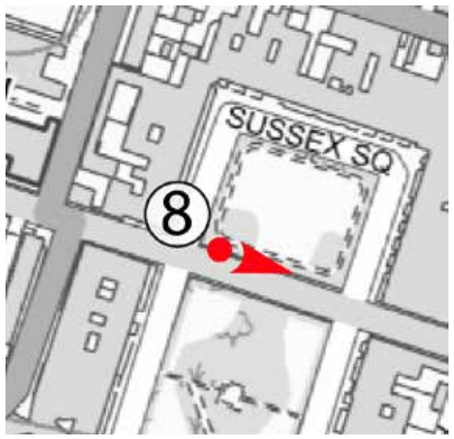
3.0 CANDIDATE VIEWPOINT STUDY (CONTD.)

VIEW 7 - EASTERN ROAD (SOUTH SIDE)



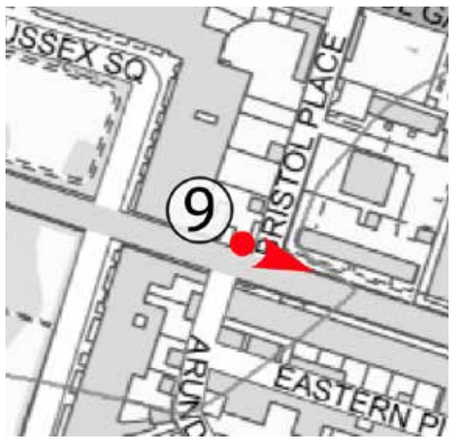
3.0 CANDIDATE VIEWPOINT STUDY (CONTD.)

VIEW 8 - EASTERN ROAD (NORTH SIDE)



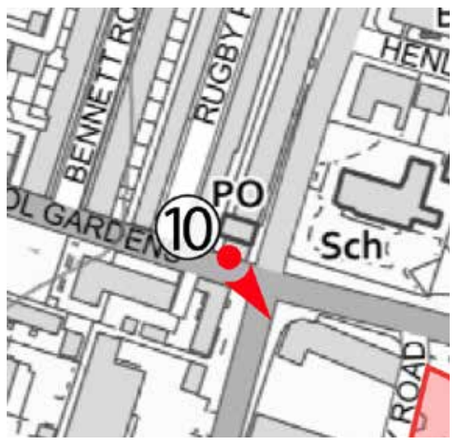
3.0 CANDIDATE VIEWPOINT STUDY (CONTD.)

VIEW 9 - EASTERN ROAD AT THE CORNER WITH BRISTOL PLACE



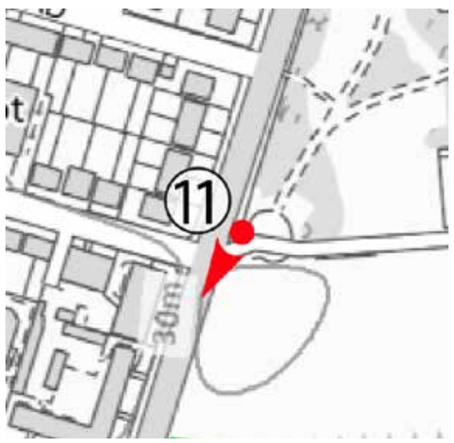
3.0 CANDIDATE VIEWPOINT STUDY (CONTD.)

VIEW 10 - BRISTOL GARDENS



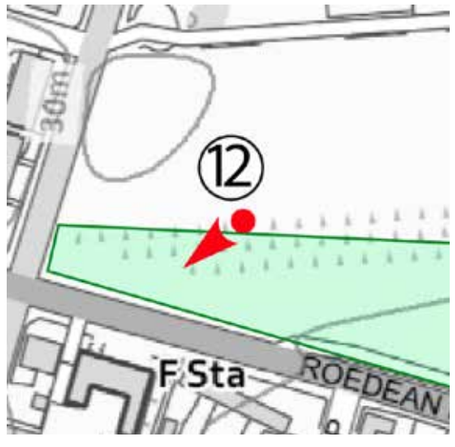
3.0 CANDIDATE VIEWPOINT STUDY (CONTD.)

VIEW 11 - WILSON AVENUE, AT THE CORNER WITH HENLEY ROAD



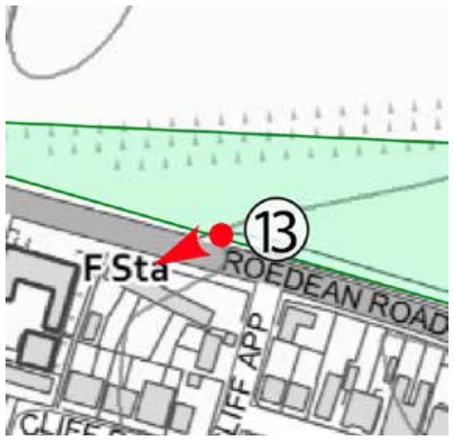
3.0 CANDIDATE VIEWPOINT STUDY (CONTD.)

VIEW 12 - NORTH OF ROEDEAN ROAD



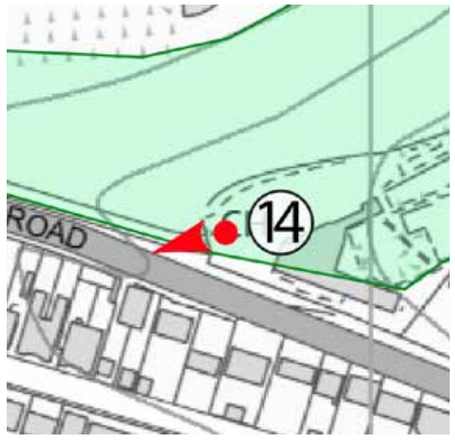
3.0 CANDIDATE VIEWPOINT STUDY (CONTD.)

VIEW 13 - ROEDEAN ROAD



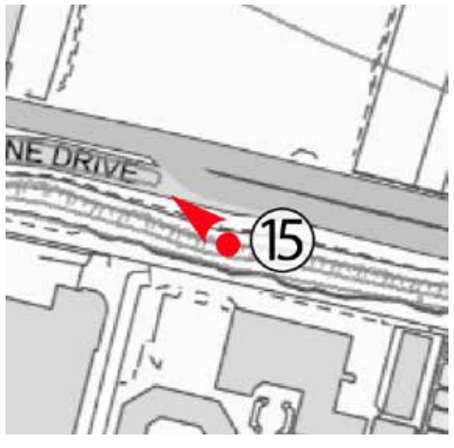
3.0 CANDIDATE VIEWPOINT STUDY (CONTD.)

VIEW 14 - ENTRANCE TO EAST BRIGHTON GOLF CLUB



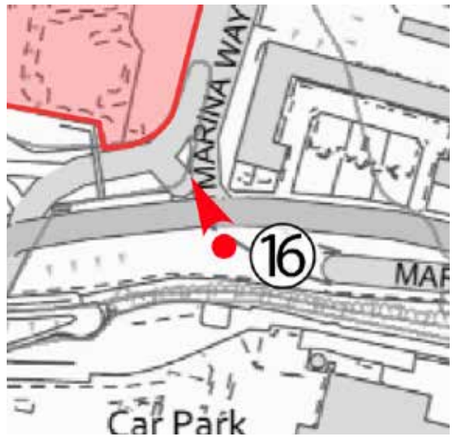
3.0 CANDIDATE VIEWPOINT STUDY (CONTD.)

VIEW 15 - MARINE DRIVE (EAST)



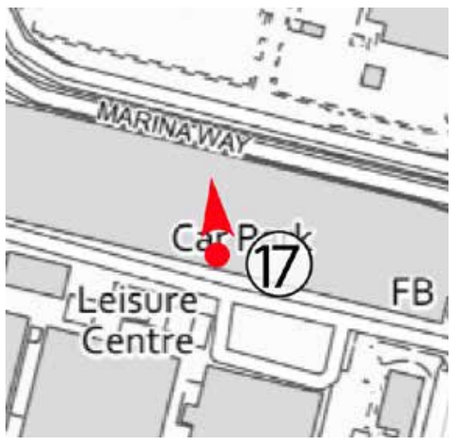
3.0 CANDIDATE VIEWPOINT STUDY (CONTD.)

VIEW 16 - MARINE DRIVE, OPPOSITE MARINE GATE



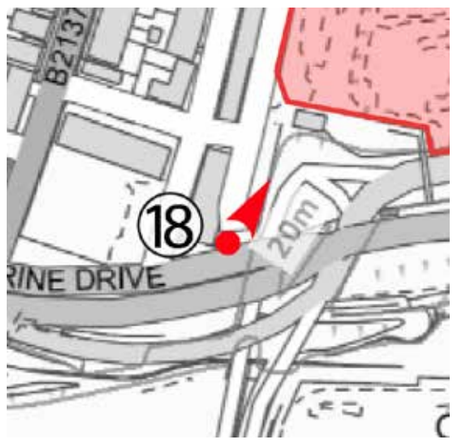
3.0 CANDIDATE VIEWPOINT STUDY (CONTD.)

VIEW 17 - MARINA WAY (ROOF OF CAR PARK)



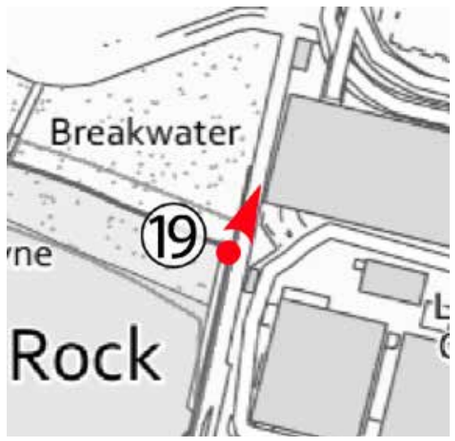
3.0 CANDIDATE VIEWPOINT STUDY (CONTD.)

VIEW 18 - MARINE DRIVE AT THE CORNER WITH BOUNDARY ROAD



3.0 CANDIDATE VIEWPOINT STUDY (CONTD.)

VIEW 19 - WESTERN HARBOUR, ARM OF MARINA



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3.0 CANDIDATE VIEWPOINT STUDY (CONTD.)

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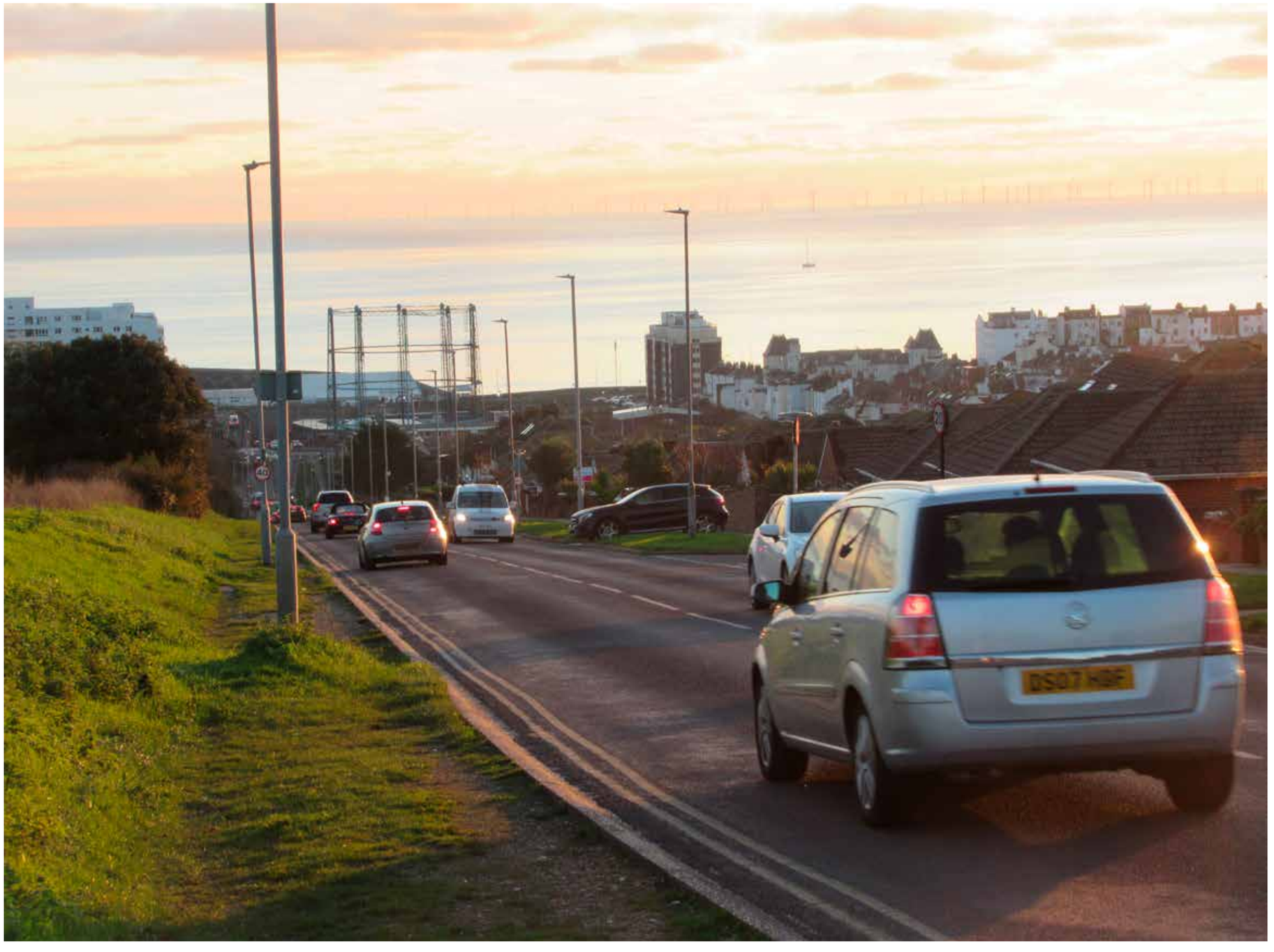

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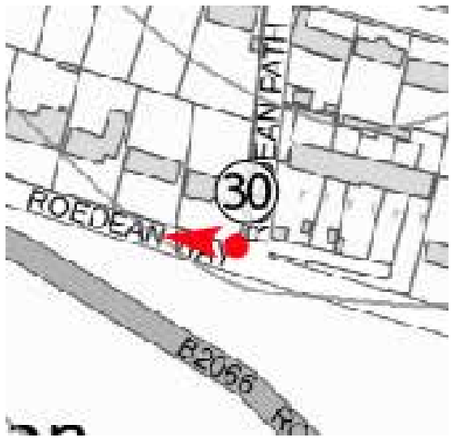

3.0 CANDIDATE VIEWPOINT STUDY (CONTD.)

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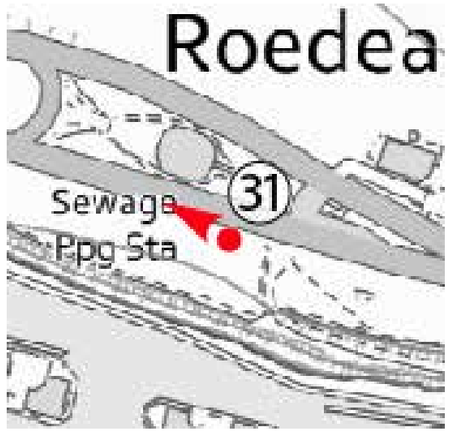

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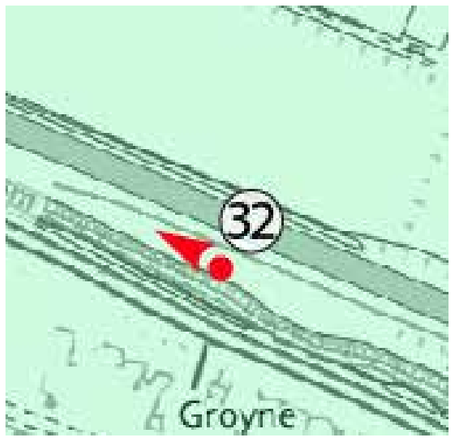
VIEW 32 - MARINE DRIVE (WEST)



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TO BE UPDATED

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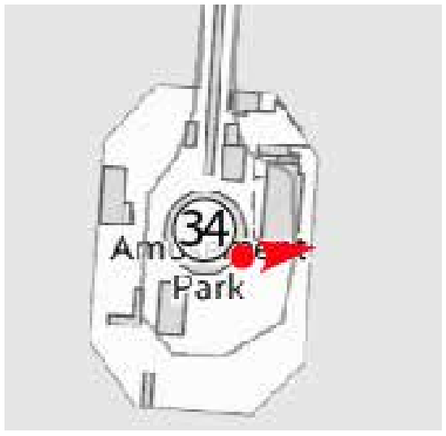

Appendix E – Archaeological Desk Based Assessment

ARCHAEOLOGICAL DESK-BASED ASSESSMENT

Former Brighton Gasworks, Brighton, East Sussex BN2 5TJ

Project Code: JAC26244
Land at Brighton Gasworks,
Brighton, BN2 5TJ
Scoping Issue
June 2020
NGR: TQ33537 03511
Local Planning Authority:
Brighton and Hove City Council

rpsgroup.com

Quality Management

Version	Status	Authored by	Reviewed by	Approved by	Date
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Approval for issue

Duncan Hawkins		19 June 2020

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EXECUTIVE SUMMARY

The site of the former Brighton Gasworks, Brighton BN2 5TJ, has been reviewed for its below ground archaeological potential.

In terms of relevant, nationally significant designated heritage assets, no World Heritage Sites, Scheduled Monuments, Historic Wrecks or Historic Battlefields lie within the study site or its immediate vicinity.

In terms of relevant local designations, the study site does not lie within an Archaeological Notification Area, as defined by Brighton and Hove City Council, and their archaeological planning advisors at East Sussex District Council.

The study site can be considered likely to have an archaeological potential for the prehistoric, Roman, Post Medieval and Modern periods.

Past post-depositional impacts within the study site are considered likely to have had a severe, negative archaeological impact.

The precise description of development has not been finalised however it is anticipated that it may include up to the following:

- Demolition of existing buildings and structures;
- Enabling works including but not limited to: ground remediation and decontamination; removal of below ground obstructions; consolidation of existing gas equipment including erection of a new Pressure Reduction Station compound;
- The construction of:
  - Up to 700 new dwellings and ancillary residential floorspace – this may be set out in the planning application by a number homes or equivalent GEA figure;
  - Circa 2,000sqm non-residential floorspace (use classes B1, A1-A4 and/or D1);
  - New public open space, and semi-private and private residential open space;
  - Car and cycle storage predominately within part podium(s);
  - Pedestrian, car and cycle and access and circulation works;
  - Landscape and public realm works;
- Associated infrastructure and interim works.

The Development proposals are at an early stage of design and will be developed further with input of technical analysis as part of the EIA process and in consultation with Brighton and Hove City Council and other stakeholders. Mitigation measures will be incorporated and designed into the Development, where possible, to avoid or reduce likely significant adverse effects on the environment and local community.

Further archaeological and geoarchaeological mitigation measures are anticipated to be required in association with redevelopment impacts.

As remains of national significance are not anticipated within the study site it is proposed that further works are secured by condition to the granting of planning permission.

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1 INTRODUCTION AND SCOPE OF STUDY

1.1 This below ground archaeological desk-based assessment has been prepared by RPS on behalf of St William Homes LLP.

1.2 The subject of this assessment comprises the site, also referred to as the study site, of the former Brighton Gasworks, Brighton BN2 5TJ. The study site is bounded by Marina Way to the east and south, Roedean Road to the north, and Boundary Road to the west. As shown on Figure 1 and subsequently, the land within the continuous solid red line extends to approximately 1.46 hectares (ha), with the land to the north and south defined by the dotted red line approximately 0.56 ha. The maximum extent of the Site would therefore be approximately 2.02 ha and is wholly located within the BHCC administrative boundary". The study site is centred at TQ33537 03511 within the area of Brighton and Hove City Council (see Figures 1-4, 28-30 and Plates 1-9).

1.3 Figures 2-4 spatially summarise relevant cultural heritage designations and archaeological findspot references in relation to the study site, primarily using data provided by the East Sussex Historic Environment Record (HER).

1.4 In terms of relevant nationally significant designated heritage assets, the study site does not lie within the vicinity of a World Heritage Site, Scheduled Monument, Historic Battlefield or Historic Wreck site.

1.5 In terms of relevant local designations, the study site does not lie within an Archaeological Notification Area, as defined by Brighton and Hove City Council and their archaeological advisors at East Sussex County Council, however such a designation lies immediately to the east (see Section 4 below).

1.6 St William Homes LLP have commissioned RPS to establish the below ground archaeological potential of the study site, and to provide guidance on ways to accommodate any archaeological constraints identified.

1.7 In accordance with relevant policy and guidance on archaeology and planning, including 'Standard and Guidance for Historic Environment Desk-Based Assessments' (Chartered Institute for Archaeologists, 2017), this assessment draws together the available archaeological, topographic and land-use information in order to clarify the archaeological potential of the study site.

1.8 This desk based assessment comprises an examination of evidence on the East Sussex Historic Environment Record (HER) and other sources, including the East Sussex Record Office, the Royal Pavilion & Museums, Brighton, and the British Gas Archive. A walkover site visit was undertaken in June 2020 (see Figure 30 and Plates 1-9).

1.9 The assessment thus enables relevant parties to assess the archaeological potential of various parts of the study site, together with the likely significance of that potential, and to consider the need for design, civil engineering, and archaeological solutions to the archaeological potential and significance identified.

2 PLANNING BACKGROUND AND DEVELOPMENT PLAN FRAMEWORK

2.1 National legislation regarding archaeology, including scheduled monuments, is contained in the Ancient Monuments and Archaeological Areas Act 1979, amended by the National Heritage Act 1983 and 2002, and updated in April 2014.

2.2 In March 2012, the government published the National Planning Policy Framework (NPPF), and it was last updated in February 2019. The NPPF is supported by the National Planning Practice Guidance (NPPG), which was published online 6th March 2014 and is periodically updated (https://www.gov.uk/guidance/conserving-and-enhancing-the-historic-environment).

2.3 The NPPF and NPPG are additionally supported by three Good Practice Advice (GPA) documents published by Historic England: GPA 1: The Historic Environment in Local Plans; GPA 2: Managing Significance in Decision-Taking in the Historic Environment (both published March 2015). The second edition of GPA3: The Setting of Heritage Assets was published in December 2017.

National Planning Policy

2.4 Section 16 of the NPPF, entitled Conserving and enhancing the historic environment provides guidance for planning authorities, property owners, developers and others on the conservation and investigation of heritage assets. Overall, the objectives of Section 16 of the NPPF can be summarised as seeking the:

- Delivery of sustainable development;
- Understanding the wider social, cultural, economic and environmental benefits brought by the conservation of the historic environment;
- Conservation of England's heritage assets in a manner appropriate to their significance; and
- Recognition that heritage makes to our knowledge and understanding of the past.

2.5 Section 16 of the NPPF recognises that intelligently managed change may sometimes be necessary if heritage assets are to be maintained for the long term. Paragraph 189 states that planning decisions should be based on the significance of the heritage asset and that level of detail supplied by an applicant should be proportionate to the importance of the asset and should be no more than sufficient to review the potential impact of the proposal upon the significance of that asset.

2.6 *Heritage Assets* are defined in Annex 2 of the NPPF as: a building, monument, site, place, area or landscape positively identified as having a degree of significance meriting consideration in planning decisions. They include designated heritage assets (as defined in the NPPF) and assets identified by the local planning authority during the process of decision-making or through the plan-making process.

2.7 Annex 2 also defines *Archaeological Interest* as a heritage asset which holds or potentially could hold evidence of past human activity worthy of expert investigation at some point.

2.8 A *Nationally Important Designated Heritage Asset* comprises a: World Heritage Site, Scheduled Monument, Listed Building, Protected Wreck Site, Registered Park and Garden, Registered Battlefield or Conservation Area.

2.9 *Significance* is defined as: The value of a heritage asset to this and future generations because of its heritage interest. This interest may be archaeological, architectural, artistic or historic. Significance derives not only from a heritage asset's physical presence, but also from its setting.

2.10 *Setting* is defined as: The surroundings in which a heritage asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance or may be neutral.

2.11 In short, government policy provides a framework which:

- Protects nationally important designated Heritage Assets;
- Protects the settings of such designations;
- In appropriate circumstances seeks adequate information (from desk based assessment and field evaluation where necessary) to enable informed decisions;
- Provides for the excavation and investigation of sites not significant enough to merit *in-situ* preservation.

2.12 The NPPG reiterates that the conservation of heritage assets in a manner appropriate to their significance is a core planning principle, requiring a flexible and thoughtful approach. Furthermore, it highlights that neglect and decay of heritage assets is best addressed through ensuring they remain in active use that is consistent with their conservation. Importantly, the guidance states that if complete, or partial loss of a heritage asset is justified, the aim should then be to capture and record the evidence of the asset's significance and make the interpretation publicly available. Key elements of the guidance relate to assessing harm. An important consideration should be whether the proposed works adversely affect a key element of the heritage asset's special architectural or historic interest. Additionally, it is the degree of harm, rather than the scale of development, that is to be assessed. The level of 'substantial harm' is considered to be a high bar that may not arise in many cases. Essentially, whether a proposal causes substantial harm will be a judgment for the decision taker, having regard to the circumstances of the case and the NPPF. Importantly, harm may arise from works to the asset or from development within its setting. Setting is defined as the surroundings in which an asset is experienced and may be more extensive than the curtilage. A thorough assessment of the impact of proposals upon setting needs to take into account, and be proportionate to, the significance of the heritage asset and the degree to which proposed changes enhance or detract from that significance and the ability to appreciate it.

2.13 In considering any planning application for development, the planning authority will be mindful of the framework set by government policy, in this instance the NPPF, by current Development Plan Policy and by other material considerations.

Local Planning Policy

2.14 The Brighton and Hove Local Plan was adopted in 2005 and contains the following saved policy relating to the historic environment (archaeology only):

HE12 Scheduled ancient monuments and other important archaeological sites

Development proposals must preserve and enhance sites of known and potential archaeological interest and their settings. Proposals that are likely to have an adverse impact on the archaeological interest, character or visual amenity of such sites and their settings will not be permitted. Exceptions will only be made where:

a. in the case of Scheduled Ancient Monuments and their settings, the development would provide for an essential national need for which no alternative site is available, and the archaeological remains are to be preserved, as far as practicable, in situ and the adverse impacts minimised; or

b. in the case of other archaeological sites and their settings, the planning authority, in considering the relative importance of the site against the need for the proposal, is satisfied that the adverse impacts are to be minimised and the need for the proposal outweighs the likely harm to be done.

All proposals must be accompanied by an appropriate assessment of their archaeological implications. In considering whether an exception should be made, the planning authority may require the applicant to provide a further assessment of the significance of potential archaeological remains before the application is determined. This might form part of an Environmental Impact Assessment.

If the planning authority is satisfied that the value of the archaeological remains is outweighed by the need for the development, it will seek to preserve archaeological remains in situ as far as possible. If preservation in situ is not practicable, the applicant may be required to make provision for archaeological recording and/or specialist excavation before and during development; the conservation and storage of artefacts; and the dissemination of results.

The planning authority will also require appropriate enhancements, mitigation, and compensatory measures to be undertaken.

Planning conditions may be imposed, or a planning obligation sought, in order to secure these requirements.

2.15 The City Plan Part One as adopted by Brighton and Hove City Council (BHCC) on 24th March 2016 contains the following policy relevant to heritage:

CP15 Heritage

The council will work with partners to promote the city's heritage and to ensure that the historic environment plays an integral part in the wider social, cultural, economic and environmental future of the city through the following aims:

1. The city's historic environment will be conserved and enhanced in accordance with its identified significance, giving the greatest weight to designated heritage assets and their settings and prioritising positive action for those assets at risk through, neglect, decay, vacancy or other threats. The council will further ensure that the city's built heritage guides local distinctiveness for new development in historic areas and heritage settings;

2. Where proposals are promoted for their contribution to mitigating climate change, the public benefit of this will be weighed against any harm which may be caused to the significance of the heritage asset or its setting; and

3. The Conservation Strategy will be taken forward and reviewed as a framework for future conservation area management proposals; to provide criteria for future conservation area designations and other local designations, controls and priorities; and to set out the council's approach to dealing with heritage at risk.

2.16 The 2016 City Plan Part One also contains Policy DA2 Brighton Marina, Gas Works and Black Rock Area. Those elements of this policy relating to the gasworks site do not reference heritage, but are reproduced here for reference:

> **2. Gas Works site**
>
> **The Gas Works site has been identified for approximately 2,000 sq m of business floor space to the north of the site, a minimum of 85 residential units and some ancillary retail development. The key criteria against which proposals will be assessed are:**
>
> **a) Employment provision - development should provide an appropriate mix of employment floor space of varying sizes that cater for business uses ranging from office to light industrial, including small starter units or managed units (Use Classes B1);**
>
> **b) Housing mix – development should provide for a mix of dwelling type, tenure and size to cater for a range of housing requirements and to improve housing choice;**
>
> **c) Design – development proposals should demonstrate high quality design which positively contribute to the varying character of existing residential and commercial properties in the vicinity to create a cohesive and attractive urban environment;**
>
> **d) Connectivity – development proposals should enhance existing links between the Marina, Gas Works and Black Rock and contribute to the creation of safe links and coherent integration between the Gas Works site and the surrounding neighbourhood;**
>
> **e) Land contamination – development proposals should undertake and submit to the Local Planning Authority evidence to support uses where possible land contamination and remediation may prohibit the delivery of the above uses and amounts; 43**
>
> **f) The developer will enter into a training place agreement to secure training for local people.**

Relevant Designations

2.19 In terms of relevant designated heritage assets, the study site does not lie within the vicinity of a World Heritage Site, Scheduled Monument, Historic Battlefield or Historic Wreck.

2.20 In terms of relevant local designations, the study site does not lie within an Archaeological Notification Area, as defined by Brighton and Hove City Council, and their archaeological planning advisors at East Sussex County Council.

2.21 In line with relevant planning policy and guidance, this desk-based assessment seeks to clarify the study site's archaeological potential, together with the likely significance of that potential, and the need or otherwise for additional mitigation measures.

3 GEOLOGY AND TOPOGRAPHY

Geology

3.1 The mapped underlying solid geology of the study site comprises chalk of the Newhaven Formation, formed in the Cretaceous period 72-86 million years ago. Superficial geological deposits above the chalk are mapped as Head deposits, comprising clay, silt, sand and gravel, formed in the Quaternary period up to 3 million years ago. Head deposits typically comprise frost and ice damaged material which has progressed downslope through a process of solifluction (BGS 1996: 123; Wymer 1999: 18; http://mapapps.bgs.ac.uk/geologyofbritain/home.html).

3.2 Three discrete horizons can be anticipated within the mapped Quaternary Head deposits: colluvium of Holocene date, above two phases of Pleistocene Head deposits (Dr Matt Pope pers. comm.: see also paragraph 4.20 below).

3.3 Deposits of made ground can also be anticipated at the study site as a result of previous and existing development.

Topography

3.4 The study site lies at the southern end of Whitehawk Bottom, a north-south dry valley which has been truncated by sea level rise and terminates at the east west cliff line facing the English Channel, c.200m to the south.

3.5 The general topography of the study site therefore comprises a drop in height from north to south, and a drop in height from east to west. Previous and existing development within the study site has impacted upon the natural topography, with terracing and levelling present within the northeastern corner and within the southern boundary (see the LiDAR survey reproduced at Figure 29).

3.6 In addition, the junction of Roedean Road and Marina Way immediately beyond the northeastern corner of the study site lies at 31.5m AOD. The northern end of the study site lies c.2-4m lower than the course of Roedean Road which itself drops in height from east to west along the northern boundary, whilst the southern end of the study site lies c.7m higher than the course of Marina Way, secured by a concrete retaining structure.

3.7 The ground level of the western side of the study site drops from c.24.8m AOD within the northwestern corner to c.21.5m AOD in the southwestern corner. The eastern side of the study site drops from a maximum height of c.28.5m AOD in the northeastern corner, to c.24.2m AOD adjacent to the gasholders, and to c.21.4m AOD within the southeastern corner (see also Figure 30 and Plates 1-9).

3.8 The shore of the English Channel lies c.200m to the south of the study site.

4 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND WITH ASSESSMENT OF SIGNIFICANCE

Timescales used in this report

Prehistoric

Palaeolithic	900,000	-	12,000 BC
Mesolithic	12,000	-	4,000 BC
Neolithic	4,000	-	1,800 BC
Bronze Age	1,800	-	600 BC
Iron Age	600	-	AD 43

Historic

Roman	AD 43	-	410
Saxon/Early Medieval	AD 410	-	1066
Medieval	AD 1066	-	1485
Post Medieval	AD 1486	-	1799
Modern	AD 1800	-	Present

Introduction

4.1 This chapter reviews the available archaeological evidence for the study site and the archaeological/historical background of the general area, and, in accordance with NPPF/NPPG, considers the potential for any as yet to be discovered archaeological evidence on the study site.

4.2 What follows comprises a review of known archaeological assets within a one kilometre radius of the site, also referred to as the study area, held on the East Sussex Historic Environment Record (HER), together with a historic map regression exercise charting the development of the study area from the eighteenth century onwards until the present day.

4.3 Figures 2-4 spatially references relevant cultural heritage designations and archaeological findspots in relation to the study site, primarily using data provided by the East Sussex Historic Environment Record (HER).

4.4 In terms of relevant nationally significant designated heritage assets, the study site does not lie within the vicinity of a World Heritage Site, Scheduled Monument, Historic Battlefield or Historic Wreck site (Figure 2).

4.5 In terms of relevant local designations, the study site does not lie within an Archaeological Notification Area (ANA), as defined by Brighton and Hove City Council and their archaeological planning advisors (see Figure 2) The western end of ANA ref DES9043, Roedean Prehistoric and Roman funerary

landscape abuts the eastern side of Marina Road (DES9043, 639, TQ3422 0337; see Figure 2 and the prehistoric and Roman sections below). Further ANA designations lie to the northeast (DES9044: Redhill Roman settlement), to the west (DES8782: St Marys Iron Age settlement and 19th century estate) and to the northwest (DES8781: Whitehawk Neolithic Enclosure and other remains).

4.6 The archaeological potential of the study area is characterised by finds of prehistoric and Roman material, principally flintwork, together with some burials, generally focussed to the east of the study site (see Figures 2-3).

4.7 Figure 4 replicates Historic Landscape Characterisation (HLC) data from the East Sussex HER and confirms that the study site is designated as 'Industry: Processing'.

4.8 The Extensive Urban Survey Historic Characterisation Report for Brighton classifies the study site to be situated in Historic Urban Character Area (HUCA) no. 15, Kemp Town, graded at Historic Environment Value (HEV) Level 4. There are 5 levels of HEV, with Level 1 being the lowest and Level 5 being the highest, however, this designation is principally for the built heritage of the area, rather than the archaeological potential, which is deemed to be limited (Harris 2007).

4.9 The LiDAR data for the study site (see Figure 29) indicates impacts from previous and existing development across the study site, particularly to the northeast and south (see also Plates 1-9).

4.10 Chapter 5 subsequently considers the study site conditions and whether the proposed development will impact the theoretical archaeological potential identified below.

Previous Archaeological Work

4.11 The East Sussex HER does not identify any archaeological work having previously been undertaken within the study site (see Figure 2).

4.12 HER ref MES35027 within the southern part of the study site identifies the presence of a possible nineteenth century farm, identified through a review of historic mapping (TQ3352 0348). The full description reads:

complex composed of a residential building and a number of ancillary buildings first appears on the 1810 Tithe Map. The complex still appears to hold roughly the same footprint on the 1st edition OS. By the time of the 2nd edition OS only the main building and the front portion of the long structure on the Eastern side of the complex remain. By the time of the 3rd and 4th edition OS these two buildings have been joined on the eastern side of the main range. The Tithe Apportionments state that field 262 in the centre of the complex is - "Arable and Waste" and owned by Hodson.

4.13 The RPS review of map evidence does not suggest that a farm was formerly present within the southern part of the study site (see paragraphs 4.33-4.39 below, and Figures 9-11).

Prehistoric

4.14 The sole findspot of Palaeolithic date within the one kilometre study area comprises a flint handaxe from Black Rock, found in 1914 to the southeast of the study site (MES186, TQ336 031).

4.15 Finds of undiagnostic flint flakes have been identified within the study area, principally to the east of the study site. Archaeological monitoring at 40 The Cliff, Roedean, revealed no archaeological features and two flint flakes (EES14041, TQ34116 03413); monitoring at 34 The Cliff revealed two white patinated

flakes (EES14042, TQ34047 03441); monitoring at 47 The Cliffe revealed three grey patinated flint flakes (EES14043, MES35000, TQ34089 03481); monitoring at 26 The Cliff revealed a single struck flint flake (EES14370, TQ33993 03456); monitoring at 23 Roedean Crescent revealed 'a few flint flakes' (EES14490, TQ34473 03577); monitoring at 51 Roedean Road revealed prehistoric struck flint (EES15176, MES34946, TQ3411 0345); monitoring at 25 Roedean Crescent revealed two flint flakes (EES15330, TQ3449 0355); monitoring at The Outlook, 2 Roedean Path, revealed a single struck flint flake (EES15657, MES23515, TQ3450 0338). To the west of the study site, a single residual prehistoric flint flake was identified at 14A Church Place (EES15233, TQ3314 0373).

4.16 Monitoring during the demolition and construction of an equipment store on East Brighton Golf Course, east of the study site, revealed an Early Bronze Age crouched burial and a ditch dated to the middle Iron Age. Geophysical survey indicated the potential presence of further features (EES14232, MES7314, TQ34128 03590). Another entry on the East Sussex HER references an early Bronze Age crouched burial and a middle Iron Age ditch within the East Brighton Golf Course, in a different location (EES15442, TQ3397 0355), and another regarding the burial only (EES9586, TQ338 036). MES203 records a crouched Early Bronze Age burial found in March 1924 between Roedean Road and the south front of the Golf clubhouse (MES203, TQ3396 0355). A crouched female burial was identified in 1931, of probable Neolithic or Early Bronze Age date, c.61m southwest of Black Rock coastguard station (MES204, TQ3446 0337).

4.17 Another Early Bronze Age inhumation has been recorded at Roedean Crescent to the east of the study site (EES9594, TQ3453 0347), which could be repeated at HER MES202 (TQ3453 0344). A further inhumation burial was identified at the rear of 6 Roedean Crescent, possibly prehistoric or Roman (MES16395, TQ3429 0353). Archaeological discoveries from the general Kemp Town area, west of the study site, include a Middle Bronze Age cremation urn (MES180, TQ3303).

4.18 A Bronze Age hoard of sixteen items are recorded as being found 'inland from Black Rock' c.1913-1914 (MES187, TQ3303).

4.19 An Iron Age gold stater has been identified at East Brighton Golf Club to the east of the study site (MES206, TQ3406 0347). An urned Iron Age cremation is recorded from 'near Brighton', found in August 1910 dug into the cliff face (MES215, TQ3303). An Iron Age or Roman bronze boar figurine was found at St Mary's Hall to the northwest of the study site (MES33720, TQ3300 0380). To the east of the study site, two residual sherds of Late Iron Age/Early Roman pottery were found during evaluation at 4 Roedean Crescent (EES14790, TQ3427 0355).

4.20 As identified in Section 3 above, the superficial geology identified at the study site comprises Quaternary Head deposits including colluvium and two layers of Pleistocene Head Deposits. The earliest Head horizon has previously produced fossils, molluscs and Middle Palaeolithic artefacts; the later Head deposits have the potential to contain a soil horizon of Palaeolithic date. The colluvial horizon has previously produced the Early Neolithic Whitehawk Causewayed Enclosure (to the northwest of the study site) and the Black Rock Late Bronze Age hoard referenced above in paragraph 4.18 (Dr Matt Pope pers. comm.).

4.21 In view of the above, a generally low to moderate archaeological potential can be identified for the prehistoric periods within the study site.

Roman

4.22 To the northwest of the study site, an Iron Age brooch together with Roman pottery, coins and a brooch were identified at St Mary's Hall Kemp Town, in a pit. The HER entry interprets the remains as indicative of settlement (MES196, TQ330 037).

4.23 To the east of the study site, a Roman burial and pit are recorded at Roedean Crescent. Associated finds were dated to the Third Century AD and included 20 iron nails, indicating a possible coffin which has not otherwise survived (EES9595, MES205, TQ3427 0355). Monitoring at 34 The Cliff revealed a single sherd of Roman pottery (EES14042, TQ34047 03441), while monitoring at 51 Roedean Road also revealed Roman pottery (EES15176, MES21049, TQ3411 0345). Residual pottery was identified at 4 Roedean Crescent (MES17151, TQ3427 0355).

4.24 A hoard of nine Roman coins has been identified on Roedean Crescent to the east of the study site (MES201, TQ3403). A coin of Trajan has been found at Black Rock to the southeast (MES185, TQ336 032), a coin of Maximinius II has been found at 15 Freehold Terrace to the east (MES209, TQ342 031), and another coin of Maximinius II is recorded from the general Black Rock area (MES212, TQ3303).

4.25 In view of the above, a generally low to moderate archaeological potential can be identified for the Roman period within the study site.

Anglo-Saxon and Medieval

4.26 The East Sussex HER records an AS burial from the general Kemptown area to the west of the study site (EES9419, TQ3303), together with the site of an Anglo-Saxon barrow containing an inhumation with a sword, spearhead, animal remains and associated material culture (MES207, TQ3303).

4.27 Domesday records a church at Brighton; *Brighthelmstone* originated as a fishing village and port, and by the middle of the twelfth century was expanding into a small town; a market is recorded as being held from 1312 (Harris 2007; Antrim & Pevsner 2013). The historical core developed some distance to the west of the study site, as shown on early mapping (see Figures 5-7).

4.28 A generally low archaeological potential is anticipated within the study site for the Anglo Saxon and Medieval periods. Evidence for agricultural activity and land division is perhaps most likely to be represented within the archaeological record.

Post Medieval & Modern (including map regression exercise)

4.29 Brighton developed as a seaside town from the middle of the eighteenth century, and became the fastest developing town in Britain during the early nineteenth century. The study site lies on the eastern edge of Kemp Town, which was speculatively developed from the early 1820s onwards (Antrim & Pevsner 2013).

4.30 Early maps show the study site to lie east of the developing core of Brighton (Figure 5: 1795 Gardner & Gream Map of Sussex; Figure 6: 1797 Ordnance Survey Drawing; 1813 Ordnance Survey Old Series).

4.31 Local social media sources indicate that the name Black Rock derives from the deposition of coal at the boundary of Brighton parish, so as to avoid paying a tax on coal; also that the name derives the presence of black rocks near to the marina, south of the study site, or from the deposition of waste material produced by the gasworks (https://www.mybrightonandhove.org.uk/topic/brighton-gas-works-2). The presence of the name on the 1797 Ordnance Survey Drawing, preceding the gasworks, could suggest the former.

4.32 The Brighton Gas Light and Coke Company gasworks were established c.1818 at Black Rock, situated just outside the Brighton parish boundary, within Rottingdean parish (https://discovery.nationalarchives.gov.uk/details/r/aa2116cf-722c-47e6-8b50-8b41344de92c).

4.33 Figure 8 reproduces the plan of the original plot of land bought for the gasworks, dated 1818, sourced from East Sussex Record Office.

4.34 Documentary references sourced from the British Gas Archive state that a storm on 29th November 1836 blew down the west wall of the gasworks, crushing gasholder No 2 (ref BRH_1934_V7_P51).

4.35 The composite plan of relevant tithe maps, reproduced at Figure 9, confirms that the study site lies within Rottingdean, adjacent to the boundary with Brighton. Award references for the study site are as follows:

Plot	Landowner	Occupant	Description	Land use/ State of Cultivation
262	Organisation: Gas Works Company	Organisation: Gas Works Company	Gas works	-
263	Thomas Beard	George Kennedy	Inn, cottages and gardens	-
264	Thomas Beard	Charles Coley	Further Black Rock	Arable
426	Organisation: Gas Works Company	Organisation: Gas Works Company	Garden	Arable

4.36 A map of Brighton dated 1853 (Figure 10) shows the gasworks extant within the southern part of the study site, with open land to the southwest, east and north.

4.37 The First Edition Ordnance Survey (Figure 11: 1875) shows the study site primarily occupied by the gasworks. A gasometer is shown situated in the northwestern corner, with two more on the eastern boundary. There is a focus of buildings within the central and southern parts of the study site. Further gasometers are understood to be present in the southwestern corner (see paragraph 4.39 below). The southeastern area of the study site includes part of a terrace of houses and open areas fronting Riflebutt Road; the southwestern area remains open garden, and the northeastern area comprises open land with a building to the east.

4.38 In 1881 the Brighton Gas Light and Coke Company became part of the Brighton and Hove General Gas Company. As part of the Act of Parliament amalgamating these companies (together with the Aldrington, Hove and Brighton Gasworks) it was required to cease gas production at the study site within ten years of the Act being passed. The gasworks occupying the study site subsequently became a gas storage facility (https://discovery.nationalarchives.gov.uk/details/r/aa2116cf-722c-47e6-8b50-8b41344de92c ; https://www.mybrightonandhove.org.uk/topic/brighton-gas-works-2).

4.39 Documentary references sourced from the British Gas Archive state that three small gasholders within the southwestern corner of the study site were demolished in 1886. One of the gasholders was positioned within a wooden building, and another was rectangular. The yard foreman's office and the coke clerk were housed in a wooden hut, which was refurbished in 1886 and used as the clerk of works office during the construction of No 7 gasholder. The tanks below the demolished gasholders were filled in with arisings from the No 7 gasholder, with the remainder of these arisings '*tipped down the front of the cliff immediately south of the garden ground of the gasworks house*' (ref BRH_1934_V7_P51).

4.40 The Second Edition Ordnance Survey (Figure 12: 1898) shows that the bulk of the former gasworks buildings have been removed from the southwestern area, and that a gasometer has been added within the centre of the northern boundary. The southwestern area of the study site remains open land and a smithy building now occupies part of the northeastern corner.

4.41 The Third Edition Ordnance Survey (Figure 13: 1911) shows additional buildings towards the centre and on the western boundary of the study site, with an excavated area to the southwest. The smithy building in the northeastern corner has expanded across this area of the study site.

4.42 Figure 14 reproduces an annotated aerial photograph dated 1928, sourced from the British Gas Archive. The annotations show gasholders 6, 7, 5 and 4 (listed from west to southeast) together with workshops on the western boundary, stores on the eastern boundary, and 'The Old House' on the southern boundary. The aerial photograph is accompanied by the following description of the study site's usage:

South side of works, west of entrance gates, yard foreman's office. East of entrance gates, private residence of the Distributing Engineer (Old House, Black Rock). Adjoining this the yard foreman's house named "The Wing." (These properties stand on the site of the house which was formerly the residence of Mr. J. 0. N. Rutter, the Engineer of the Brighton Gas Light and Coke Company, from 1835 to 1885. Mr J O N Rutter was the grandfather of Mr C. H. Rutter, the present Engineer and General Manager).

East of "The Wing" the gas stove stores and gas fire reconditioning shop with spray painting plant and japanning oven, and then the motor lorry garage. On the east side of the Works the unloading dock, mess room, sheet metal workers' shop, main stores and carpenters' shop.

On the north side, the gasholders. On the west side, motor and cycle repair shop, pipe screwing shop, engine room, blacksmith's shop, dipping shed, and brass finishing shop. To the north of yard in centre, gas cooker and boiler reconditioning shops, including the sand blast plant and muffle furnaces.

Just west of No. 5 gasholder the valveroom, and a little further west the power house for generating electricity for driving boosters installed in Valveroom.

4.43 The 1931 Ordnance Survey (Figure 15) shows additional buildings positioned within the southeastern part of the study site, west of the houses fronting Riflebutt Road. An aerial photograph derived from the British Gas Archives dated 1932 (Figure 16) shows the southeastern buildings in more detail. The structures labelled as a smithy within the northeastern corner appear to comprise a substantial three storey building.

4.44 Brighton gasworks is recorded as being bomb damaged in August 1942, and possibly also in 1944 (https://www.culture24.org.uk/places-to-go/south-east/brighton-and-hove/art29725). The 1944 bomb damage map (Figure 17) records three bomb strikes within the study site.

4.45 The 1951 Ordnance Survey (Figure 18) shows the presence of only three gasometers, within the northern part of the study site, together with additional buildings towards the centre and southeast. The

buildings within the northeastern corner are labelled 'Perivale' and 'Patchet House'. The Black Rock Bakery is now labelled within the southeastern part of the study site, and former terraced houses towards the southeastern corner have been replaced with gas works buildings. The southwestern corner of the study site is shown without any of the former features.

4.46 An annotated map derived from the East Sussex Record Office and dated to the 1960s, reproduced at Figure 19, shows the proposed realignment of roads around the eastern and southern sides of the study site. The 1967 Ordnance Survey (Figure 20) shows the construction of the Gas Board Depot & Offices within the southern part of the study site, with a further large building occupying much of the southwestern corner. The northeastern corner has also been redeveloped.

4.47 Figure 21 reproduces a block plan of the gasworks dated 1968, derived from the British Gas Archive, which shows the functions of the buildings and the service connections between them, together with the removal of buildings formerly within the southeastern corner. The northeastern corner of the study site is labelled as occupied by 'Andrews furniture removers'.

4.48 Information derived from the East Sussex Record Office dated 1972 (Figure 22) shows the Black Rock Bakery within the southeastern corner of the study site, ahead of redevelopment. The 1975-1980 composite Ordnance Survey (Figure 23) shows the removal of the terraced housing formerly in the southeastern boundary, the removal of the buildings in the northeastern corner, and the creation of Marina Way around the eastern and southern study site boundaries. Part of the southwestern corner of the study site now comprises a downward slope towards the road, with a 'Police Office' marked on the western boundary.

4.49 The 1983 block plan (Figure 24) derived from the British Gas Archives shows a simplified version of the 1968 block plan reproduced at Figure 22. The 1990-1994 composite Ordnance Survey (Figure 25) shows no significant alterations within the study site, nor does the 2004 aerial photograph (Figure 26), however, the 2007 aerial photograph (Figure 27) shows the demolition of the former gasworks offices and depot buildings within the southern part of the study site.

4.50 The 2019 aerial photograph (Figure 28) and the current site survey (Figure 30) shows the study site in its current configuration.

4.51 The study site's archaeological potential for the Post Medieval and Modern periods is considered as entirely invested its use as a gasworks and latterly as a gasholder station, from the early nineteenth century onwards. This potential will focus on structures associated with the existing gasholder station, together with any former gasholder related structures, and any surviving remains of features associated with former properties latterly absorbed into the gasworks complex.

Negative and Neutral information

4.52 To the east of the study site, a single trench evaluation revealed no archaeological remains (EES14256, TQ33838 03408). Evaluation at 8 Cliff Approach Roedean revealed no archaeology (EES14823, TQ3374 0350), nor did evaluation at 1-3 The Cliff (EES16050, TQ3381 0357). Evaluation on the A259 Coast road revealed no archaeological remains (EES14710, TQ3594 0272).

4.53 To the east of the study site, monitoring at 49 Roedean Road revealed nothing of archaeological interest (EES14489, TQ34105 03475); monitoring at 23 Roedean Crescent revealed no archaeological remains (EES14497, TQ34459 03557), monitoring at 913 Roedean Crescent revealed a World War Two concrete bunker (EES15174, MES21048, TQ3434 0362); monitoring at 23 Roedean Crescent revealed no archaeological remains (EES16008, TQ3445 0355), monitoring at 1 Cliff Road and 8 Cliff Approach revealed no archaeological finds or features (EES16107, TQ3374 0350); monitoring at The Outlook, Roedean, revealed Modern remains only (EES16166, TQ3450 0340); monitoring at 2 Roedean Heights revealed no archaeological remains (EES17547, TQ3415 0352); monitoring at 45 The Cliff revealed no archaeology (EES18994, TQ3407 0348).

4.54 To the west and northwest of the study site, monitoring at St Mary's Hall, Eastern Road, revealed no archaeological remains (EES16125, TQ3294 0386); monitoring at 1 Manor Road revealed Modern remains only (EES17013, TQ3265 0390); monitoring at Bristol Gate revealed no archaeological remains (EES17146, TQ3285 0385); monitoring at 16 Bristol Gate revealed Modern remains only (EES18231, TQ3297 0389).

4.55 To the south of the study site, a watching brief at Brighton Marina revealed some remains of low archaeological interest (EES16210, TQ3353 0300).

Assessment of Significance (Designated Heritage Assets)

4.56 Existing national policy guidance for archaeology (the NPPF as referenced in section 2) enshrines the concept of the 'significance' of heritage assets. Significance as defined in the NPPF centres on the value of an archaeological or historic asset for its 'heritage interest' to this or future generations.

4.57 In terms of relevant designated heritage assets, The study site does not lie within the vicinity of a World Heritage Site, Scheduled Monument, Historic Battlefield or Historic Wreck.

4.58 In view of the above it is concluded that the redevelopment proposals will have no direct impact upon relevant designated heritage assets.

Assessment of Significance (Non-Designated Heritage Assets)

4.59 In terms of relevant local designations, the study site does not lie within an Archaeological Priority Area, as defined by Brighton and Hove City Council and their archaeological planning advisors.

4.60 As identified by desk based work, archaeological potential by period and the likely significance of any archaeological remains which may be present is summarised in table form below:

Period:	Identified Archaeological Potential	Identified Archaeological Significance
Palaeolithic	Low to moderate	Low (Local) to Moderate (Regional)
Mesolithic	Low to moderate	Low (Local) to Moderate (Regional)
Neolithic	Low to moderate	Low (Local) to Moderate (Regional)
Bronze Age	Low to moderate	Low (Local) to Moderate (Regional)

Iron Age	Low to moderate	Low (Local) to Moderate (Regional)
Roman	Low to moderate	Low (Local) to Moderate (Regional)
Anglo-Saxon	Low	Low (Local)
Medieval	Low	Low (Local)
Post Medieval	Low	Low (Local)
Modern	High	Low (local)

4.61 Any archaeological remains, should they occur at the study site, would in the context of the Secretary of State's non-statutory criteria for Scheduled Monuments (DCMS 2013) most likely be of local significance.

5 SITE CONDITIONS, THE PROPOSED DEVELOPMENT AND REVIEW OF POTENTIAL DEVELOPMENT IMPACTS ON ARCHAEOLOGICAL ASSETS

Site Conditions

5.1 The study site currently comprises two gasholders within the northeastern part of the study site, together with hardstanding across the bulk of the remainder, principally in use for storage, with double height commercial premises situated towards the centre of the western boundary, and areas of temporary containers across the southern area. The northeastern corner of the study site is also in storage use, and the southeastern corner comprises a single storey building, overgrown land and landscaping associated with Marina Way (see Figures 28-30 and Plates 1-9).

5.2 The construction of the existing buildings can be considered likely to have had a negative archaeological impact through the cutting of foundations and services.

5.3 The construction and subsequent demolition of the buildings previously occupying the study site can be considered likely to have had a cumulative negative archaeological impact, through site levelling and terracing, the cutting of basements/cellars, foundations and services, together with their subsequent grubbing out. The gasworks and gas storage use of the study site, particularly the excavation of the gasholders, is considered likely to have had a particularly negative archaeological impact. The LiDAR survey reproduced at Figure 29 provides an indication of previous truncation and levelling (see also Figure 30 and Plates 1-9).

5.4 Agricultural/horticultural use of the study site prior to development can be considered likely to have had a moderate, widespread negative archaeological impact.

Proposed Development

5.5 The precise description of development has not been finalised, however it is anticipated that it may include up to the following:

- Demolition of existing buildings and structures;
- Enabling works including but not limited to: ground remediation and decontamination; removal of below ground obstructions; consolidation of existing gas equipment including erection of a new Pressure Reduction Station compound;
- The construction of:
  - Up to 700 new dwellings and ancillary residential floorspace – this may be set out in the planning application by a number homes or equivalent GEA figure;
  - Circa 2,000sqm non-residential floorspace (use classes B1, A1-A4 and/or D1);
  - New public open space, and semi-private and private residential open space;
  - Car and cycle storage predominately within part podium(s);
  - Pedestrian, car and cycle and access and circulation works;
  - Landscape and public realm works;
- Associated infrastructure and interim works.

5.6 The Development proposals are at an early stage of design and will be developed further with input of technical analysis as part of the EIA process and in consultation with BHCC and other stakeholders. Mitigation measures will be incorporated and designed into the Development, where possible, to avoid or reduce likely significant adverse effects on the environment and local community.

Review of Potential Development Impacts on Designated Archaeological Assets

5.7 In terms of relevant designated heritage assets, as defined above and as shown on Figure 2, no nationally designated World Heritage Sites, Scheduled Monuments, Historic Battlefield or Historic Wreck sites lie within the vicinity of the study site.

5.8 In view of the above it is concluded that the redevelopment proposals will have no direct archaeological impact upon relevant designated heritage assets.

Review of Potential Development Impacts on Non-Designated Assets

5.9 In terms of relevant local designations, the study site is not located within an Archaeological Notification Area as defined by Brighton and Hove City Council and their archaeological planning advisors.

5.10 As defined above in Section 4, the available information indicates that the study site has a low to moderate archaeological potential for the periods, which upon the basis of the available information can be considered likely to be of generally low significance.

5.11 The nature of archaeological survival will necessarily depend upon the impact of past post-depositional impacts as a result of development since deposition, which in this case comprises the construction of the existing and previous roads and buildings.

5.12 In view of the identified archaeological potential, it is anticipated that the East Sussex County Council archaeological advisors will require additional mitigation measures in relation to construction groundworks impacts.

6 SUMMARY AND CONCLUSIONS

6.1 The study site of the former Brighton gasworks, BN2 5TJ, has been assessed for its below ground archaeological potential.

6.2 In accordance with relevant government planning policy and guidance, a desk based assessment has been undertaken to clarify the archaeological potential of the study area.

6.3 In terms of relevant designated heritage assets, no World Heritage Sites, Scheduled Monuments, Historic Battlefield or Historic Wreck sites have been identified within the vicinity of the study site.

6.4 In terms of relevant local designations, the study site is not located within an Archaeological Notification Area as defined by Brighton and Hove City Council and their archaeological planning advisors.

6.5 The available information indicates a low to moderate archaeological potential for the prehistoric, Roman, Post Medieval and Modern periods, which on the basis of the available information is considered likely to be of a generally low significance.

6.6 Past-post depositional impacts within the study site, primarily the construction and subsequent demolition of the former gasworks buildings, are considered likely to have had a cumulatively severe negative archaeological impact.

6.7 The precise description of development has not been finalised, however it is anticipated that it may include up to the following:

- Demolition of existing buildings and structures;
- Enabling works including but not limited to: ground remediation and decontamination; removal of below ground obstructions; consolidation of existing gas equipment including erection of a new Pressure Reduction Station compound;
- The construction of:
  - Up to 700 new dwellings and ancillary residential floorspace – this may be set out in the planning application by a number homes or equivalent GEA figure;
  - Circa 2,000sqm non-residential floorspace (use classes B1, A1-A4 and/or D1);
  - New public open space, and semi-private and private residential open space;
  - Car and cycle storage predominately within part podium(s);
  - Pedestrian, car and cycle and access and circulation works;
  - Landscape and public realm works;
- Associated infrastructure and interim works.

6.8 The development proposals are at an early stage of design and will be developed further with input of technical analysis as part of the EIA process and in consultation with BHCC and other stakeholders. Mitigation measures will be incorporated and designed into the Development, where possible, to avoid or reduce likely significant adverse effects on the environment and local community.

6.9 On the basis of the available information, further archaeological mitigation measures are anticipated to be required in advance of development impact.

6.10 It is proposed in the first instance to archaeologically and geoarchaeologically monitor any site investigation works, with a view to informing the scope and nature of any additional fieldworks. This may comprise archaeological and/or geoarchaeological evaluation works, with further works dependant upon the results of earlier phases.

6.11 In addition to below ground works, it is anticipated that a programme of low level historic building recording will be required on buildings/structures related to the former gasworks surviving within the study site.

6.12 As remains of national significance are not anticipated within the study site, it is anticipated that any necessary archaeological works can follow the granting of planning consent, secured by an appropriate condition.

SOURCES CONSULTED

General

British Gas Archives

British Library

East Sussex Historic Environment Record

East Sussex Record Office

National Archives

Royal Pavilion & Museums, Brighton

Internet

Archaeological Data Service: http://archaeologydataservice.ac.uk

Aerial photography: http://www.britainfromabove.org.uk/

Brighton bomb damage: https://www.culture24.org.uk/places-to-go/south-east/brighton-and-hove/art29725

British Geological Survey: http://www.bgs.ac.uk/discoveringGeology/geologyOfBritain/viewer.html

British History: http://www.british-history.ac.uk/

Domesday Book: https://opendomesday.org.uk

Historic England (the Heritage List): https://www.historicengland.org.uk/listing/the-list

National Archives https://discovery.nationalarchives.gov.uk/details/r/aa2116cf-722c-47e6-8b50-8b41344de92c

NPPG: http://planningguidance.planningportal.gov.uk

Past Scape: http://www.pastscape.org.uk

Portable Antiquities Database: https://finds.org.uk/database/

Bibliographic

Antram and Pevsner *The Buildings of England Sussex; East with Brighton and Hove* 2013

Bridgland Quaternary River terrace deposits as a framework for the Lower Palaeolithic record in Gamble & Lawson (eds.) The *English Palaeolithic Reviewed* 1996

British Geological Survey British Regional Geology *London and the Thames Valley* Fourth Edition 1996

Chartered Institute for Archaeologists *Standard & Guidance for historic environment desk based assessment* 2014, revised 2017

Department of Communities and Local Government *National Planning Policy Framework* 2012 (revised February 2019)

Department of Communities and Local Government/Department of Culture Media and Sport/English Heritage *PPS5 Planning for the Historic Environment: Historic Environment Planning Practice Guide* 2010

Everard *The History of the Gas Light & Coke Company 1812-1949* 1992 edition

Gibbard *The Pleistocene History of the Lower Thames Valley* 1994

Harris *Brighton & Hove Historic Character Assessment Report Sussex Extensive Urban Survey* March 2007 unpublished document

Historic England *Archaeological Priority Area Guidelines* July 2016 unpublished document

Historic England (formerly English Heritage) *Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment 2008* (new draft 2017)

Historic England *Historic Environment Good Practice Advice in Planning: 1 The Historic Environment in Local Plans* July 2015 unpublished document

Historic England *Historic Environment Good Practice Advice in Planning: 2 Managing Significance in Decision-Taking in the Historic Environment* July 2015 unpublished document

Historic England *Historic Environment Good Practice Advice in Planning: 3 The Setting of Heritage Assets* December 2017 unpublished document

Pope *Managing the Early Prehistoric Heritage of Brighton and Hove* 2001 unpublished document

Victoria County History *A History of the County of Sussex Volume 7 the Rape of Lewis* 1940

Cartographic

1579 Saxton map of Sussex

1724 Budgen map of Sussex

1795 Gardner & Gream map of Sussex

1797 Ordnance Survey Drawing

1813 Ordnance Survey Old Series

1818 plan of land at Black Rock old to Brighton Gas + Coke Co

1819 Cary Map of Sussex

1824-5 Brighton and its Environs

1825 Greenwood Map of Sussex

1839 Ovingdean Tithe Map

1839 Rottingdean Tithe Map

1850 map of Brighton

1851 Brighton Tithe Map

1852 Radkin Map of Brighton

1853 map of Brighton and its environs

1862 Plan of the Volunteer Review

1873-1875 Ordnance Survey

1875 Ordnance Survey

1897 Ordnance Survey

1898 Ordnance Survey

1903 Black Rock Cottages sales particulars plan

1909 Ordnance Survey

1911 Ordnance Survey

1929-1930 Ordnance Survey

1931 Ordnance Survey

1935 map of Brighton

1938 Ordnance Survey

1944 Bomb Damage Map

1951 Ordnance Survey

1952 Ordnance Survey

1960s Black Rock Interchange and Marina Access

1963 Ordnance Survey

1967 Ordnance Survey

1968 block plan of gasworks

1968 Ordnance Survey

1969 Ordnance Survey

1972 plan of Black Rock Bakery

1975-1980 Ordnance Survey

1978 Ordnance Survey

1983 block plan of gasworks

1988-1990 Ordnance Survey

1990-1994 Ordnance Survey

1991 Ordnance Survey

2001 Ordnance Survey

2003 Ordnance Survey

2010 Ordnance Survey

2020 Ordnance Survey

Photographic

1928 Aerial photograph (ref BRH/1928_3/101)

1932 aerial photographs (various)

1934 Old Gas Holders Black Rock Brighton (ref BRH/1934_7/51)

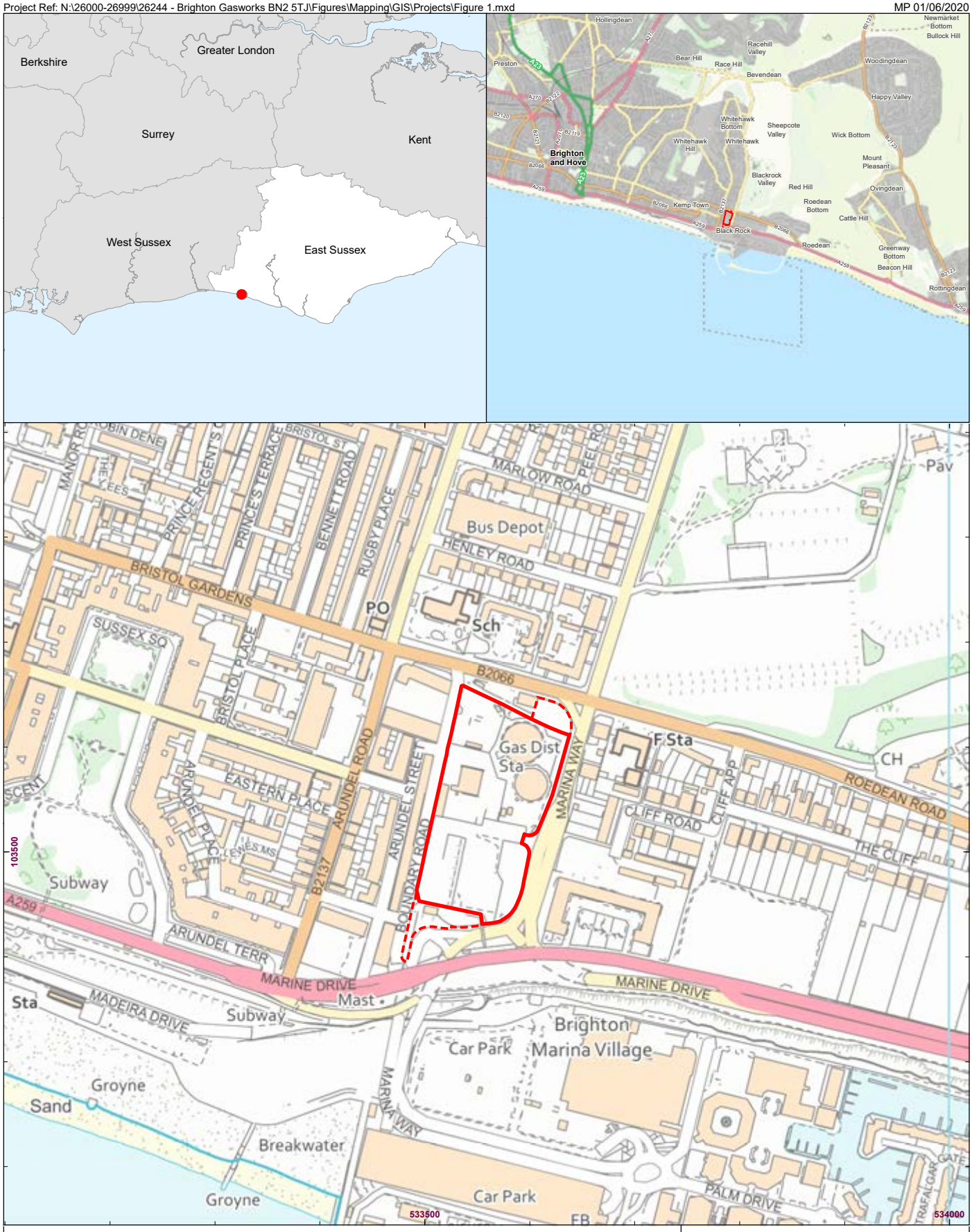
1935 Photograph of Black Rock works, Brighton, showing wooden building housing rectangular gas holder (ref BRH/1935_8/184)

1970 a view of Riflebutt Road looking north, with gasometer on the left

1970 a view of Riflebutt Road looking south, on the access road site, with gasometer on the left

1970 a view of Roedean Road at Riflebutt Road

1970 a view of the south end of Riflebutt Road on the access site, with gasometer



Site Boundary

Council Land

N

0 50 100m

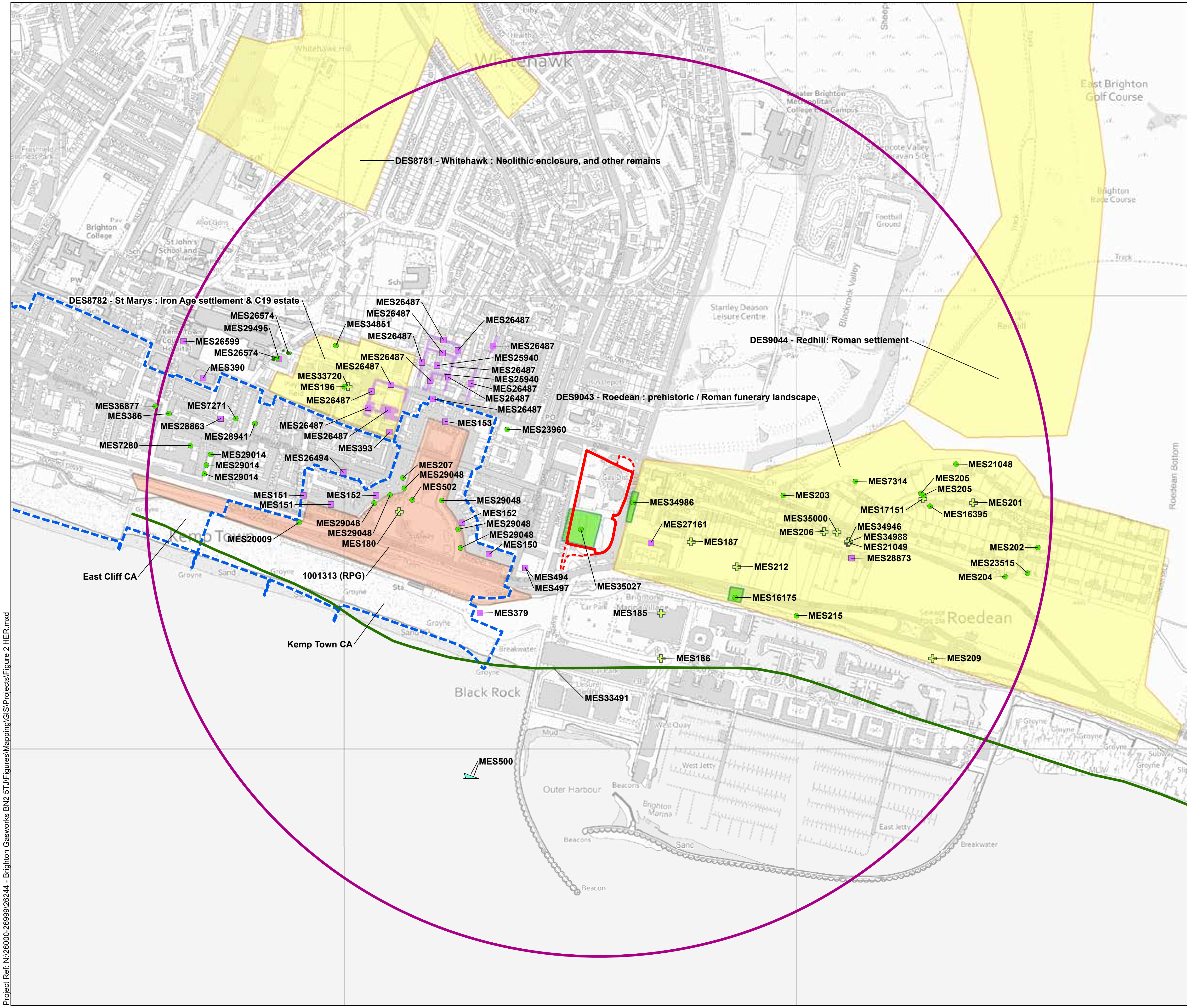
Scale at A4: 1:5,000

MAKING COMPLEX EASY

Figure 1

Site Location

MP 01/06/2020


Whitehawk
East Brighton Golf Course
Brighton College
Brighton Race Course
Stanley Deason Leisure Centre
Black Rock
Outer Harbour
Brighton Marina
West Jetty
East Jetty
Roedean
DES8781 - Whitehawk : Neolithic enclosure, and other remains
DES8782 - St Marys : Iron Age settlement & C19 estate
DES9044 - Redhill: Roman settlement
DES9043 - Roedean : prehistoric / Roman funerary landscape
MES26487
MES26574
MES29495
MES34851
MES26599
MES390
MES33720
MES196
MES25940
MES36877
MES386
MES7271
MES28863
MES28941
MES7280
MES29014
MES26494
MES393
MES153
MES23960
MES207
MES29048
MES502
MES151
MES152
MES20009
MES180
MES150
MES494
MES497
MES379
MES35027
MES34986
MES27161
MES187
MES185
MES186
MES33491
MES500
MES203
MES7314
MES21048
MES205
MES201
MES16395
MES17151
MES35000
MES206
MES34946
MES34988
MES21049
MES28873
MES202
MES23515
MES204
MES212
MES16175
MES215
MES209
East Cliff CA
Kemp Town CA
1001313 (RPG)
N
0 100 200m
Scale at A3: 1:8,000

Legend

- Site Boundary
- Search Radius 1km

Designated Heritage Assets:

- Registered Park or Garden
- Conservation Area

Non-designated Heritage Assets:

- Archaeological Notification Area

HER Record (Point)

- Find Spot
- Monument
- Maritime
- Building

HER Record (Line)

- Monument
- Building

HER Record (Polygon)

- Monument
- Building

rps MAKING COMPLEX EASY

Figure 2

Summary of heritage designations and monument events (data from East Sussex HER)

Project Ref: N:\26000-26999\26244 - Brighton Gasworks BN2 5TJ\Figures\Mapping\GIS\Projects\Figure 2 HER.mxd

MP 01/06/2020

Legend

- Site Boundary
- Search Radius 1km

Previous Archaeological Work:

- HER Event (Point)
- HER Event (Line)
- HER Event (Polygon)

EES17366
EES17586
EES17906
EES9419
EES17013
EES18044
EES15625
EES15625
EES17146
EES17146
EES18231
EES16125
EES15644
EES17062
EES17062
EES15220
EES15233
EES15054
EES9586
EES14496
EES16050
EES15442
EES14232
EES15215
EES15174
EES16008
EES14490
EES15330
EES9595
EES14790
EES14497
EES14823
EES16107
EES14823
EES15175
EES18994
EES18994
EES17547
EES14043
EES14370
EES14489
EES15176
EES9594
EES18029
EES14710
EES14710
EES16166
EES9583
EES15657
EES14256
EES14254
EES17229
EES14041
EES14042
EES9590
EES15298
EES16210
EES15949
EES18756
EES14608
EES18634

N

0 100 200 m

Scale at A3: 1:8,000

MAKING COMPLEX EASY

Figure 3

Summary of archaeological events (data from East Sussex HER)

Project Ref: N:\26000-26999\26244 - Brighton Gasworks BN2 5TJ\Figures\Mapping\GIS\Projects\Extended Redline\Figure 3 Events.mxd

MP 01/06/2020

Legend

- Site Boundary
- Search Radius 1km

Historic Landscape Characterisation:

- Coastal | Cliffs & Beaches
- Designed Landscapes | Formal parkland
- Fieldscapes | Formal Enclosure (planned/private)
- Fieldscapes | Informal Fieldscapes
- Horticulture | Market Gardens/Allotments
- Industry | Other Industry
- Industry | Processing
- Recreation | Golf courses
- Recreation | Marinas
- Recreation | Sports fields
- Settlement | Expansion - other
- Settlement | Expansion - suburbs
- Unimproved/Unenclosed | Downland
- Woodland | Regenerated

N

0 100 200m

Scale at A3: 1:8,000

MAKING COMPLEX EASY

Figure 4

Historic Landscape Characterisation information (data from East Sussex HER)

Project Ref: N:\26000-26999\26244 - Brighton Gasworks BN2 5TJ\Figures\Mapping\GIS\Projects\Extended Redline\Figure 4 HLC.mxd

Approximate Site Location

N

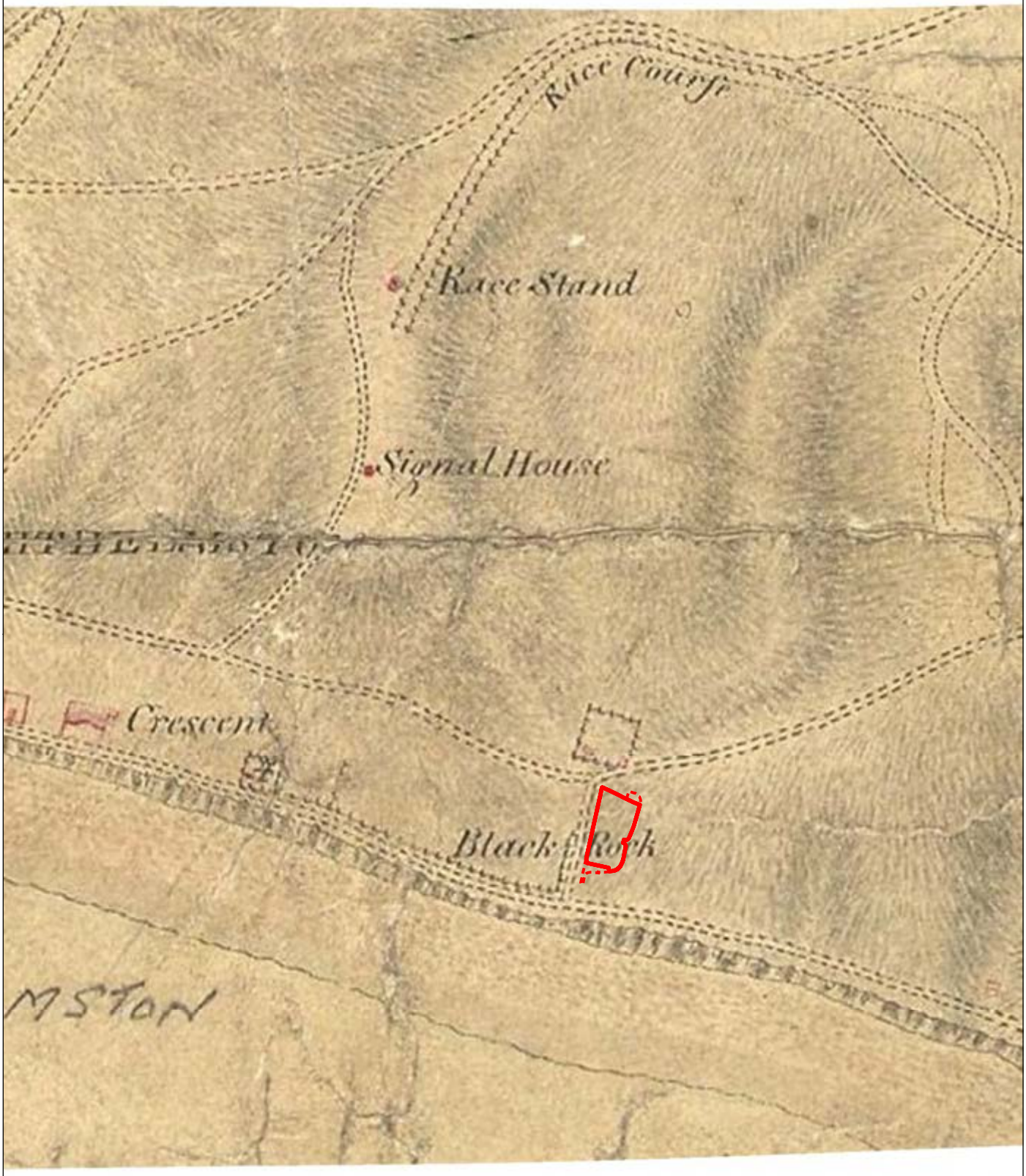
0 250 500 750m

Scale at A4: 1:25,000 approx.

MAKING COMPLEX EASY

Figure 5

1795 Gardner & Gream Map of Sussex



Approximate Site Location

N

0 150 300 450m

Scale at A4: 1:15,000 approx.

MAKING COMPLEX EASY

Figure 6

1797 Ordnance Survey Drawing

Approximate Site Location

N

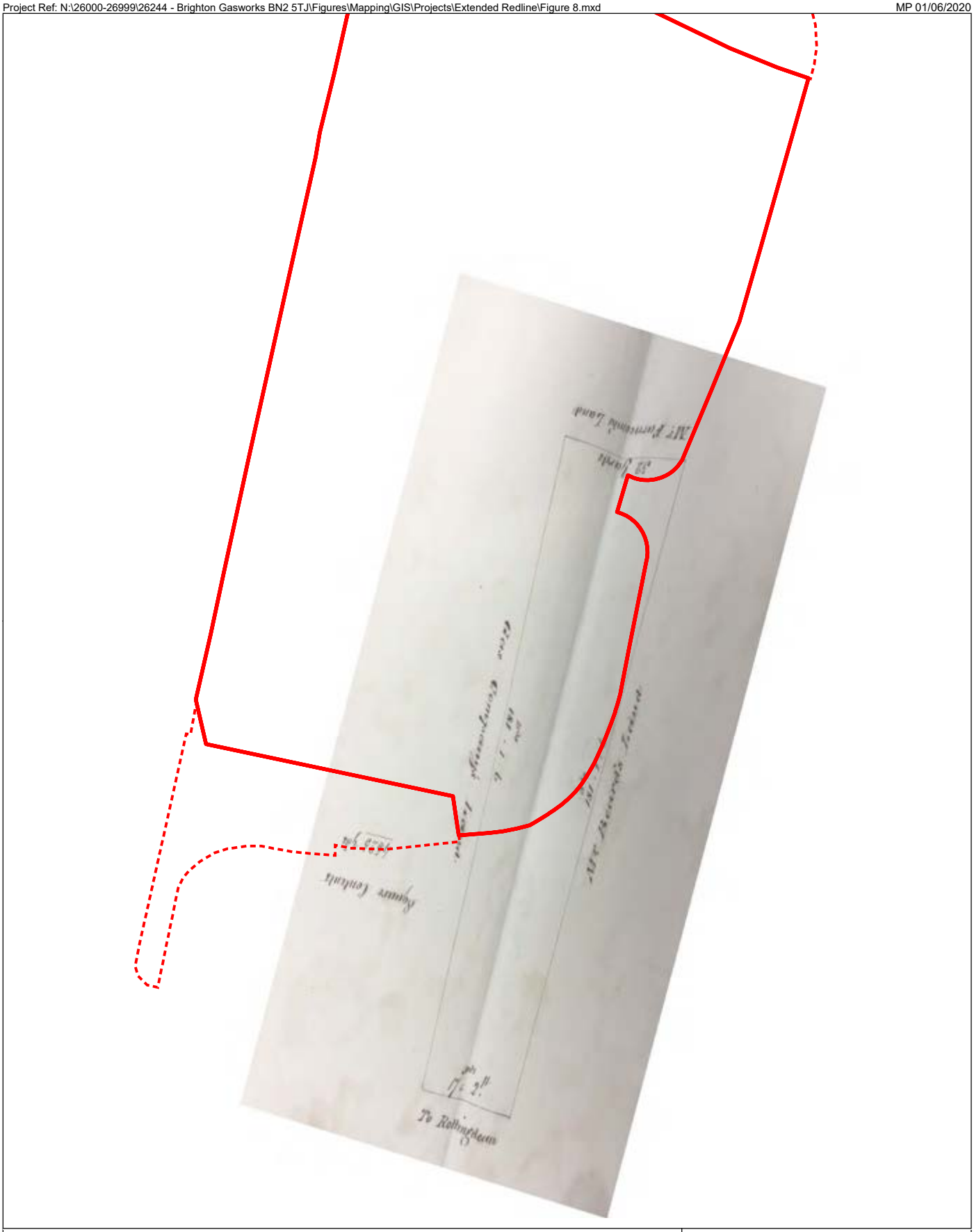
0 250 500 750m

Scale at A4: 1:25,000 approx.

MAKING COMPLEX EASY

Figure 7

1813 Ordnance Survey Old Series



Approximate Site Location

N

0 10 20 30m

Scale at A4: 1:1,250 approx.

MAKING COMPLEX EASY

Figure 8

1818 Plan of land at Black Rock sold to Brighton Gas + Coke Co

Approximate Site Location

Tithe Map Boundary

N

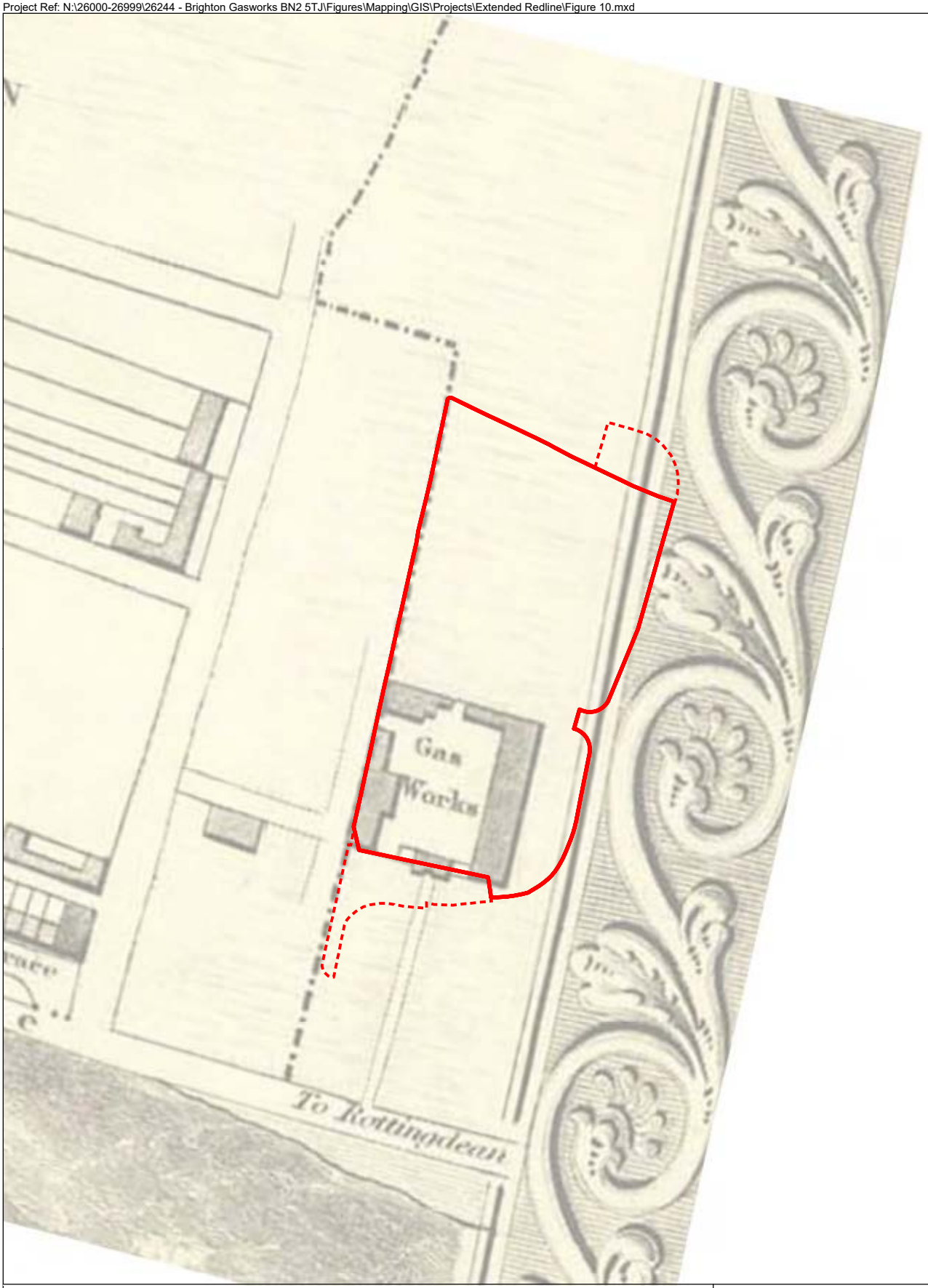
0 25 50 75m

Scale at A4: 1:2,500 approx.

MAKING COMPLEX EASY

Figure 9

1839 Ovingdean Tithe Map / 1839 Rottingdean Tithe Map / 1851 Brighton Tithe Map



Approximate Site Location

N

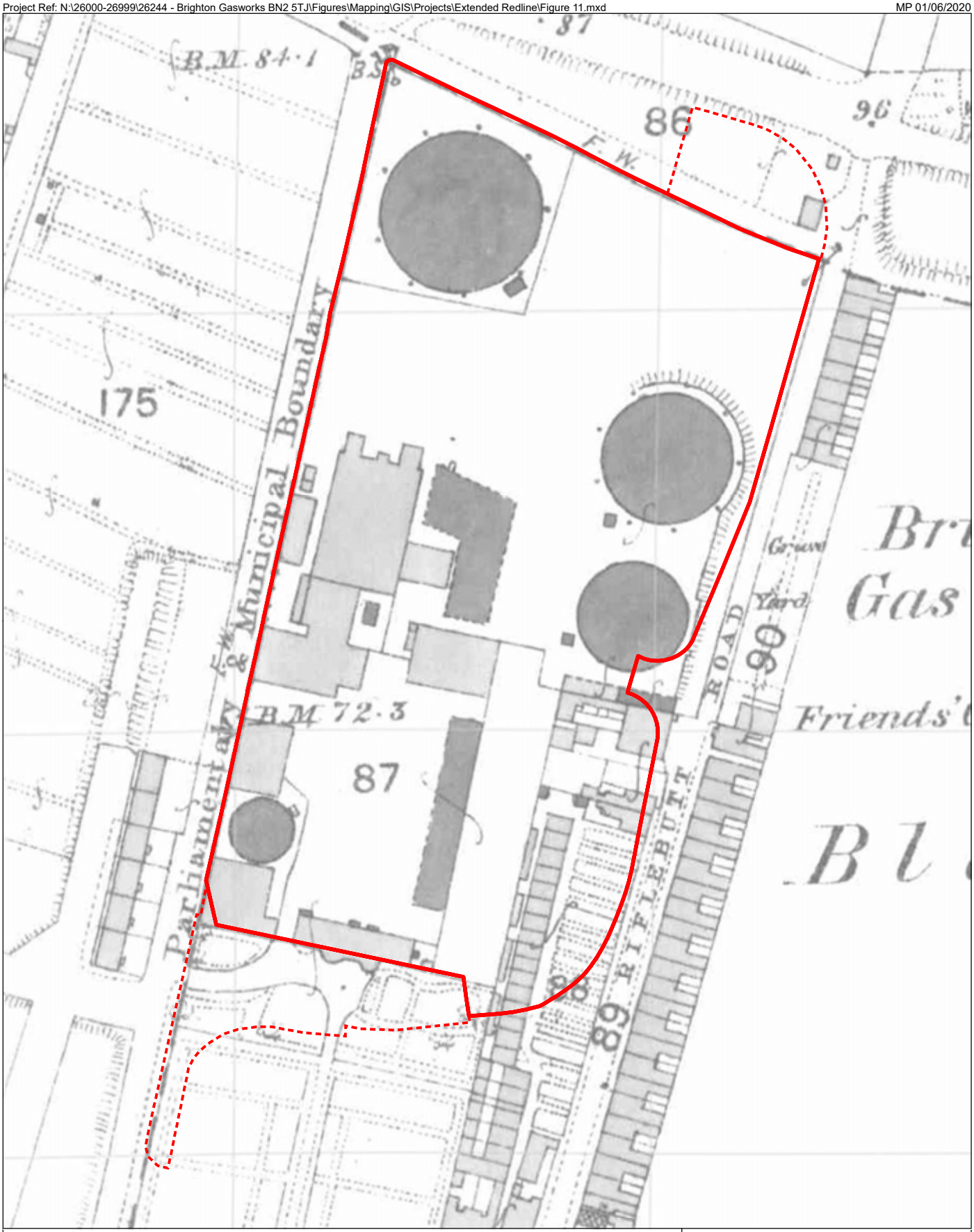
0 25 50 75m

Scale at A4: 1:2,500 approx.

MAKING COMPLEX EASY

Figure 10

1853 Brighton and its Environs



Site Boundary

N

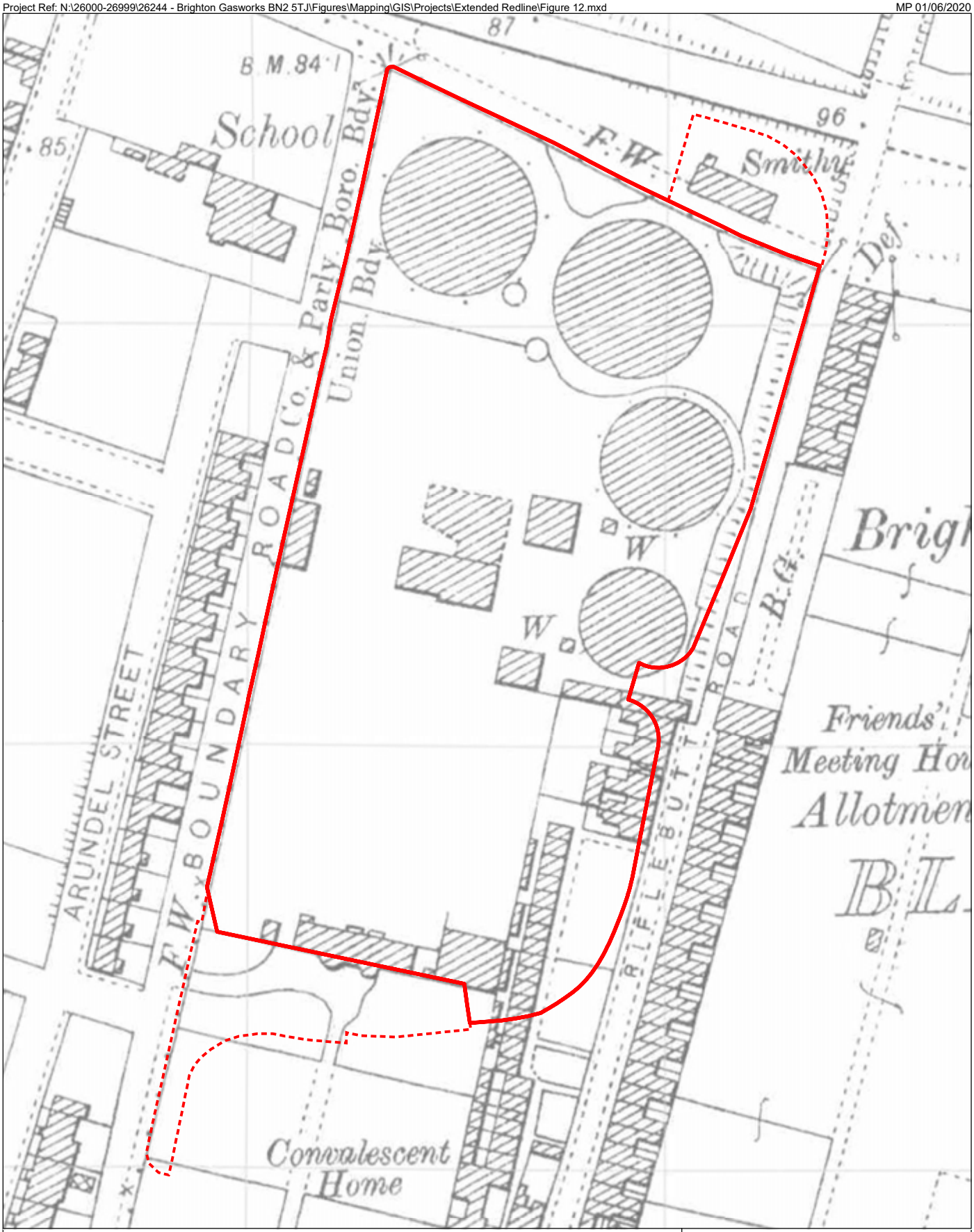
0 10 20 30m

Scale at A4: 1:1,250

MAKING COMPLEX EASY

Figure 11

1875 Ordnance Survey



Site Boundary

N

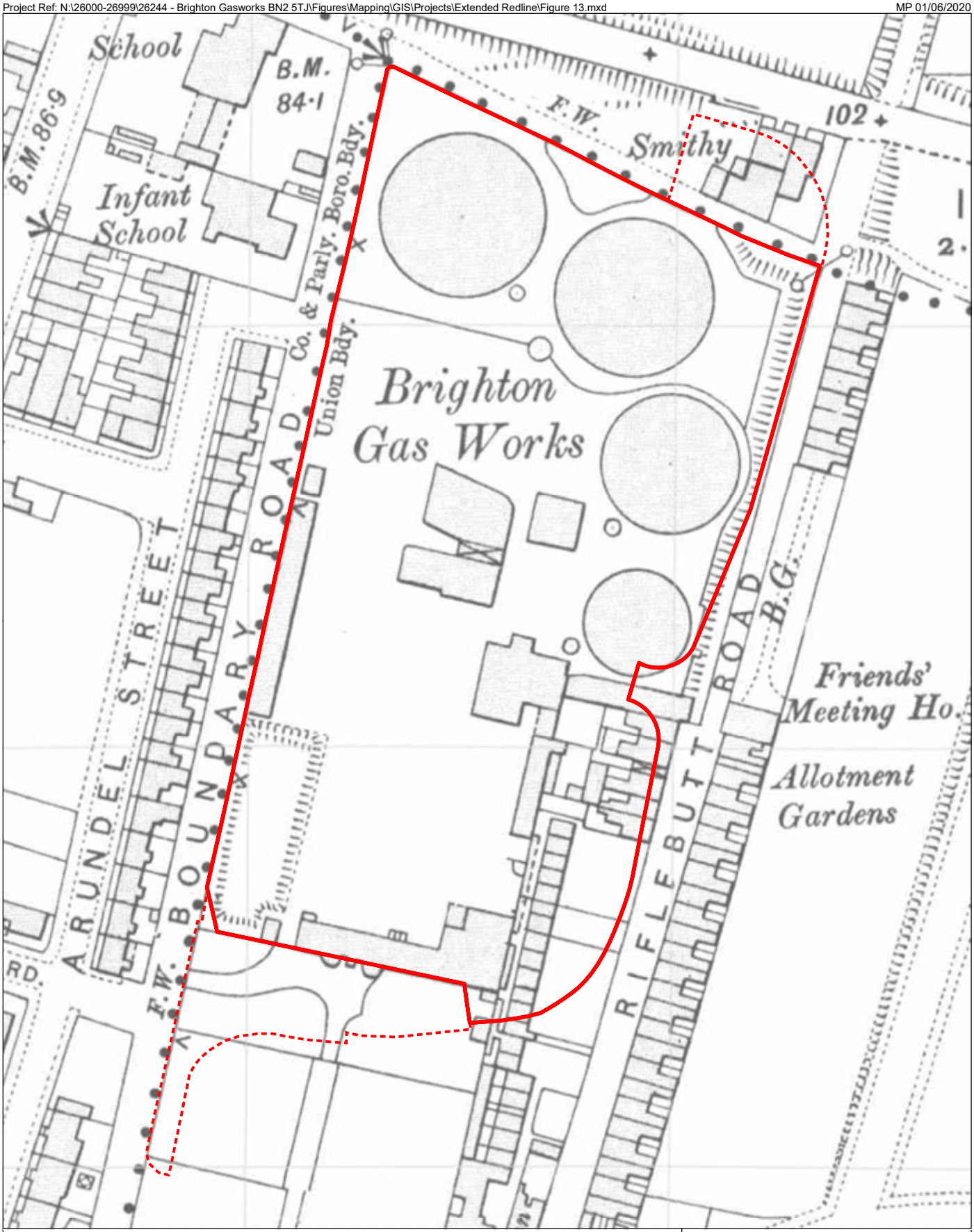
0 10 20 30m

Scale at A4: 1:1,250

MAKING COMPLEX EASY

Figure 12

1898 Ordnance Survey



Site Boundary

N

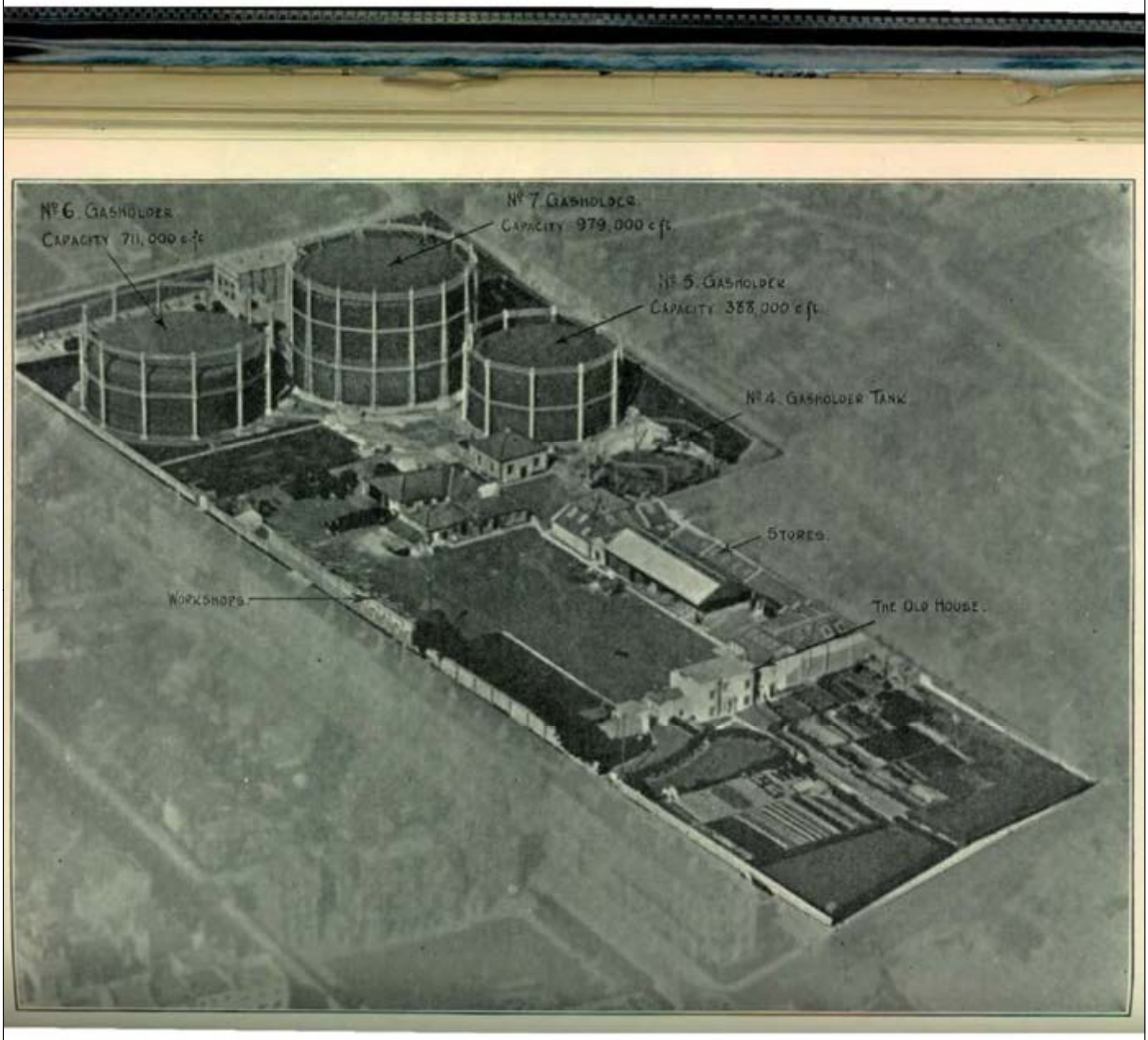
0 10 20 30m

Scale at A4: 1:1,250

MAKING COMPLEX EASY

Figure 13

1911 Ordnance Survey

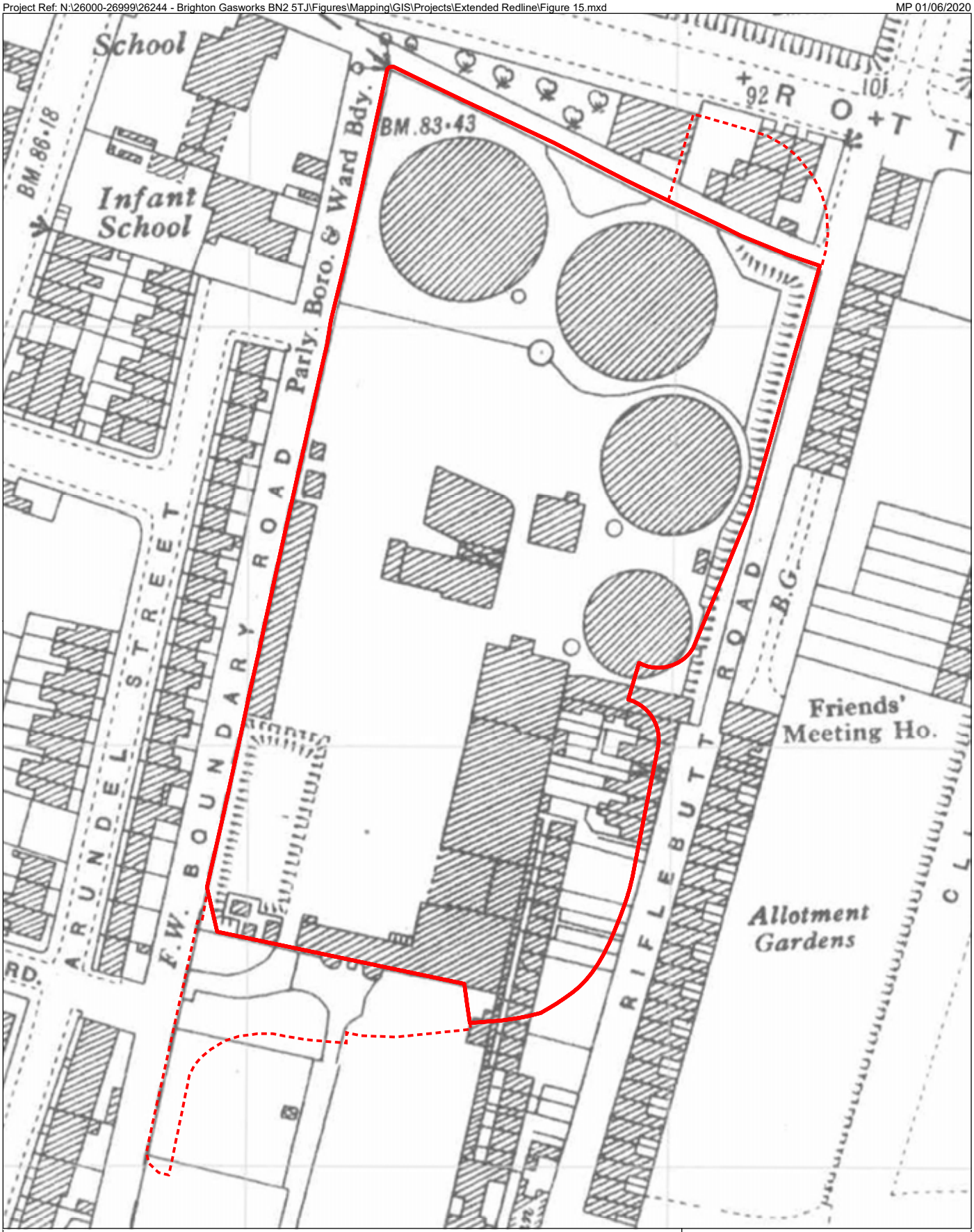


Illustrative Only
Not to Scale

MAKING COMPLEX EASY

Figure 14

1928 aerial photograph



Site Boundary

N

0 10 20 30m

Scale at A4: 1:1,250

MAKING COMPLEX EASY

Figure 15

1931 Ordnance Survey

N

Illustrative Only
Not to Scale

MAKING COMPLEX EASY

Figure 16

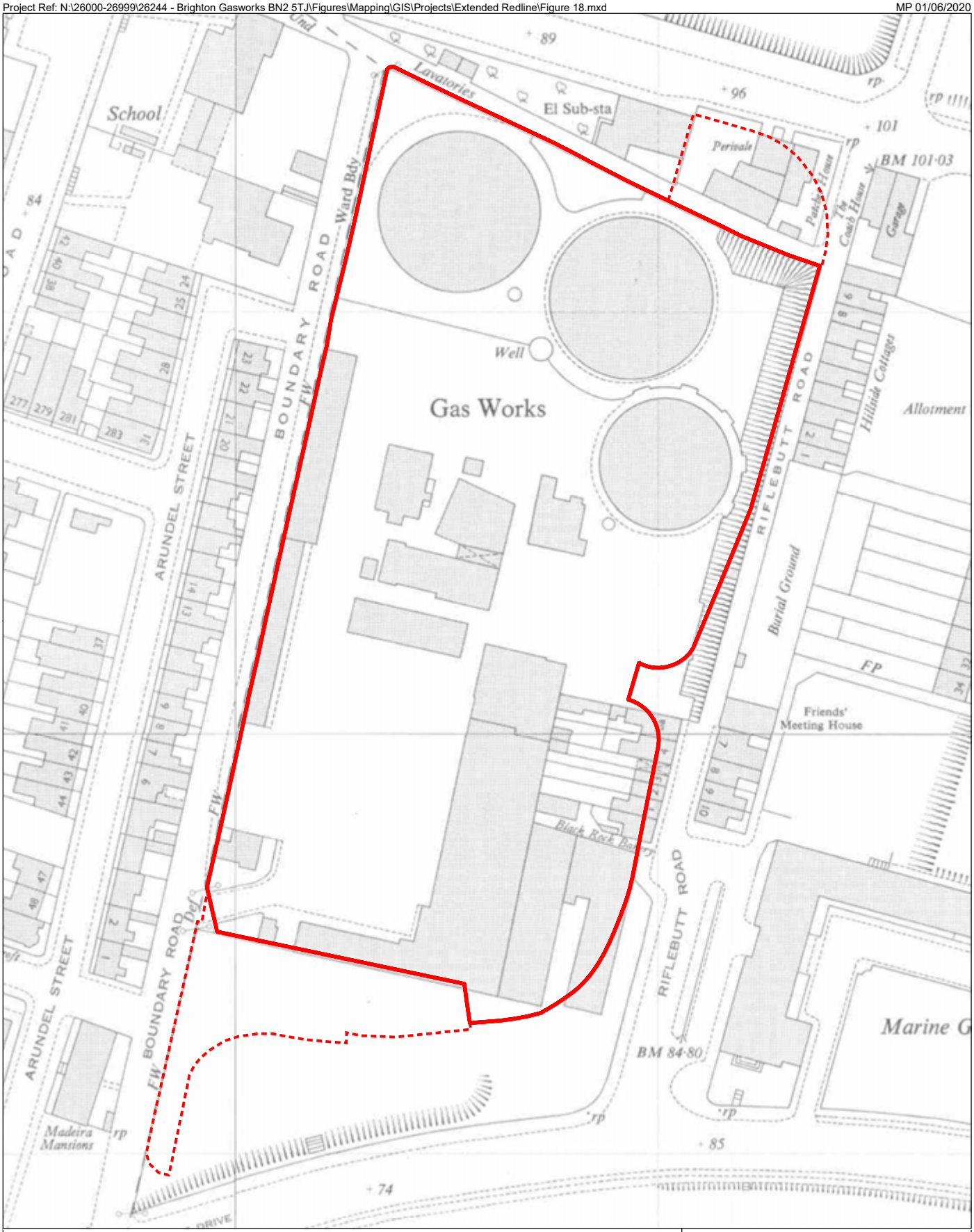
1932 aerial photograph

Site Boundary

MAKING COMPLEX EASY

Figure 17

1944 Bomb Damage Map



Site Boundary

N

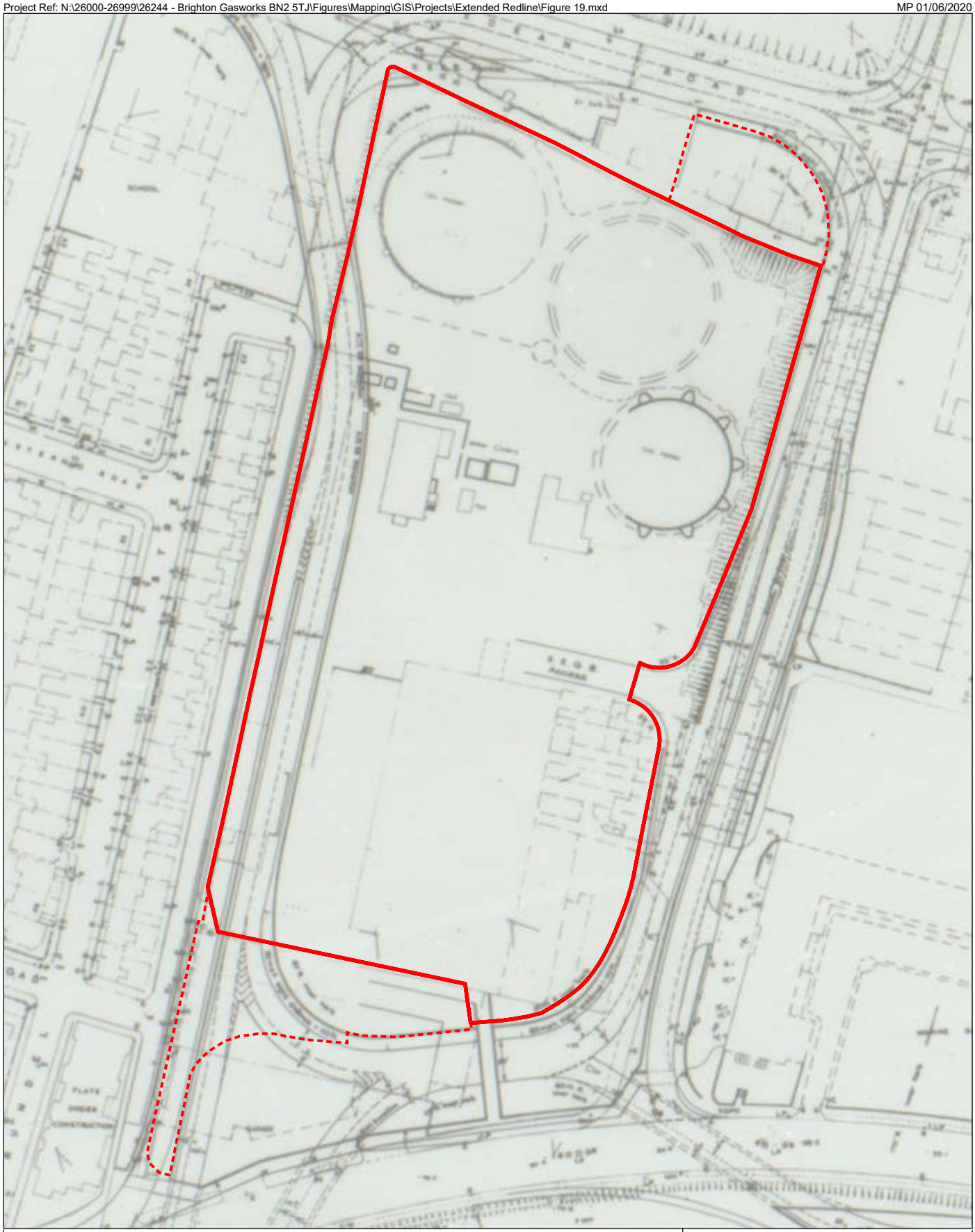
0 10 20 30m

Scale at A4: 1:1,250

MAKING COMPLEX EASY

Figure 18

1951 Ordnance Survey



Site Boundary

N

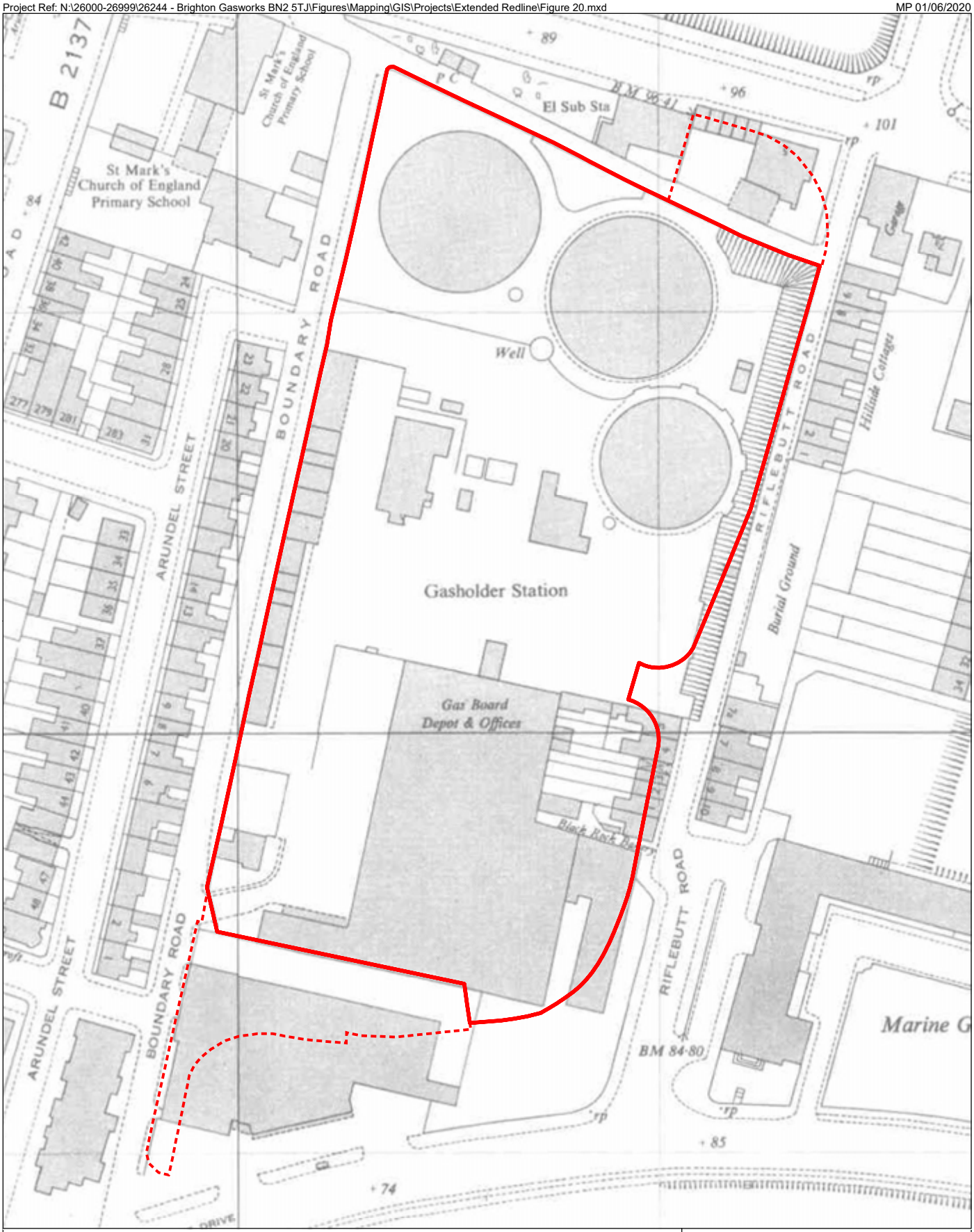
0 10 20 30m

Scale at A4: 1:1,250

MAKING COMPLEX EASY

Figure 19

1960s Black Rock Interchange and Marina Access



Site Boundary

N

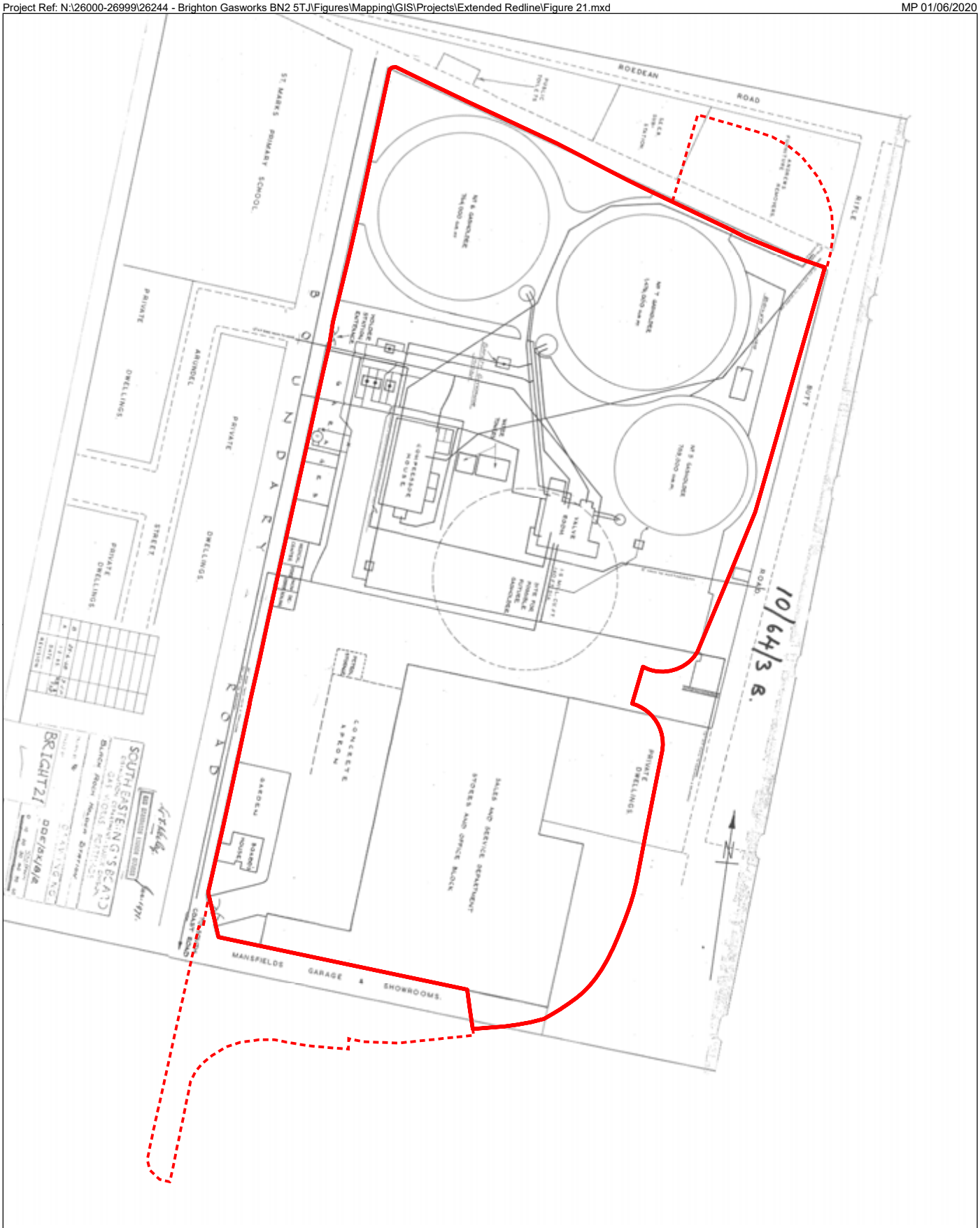
0 10 20 30m

Scale at A4: 1:1,250

MAKING COMPLEX EASY

Figure 20

1967 Ordnance Survey



Site Boundary

N

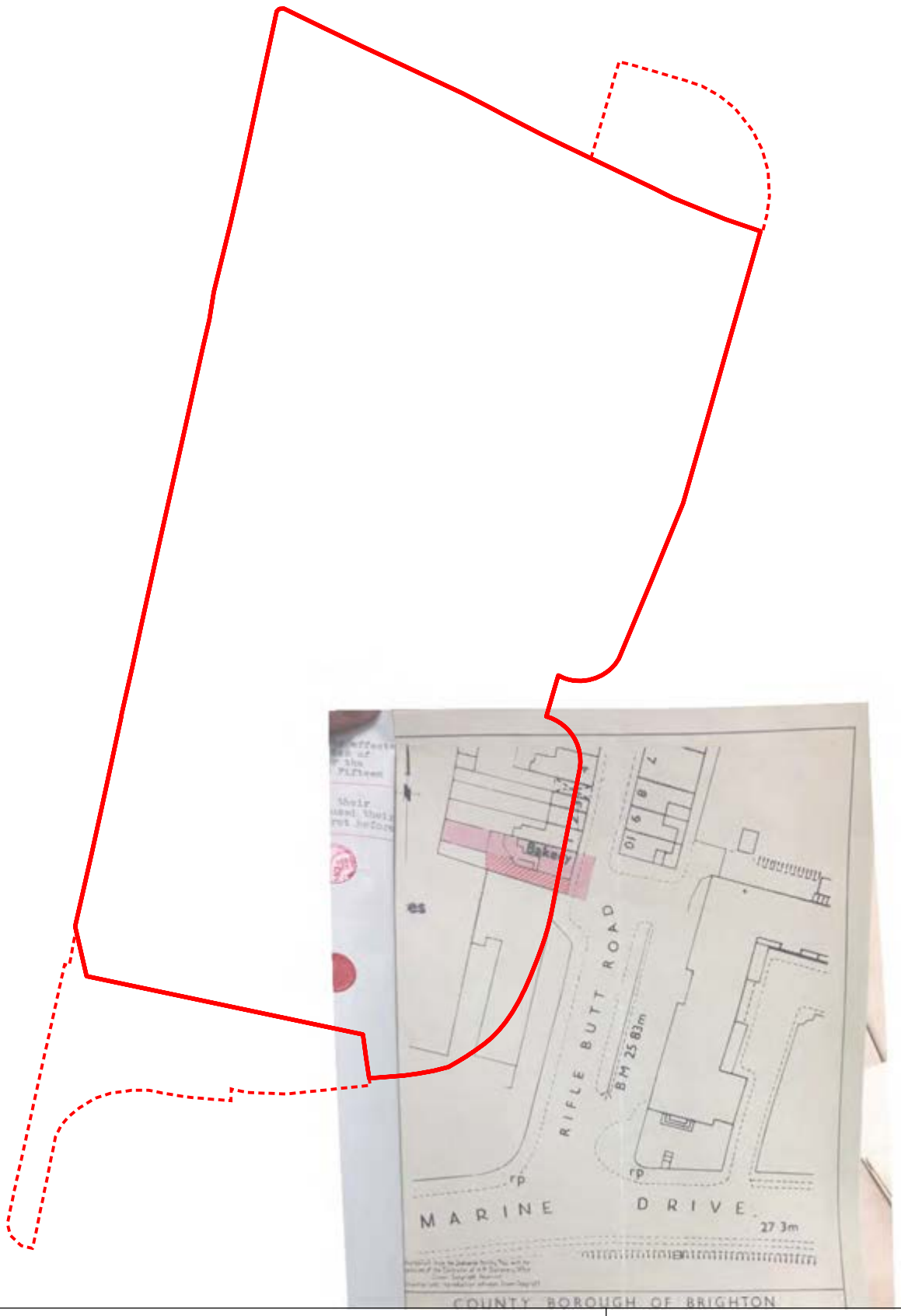
0 10 20 30 m

Scale at A4: 1:1,250

MAKING COMPLEX EASY

Figure 21

1968 block plan of gasworks



Site Boundary

N

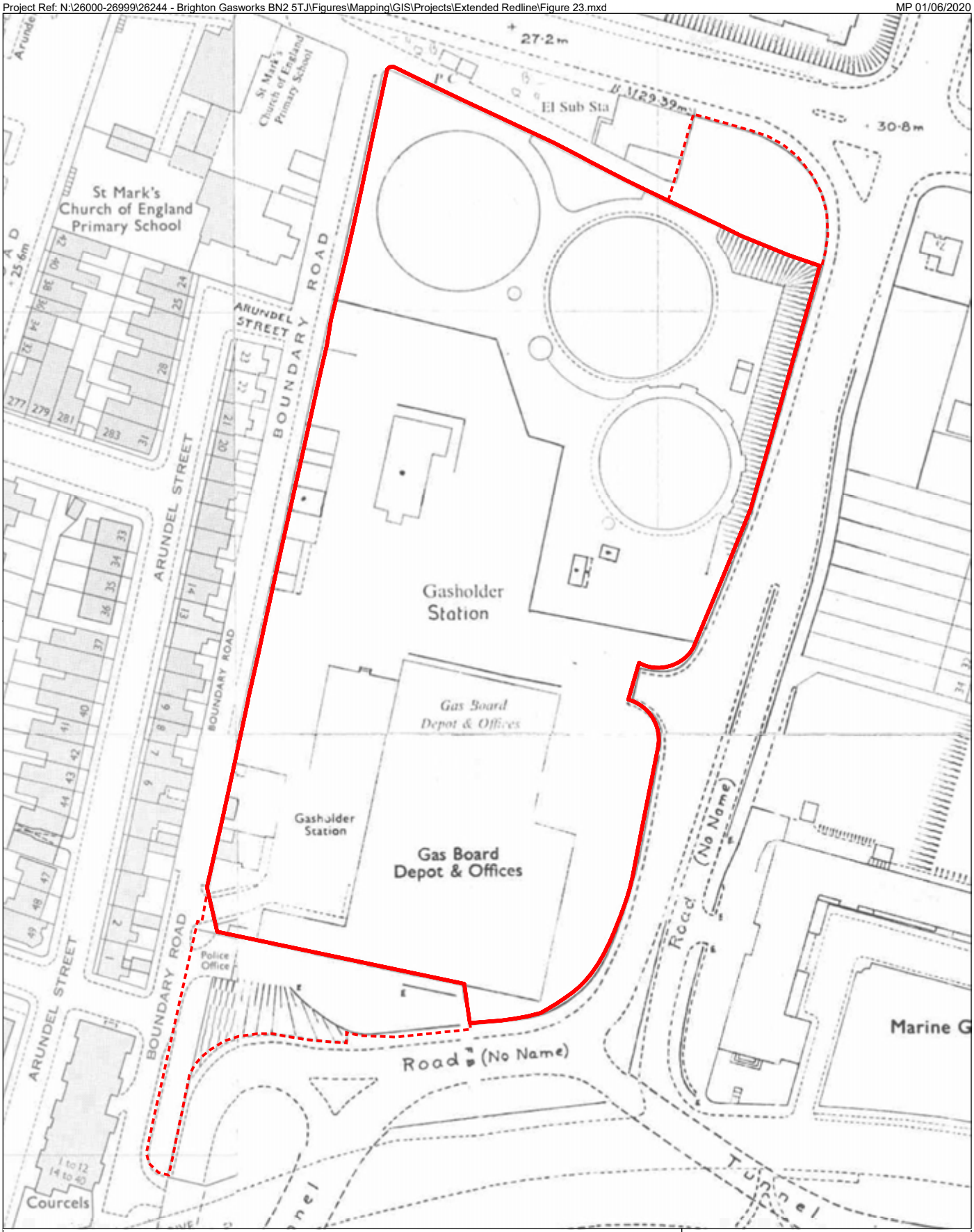
0 10 20 30m

Scale at A4: 1:1,250

MAKING COMPLEX EASY

Figure 22

1972 plan of Black Rock Bakery



Site Boundary

N

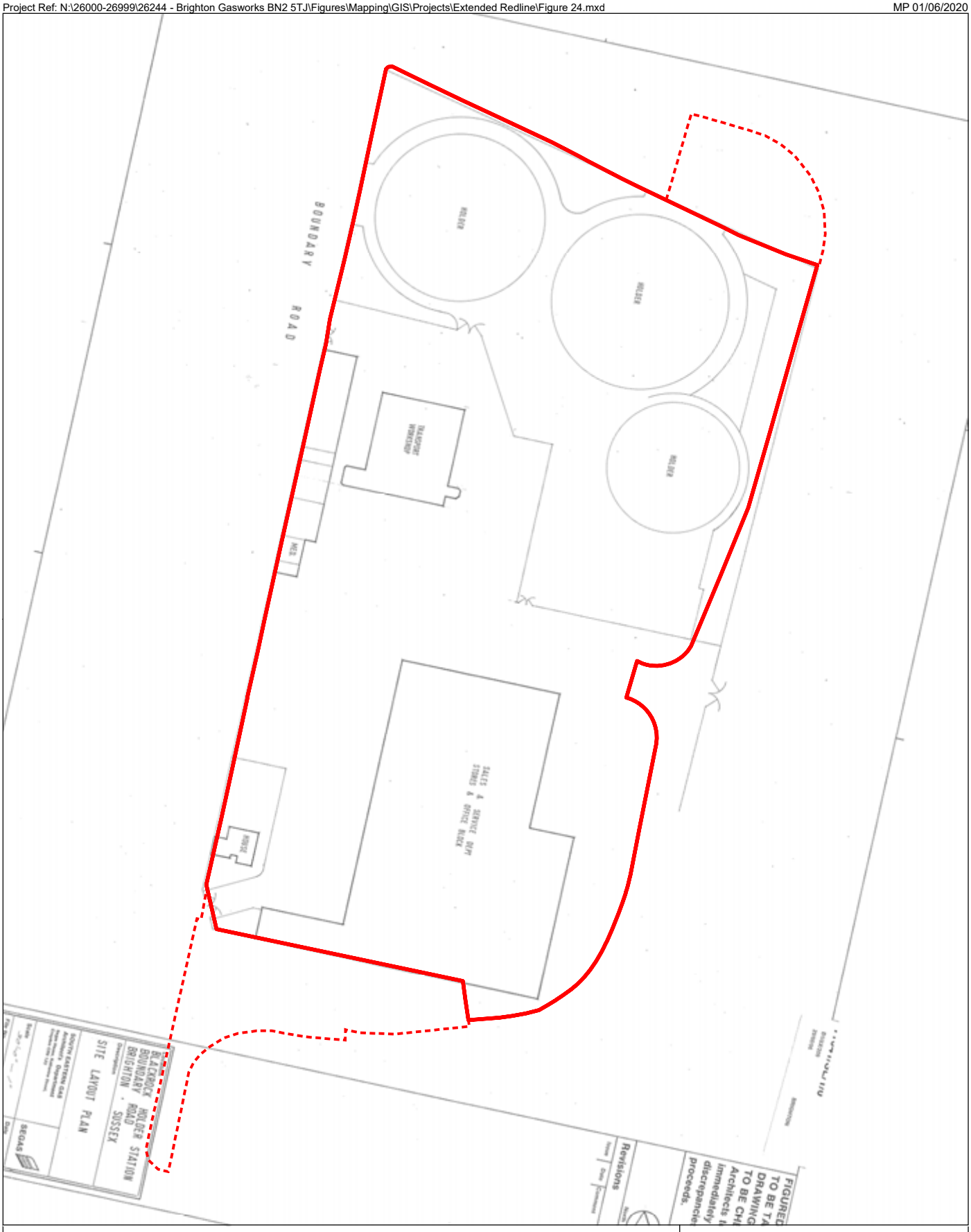
0 10 20 30m

Scale at A4: 1:1,250

MAKING COMPLEX EASY

Figure 23

1975-1980 Ordnance Survey



Site Boundary

N

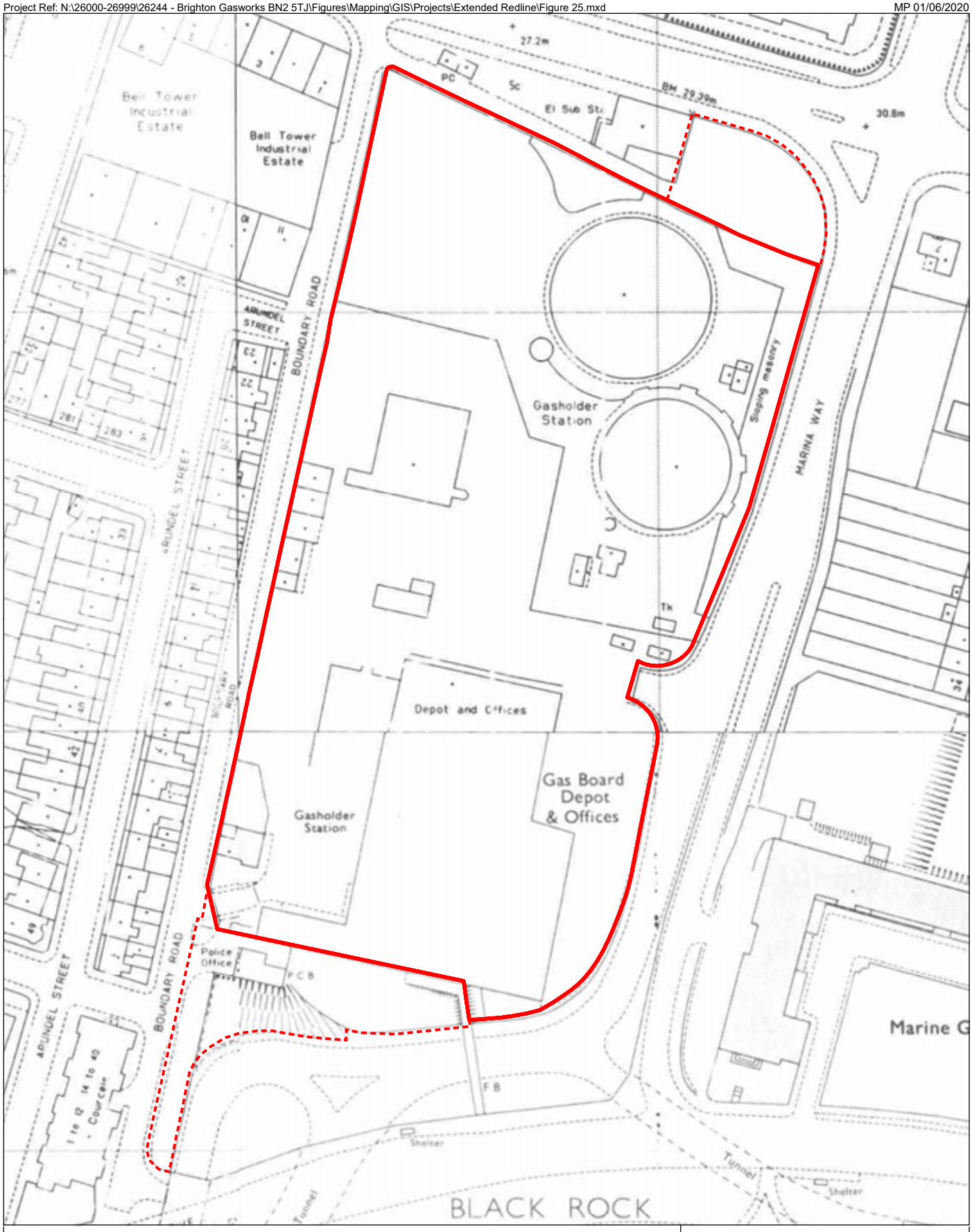
0 10 20 30 m

Scale at A4: 1:1,250

MAKING COMPLEX EASY

Figure 24

1983 block plan of gasworks



Site Boundary

N

0 10 20 30m

Scale at A4: 1:1,250

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Figure 25

1990-1994 Ordnance Survey

Site Boundary

N

0 10 20 30 m

Scale at A4: 1:1,250

MAKING COMPLEX EASY

Figure 26

2004 aerial photograph

Site Boundary

N

0 10 20 30 m

Scale at A4: 1:1,250

MAKING COMPLEX EASY

Figure 27

2007 aerial photograph

Site Boundary

N

0 10 20 30 m

Scale at A4: 1:1,250

MAKING COMPLEX EASY

Figure 28

2019 aerial photograph

MP 01/06/2020

Legend

Site Boundary

LiDAR DATA

Source:
Environment Agency

Data Type: DSM

Resolution: 1m

Date Captured:
Nov 2009

Processing:
colourised elevation overlaid on
Multi-direction Hillshade

N

0 25 50m

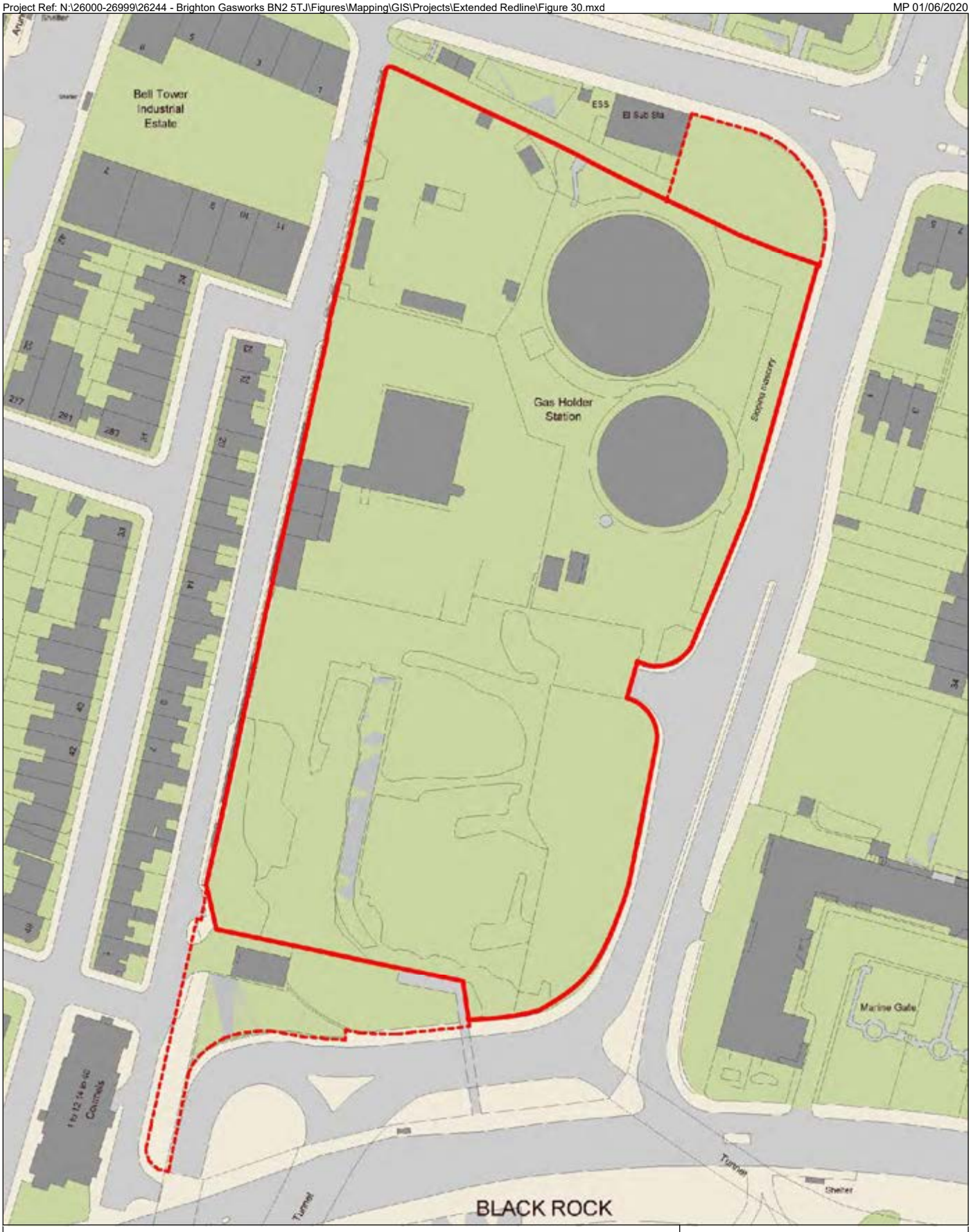
Scale at A3: 1:1,250

MAKING COMPLEX EASY

Figure 29

LiDAR Data

Project Ref: N:\26000-26999\26244 - Brighton Gasworks BN2 5T\JFigures\Mapping\GIS\Projects\Extended Redline\Figure 29.mxd



Site Boundary

N

0 10 20 30 m

Scale at A4: 1:1,250

MAKING COMPLEX EASY

Figure 30

Site survey as existing

Plate 1: View south across the study site from the northwestern boundary

Plate 2: View west across the central part of the study site from the eastern boundary

Plate 3: View north from the southeastern end across the eastern part of the study site

Plate 4: View north from the southwestern end across the western part of the study site

Plate 5: View south across the northwestern part of the study site

Plate 6: View across the central part of the study site

Plate 7: Entrance gates in the southwestern part of the study site

Plate 8: View of part of the western boundary wall

Plate 9: Remnant hardstanding within the southern part of the study site

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COMPLEX
EASY

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Appendix F – Existing Health Baseline Profile

Census data records the self-reported health status of the population. At the time of the 2011 Census, the residents of the Local Area surrounding the Site (Rottingdean Coastal ward and East Brighton ward) generally reported good health: 79% of all residents within the Local Area were recorded as being in very good or good health, although this is lower when compared to the averages for Brighton and Hove (83%), the South East (84%) and England (81%).

Detailed, up to date, information on health does not tend to be publicly available at spatial scales below local authority level. However, Public Health England records a range of metrics to assess the overall health of a population and identify issues and inequalities, at the local authority level and above.

Table 1 summarises Public Health England data for Brighton and Hove, set out alongside the South East and national average for comparison purposes. The metrics considered below are those which are of most relevance to planning and development. Metrics such as breastfeeding initiation, injury and diseases (such as cancer, TB, STIs) and lifestyle factors such as smoking, alcohol and drug abuse etc. have not been considered here.

Table 1 – Health Profile Summary

Health Indicator		Brighton & Hove	South East	England
Life Expectancy at Birth	Male	78.9	80.7	79.6
	Female	82.9	84.1	83.2
Under 75 Mortality Rate: all causes (per 100,000 population under 75)		367	292	330
Under 75 mortality rate: cardiovascular (per 100,000 population under 75)		71.7	59.0	71.7
Under 75 mortality rate: respiratory disease considered preventable (per 100,000 population under 75)		23.5	15.9	19.2
Excess weight in adults		50.4%	60.3%	62.0%
Obese children (age 10-11)		13.3%	16.8%	20.2%
Physically active adults (150+ mins of moderate intensity activity per week)		76.7%	69.8%	66.3%
Killed and seriously injured on roads (per 100,000 resident population)		56.9	49.6	42.6
Violent Crime (hospital admissions for violence per 100,000 population)		38.2	31.2	44.9

Source: Public Health England, 2019. Brighton and Hove Health Profile 2019.

Life expectancy is used as a proxy for the general level of health in a population. Life expectancy for both males and females in Brighton and Hove is lower than the regional and national averages.

Under 75 mortality rate from all causes is higher in Brighton and Hove than the regional and national averages. This is particularly true of under 75 mortality from respiratory disease considered preventable where Brighton and Hove has a rate of 23.5 per 100,000 population compared to 15.9 in the South East and 19.2 in England.

Obesity is a major national health concern. Physical activity among adults is higher in Brighton and Hove than the regional and national average. Excess weight in adults is lower in Brighton and Hove than at the comparison spatial levels, and obesity among 10-11 year olds is also lower.

Rates of serious road traffic accidents are higher in Brighton Hove compared to both the London and national averages.

Rates of violent crime (measured by the number of hospital admissions for violence including sexual violence) are lower in Brighton and Hove at 38.2 incidences per 100,000 population, compared to the national average (44.9 incidence per 100,000 population), although slightly higher than the regional average (31.2 incidence per 100,000 population).

Whilst the data available can highlight trends at local authority level and above, it is not able to identify specific issues affecting a local area.

Appendix G – Preliminary Ecological Appraisal

ST WILLIAM HOMES LLP

ECOLOGYSOLUTIONS

Part of the ES Group

BRIGHTON GASWORKS

Ecological Assessment

June 2020
8757.EcoAs.vf2

ecology solutions for planners and developers

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APPENDICES

APPENDIX 1	Information downloaded from Multi-Agency Geographic Information for the Countryside (MAGIC)

1. INTRODUCTION

1.1. Background and Proposals

1.1.1. Ecology Solutions was commissioned in February 2020 by St William Homes LLP to undertake an ecological assessment of Brighton Gasworks, East Sussex (see Plan ECO1).

1.1.2. A preliminary ecological appraisal report for the gasholders and immediate surrounding area was produced by CT Ecology in July 2018. This document has been reviewed and considered as part of this assessment.

1.1.3. The proposals for redevelopment include the demolition of the existing buildings and structures on site, and the construction of up to 700 new dwellings and non-residential floorspace, along with public open space, new private and semi-private residential open space, access and parking.

1.2. Characteristics of the Site and Land Outside of Applicant's Ownership

1.2.1. The land within the continuous solid red line as shown on Plan ECO2 extends to approximately 1.46 hectares (ha), with the land to the north and south defined by the dotted red line approximately 0.56 ha. The maximum extent of the site would therefore be approximately 2.02 ha and is wholly located within the Brighton and Hove City Council administrative boundary. It has not yet been decided whether the land within the dotted red lines will be included in the application, however, the relevant boundary will be assessed at the time of making the application and therefore these parcels have been considered as part of this assessment.

1.2.2. The local area is characterised by residential and commercial properties. The site is bounded to the east by Marina Way and to the west by Boundary Road. The site falls within the Brighton and Lewes Downs Biosphere Reserve, with Brighton to Newhaven Cliffs Site of Special Scientific Interest (SSSI) located approximately 50m to the south of the site boundary at its closest point.

1.2.3. The site itself is industrial in character, dominated by hardstanding. There are two disused gas storage tanks present in the north of the site, along with several warehouse buildings, cabins and storage containers. Elements of scrub and disturbed ground are also present.

1.2.4. The land outside of the applicant's ownership that lies immediately to the north is dominated by hardstanding, whilst the area to the south comprises tall ruderal vegetation, scrub, disturbed ground, amenity grassland, hardstanding and a single building.

1.3. Ecological Assessment

1.3.1. This document provides an assessment of the ecological interest of the site. The importance of the habitats within the site are evaluated with due

consideration given to the guidance published by the Chartered Institute of Ecology and Environmental Management (CIEEM)[1].

1.3.2. Where necessary, mitigation measures are recommended so as to safeguard any significant existing ecological interest within the site and, where appropriate, potential enhancement measures are put forward and reference made to both national and local biodiversity priorities.

[1] CIEEM (2018). *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine.* Version 1.1 – Updated September 2019. Chartered Institute of Ecology and Environmental Management, Winchester.

2. SURVEY METHODOLOGY

2.1. The methodology utilised for the survey work can be split into three areas, namely desk study, habitat survey and initial faunal survey. These are discussed in more detail below.

2.2. Desk Study

2.2.1. In order to compile background information on the site and the surrounding area, Ecology Solutions contacted Sussex Biodiversity Record Centre (SxBRC). The background information included all statutory and non-statutory designated sites within 5km of the site, and all protected, priority and invasive species within 3km of the site.

2.2.2. Further information on designated sites from a wider search area was obtained from the online Multi-Agency Geographic Information for the Countryside (MAGIC)[2] database, which uses information held by Natural England and other organisations.

2.2.3. This information is reproduced at Appendix 1 and where appropriate on Plan ECO1.

2.3. Habitat Survey

2.3.1. Habitat surveys were carried out by Ecology Solutions in May 2020 in order to ascertain the general ecological value of the site and land outside of the applicant's ownership, and to identify the main habitats and associated plant species present. A habitat survey was previously undertaken of the gasholders and immediate surrounding habitats in July 2018.

2.3.2. The site and land outside of the applicant's ownership was surveyed in May 2020 based on extended Phase 1 survey methodology[3], as recommended by Natural England, whereby the habitat types present are identified and mapped, together with an assessment of the species composition of each habitat. This technique provides an inventory of the basic habitat types present and allows identification of areas of greater potential which require further survey. Any such areas identified can then be examined in more detail.

2.3.3. Using the above method, the site and land outside of the applicant's ownership was classified into areas of similar botanical community types, with a representative species list compiled for each habitat identified.

2.3.4. All the species that occur in each habitat would not necessarily be detectable during survey work carried out at any given time of the year, since different species are apparent in different seasons. Nonetheless, given the habitats present it is considered that an accurate and robust assessment has been made.

[2] http://www.magic.gov.uk
[3] Joint Nature Conservation Committee (2010). *Handbook for Phase 1 Habitat Survey – a Technique for Environmental Audit*. England Field Unit, Nature Conservancy Council, reprinted JNCC, Peterborough.

2.4. **Faunal Survey**

2.4.1. Obvious faunal activity recorded during the site survey, such as birds or mammals observed visually or by call, was recorded. Specific attention was paid to any potential use of the site by protected species, priority species or other notable species.

2.4.2. In addition, specific surveys were undertaken in respect of bats and Badgers *Meles meles* by experienced surveyors.

Bats

2.4.3. All buildings within the site and land outside of the applicant's ownership were assessed for their potential to support roosting bats in May 2020. Buildings were subject to initial external surveys and were categorised as having high, medium, low or negligible suitability for roosting bats in accordance with the Bat Conservation Trust's *Bat Surveys for Professional Ecologists: Good Practice Guidelines.*

2.4.4. The probability of a building being used by bats as a summer roost site increases if it:

- is largely undisturbed;
- dates from pre-20th Century;
- has a large roof void with unobstructed flying spaces;
- has access points for bats (though not too draughty);
- has wooden cladding or hanging tiles; and / or
- is in a rural setting and close to woodland or water.

2.4.5. Conversely, the probability decreases if a building is of a modern or pre-fabricated design / construction, is in an urban setting, has small or cluttered roof voids, has few gaps at the eaves or is a heavily disturbed premises.

2.4.6. The main requirement for a winter / hibernation roost site is that it maintains a stable (cool) temperature and humidity. Sites commonly utilised by bats as winter roosts include cavities / holes in trees, underground sites and parts of buildings. Whilst different species may show a preference for one of these types of roost site, none are solely dependent on a single type.

2.4.7. All field surveys were undertaken with regard paid to best practice guidelines issued by Natural England (2004[4]), the Joint Nature Conservation Committee (2004[5]) and the Bat Conservation Trust (2016[6]).

2.4.8. Due to the current company policy pertaining to Covid-19, no internal inspections of any of the buildings on site or within the land outside of the applicant's ownership were undertaken. However, on account of the

[4] Mitchell-Jones, A J (2004). *Bat Mitigation Guidelines*. English Nature, Peterborough.
[5] Mitchell-Jones, A J & McLeish, A P (Eds.) (2004). *Bat Workers' Manual*. 3rd edition. Joint Nature Conservation Committee, Peterborough.
[6] Collins, J (Ed.) (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidelines.* 3rd Edition. Bat Conservation Trust, London.

building types it is not considered that the results of the surveys would have materially changed by being able to complete internal surveys.

Badgers

2.4.9. The site and immediate vicinity was subject to specific surveys for Badgers in May 2020.

2.4.10. The surveys comprised two main elements: firstly, searching thoroughly for evidence of Badger setts. If any setts were encountered each sett entrance was noted and plotted, even if the entrance appeared disused. The following information was recorded where present:

i) The number and location of well used or very active entrances if present; these are clear of any debris or vegetation and are obviously in regular use and may, or may not, have been excavated recently.

ii) The number and location of inactive entrances; these are not in regular use and have debris such as leaves and twigs in the entrance or have plants growing in or around the edge of the entrance.

iii) The number of disused entrances; these have not been in use for some time, are partly or completely blocked and cannot be used without considerable clearance. If the entrance has been disused for some time all that may be visible is a depression in the ground where the hole used to be together with the remains of the spoil heap.

2.4.11. Secondly, any evidence of Badger activity such as well-worn paths, run-throughs, snagged hair, footprints, latrines and foraging signs was sought and if present recorded so as to build up a picture of the use of the site by Badgers.

3. ECOLOGICAL FEATURES

3.1. A habitat survey was undertaken within the site and land outside of the applicant's ownership by Ecology Solutions in May 2020.

3.2. The following main habitat / vegetation types were identified within the site and land outside of the applicant's ownership during the surveys undertaken:

- Hardstanding;
- Buildings / Structures;
- Scrub;
- Amenity Grassland;
- Tall Ruderal Vegetation; and
- Disturbed Ground.

3.3. The locations of these habitats are shown on Plan ECO2.

3.4. **Site**

Hardstanding

3.4.1. Hardstanding is present across much of the site, providing access, vehicle parking and areas for storage. Areas of hardstanding comprise a mix of concrete, crushed hardcore and loose cobbles (see Photograph 1).

3.4.2. A number of opportunistic and early colonising species were noted across the areas of hardstanding having established due to the lack of recent management. Species present include Red Valerian *Centranthus ruber*, Bramble *Rubus fruticosus*, Bristly Ox-tongue *Helminthotheca echioides*, Ribwort Plantain *Plantago lanceolata*, Ivy-leaved Toadflax *Cymbalaria muralis*, Barren Brome *Anisantha sterilis*, Butterfly-bush *Buddleja davidii*, Hoary Mustard *Hirschfeldia incana*, Smooth Sow-thistle *Sonchus oleraceus*, Wall Barley *Hordeum murinum*, Long-headed Poppy *Papaver dubium* subsp. *dubium*, Herb Robert *Geranium robertianum*, Hemlock *Conium maculatum*, Field Forget-me-not *Myosotis arvensis*, Common Field Speedwell *Veronica persica*, Scarlet Pimpernel *Anagallis arvensis*, Black Medick *Medicago lupulina*, Field Madder *Sherardia arvensis*, Cut-leaved Cranesbill *Geranium dissectum*, False Oat-grass *Arrhenatherum elatius*, *Sedum* sp., Pellitory-of-the-wall *Parietaria judaica*, Common Ragwort *Senecio jacobaea*, Pineappleweed *Matricaria discoidea*, Dandelion *Taraxacum officinale*, Perforate St John's Wort *Hypericum perforatum*, Common Mouse-ear *Cerastium fontanum*, Perennial Rye Grass *Lolium perenne*, Yorkshire Fog *Holcus lanatus*, Buck's-horn Plantain *Plantago coronopus*, Purple Toadflax *Linaria purpurea*, Cleavers *Galium aparine*, Cocksfoot *Dactylis glomerata*, Seaside Daisy *Erigeron glaucus*, Broad-leaved Dock *Rumex obtusifolius*, Curled Dock *Rumex crispus*, Greater Plantain *Plantago major*, Lesser Burdock *Arctium minus*, Spear Thistle *Cirsium vulgare*, Common Mallow *Malva sylvestris*, Sycamore *Acer pseudoplatanus* sapling, Wood Avens *Geum urbanum*, Periwinkle *Vinca* sp., Yarrow *Achillea millefolium*, Dove's-foot Cranesbill *Geranium molle*, Annual Mercury *Mercurialis annua*, Creeping Cinquefoil *Potentilla reptans*, Daisy *Bellis perennis*, Creeping Buttercup *Ranunculus repens*, Annual Meadow Grass *Poa annua* and Great Mullein *Verbascum thapsus*.

Buildings / Structures

3.4.3. The site contains several buildings and cabins, the majority of which are warehouse style buildings and by their design, lack internal loft voids. There are also numerous metal storage containers present across the site, along with open sided storage sheds. Two disused gas storage tanks are present at the northern end of the site.

3.4.4. Building B1 (see Plan ECO2) is a single storey cabin used as an office building in the north of the site. The cabin is of wood and metal construction and supports a flat roof.

3.4.5. Building B2 (see Plan ECO2) is a two storey brick and corrugated metal built commercial building used by The Big Lemon coach company. The building supports a shallow pitched roof clad with corrugated metal. Large shutters are present on the eastern and western aspects. The northern portion of the building is single height, whilst the southern portion is used as offices and has a second floor. No apparent loft void is present.

3.4.6. Building B3 (see Plan ECO2) is two storey single height brick building supporting a pitched corrugated asbestos roof used as a tyre shop. A large shutter is present on the eastern side. No loft void is present.

3.4.7. Building B4 (see Plan ECO2) is a single storey brick building supporting a corrugated asbestos roof and wooden soffit boards. A small loft void appears to be present in the northern end of the building. The building is in use as storage by the tyre shop.

3.4.8. Buildings B6, B7 and B8 (see Plan ECO2) are all small prefabricated metal cabins with flat roofs used as gatehouse cabins and a toilet block.

3.4.9. Buildings B9, B10 and B11 (see Plan ECO2) are brick-built, single storey building with flat roofs and no windows, used for housing utilities.

3.4.10. Two disused gas storage tanks are present at the northern end of the site (see Plan ECO2). The tanks are both metal structures, with the most southernly still supporting the guide frame (see Photograph 2). Both structures contained a large amount of water at the time of the survey.

Scrub

3.4.11. Pockets of scrub are present across the site (see Photograph 3). Species present include abundant Butterfly-bush, Elder *Sambucus nigra*, Bramble and Ivy *Hedera helix*, frequent Red Valerian, Annual Mercury, Common Nettle *Urtica dioica* and Cleavers, and rarely occurring Sycamore and Hedge Bindweed *Calystegia sepium*.

Disturbed Ground

3.4.12. Two long bunds are present in the south of the site where a large area has been levelled to allow for storage (see Photograph 4). The bunds are a mixture of earth and hardcore. The dominant species is Red Valerian, with frequent Common Nettle, Barren Brome, Ribwort Plantain, Smooth Sow-

thistle, Cleavers, Bristly Ox-tongue, Butterfly-bush, Ivy-leaved Toadflax, Dandelion, Bramble and Common Ragwort, occasional Long-headed Poppy, Purple Toadflax, Cocksfoot and False Oat-grass and rarely occurring Creeping Buttercup.

3.4.13. A further small area of disturbed ground is present in the south of the site. Species present include Red Valerian, Cleavers, Common Nettle, Yarrow, Butterfly-bush, Barren Brome, Broad-leaved Dock, Ribwort Plantain and Bramble.

3.5. Land Outside of the Applicant's Ownership

Hardstanding

3.5.1. The parcel of land to the north is dominated by hardstanding with some elements of vegetation to the edges. Smaller areas of hardstanding are associated with the southern parcel providing access and parking. Species present include Mugwort *Artemisia vulgaris*, White Clover *Trifolium repens*, Barren Brome, Wall Barley and Dandelion.

Buildings / Structures

3.5.2. A single building (B5) is present in the southern parcel of the land outside of the applicant's ownership (see Plan ECO2).

3.5.3. Building B5 is a single storey building in the south of the site, constructed from breeze blocks and supporting a pitched concrete tile roof and wood soffit boards. Windows are present on the south and northern aspects. Access is via a door in the western aspect. Wood cladding is present above the door (see Photograph 5). No internal access was permitted but a loft void appears to be present. Dense Ivy cover is present on the south-eastern corner of the building.

3.5.4. A number of storage containers are also present in the northern parcel.

Scrub

3.5.5. A significant area of scrub is present in the southern parcel that was formally an area of amenity planting that has been left unmanaged for some time. Smaller elements of scrub are also present in the north-western corner of the southern parcel. Species present include dominant *Elaeagnaceae* sp., with frequent Butterfly-bush, Elder, Bramble, Ivy, Red Valerian, Common Nettle and Cleavers, and rarely occurring Horse-chestnut *Aesculus hippocastanum*, *Tamarix* sp. and *Cotoneaster* sp..

Amenity Grassland

3.5.6. A small area of amenity grassland is present in the west of the southern parcel (see Photograph 6). The grassland is subject to regular management. Species present include dominant Wall Barley, with frequent Barren Brome, Cocksfoot, Common Mallow, Dandelion and Daisy, and occasionally occurring Bristly Ox-tongue, Dove's-foot Cranesbill, Common Field Speedwell, Herb Robert, Spear Thistle, Shepherd's-purse *Capsella bursa-pastoris*, Broad-leaved Dock, Ribwort Plantain, Buck's-horn Plantain, and Yarrow. A line of newly planted

Hawthorn *Crataegus monogyna* and Blackthorn *Prunus spinosa* are present along the boundary wall.

Tall Ruderal Vegetation

3.5.7. A steep slope on the southern boundary of the southern parcel is dominated by tall ruderal vegetation. The dominant species is Ivy, with frequent Bramble, occasional Elder, Spear Thistle, Red Valerian, Ribwort Plantain, Cleavers, Creeping Thistle *Cirsium arvense*, Barren Brome and Bristly Ox-tongue, and rarely occurring Sycamore also present.

Disturbed Ground

3.5.8. A small area of disturbed ground is present in the southern parcel. Species present include Red Valerian, Cleavers, Ribwort Plantain, Bramble, Creeping Buttercup, Wall Barley, Creeping Thistle, Cocksfoot, Common Ragwort, False Oat-grass and Smooth Sow-thistle.

3.6. Non-native Invasive Species

3.6.1. Butterfly-bush and Red Valerian have been recorded within the site, whilst Butterfly-bush, Cotoneaster and Red Valerian have all been recorded within the land outside of the applicant's ownership.

3.6.2. Some species of Cotoneaster are listed in the Wildlife and Countryside Act (WCA) 1981 (as amended) under schedule 9 Part II. It is an offence to cause any plant listed on the schedule to grow in the wild.

3.6.3. Butterfly-bush is present across the majority of the areas of hardstanding and scrub within the site and the land outside of the applicant's ownership. Butterfly-bush is classed as a non-native species by the Non-native Species Secretariat[7].

3.6.4. Red Valerian was also recorded across areas of hardstanding within the site and the land outside of the applicant's ownership and is listed on the Sussex Invasive Non-native Species Register.

3.7. Background Records

3.7.1. The data search returned records of four species of plants protected under Schedule 8 of the Wildlife and Countryside Act 1981 (as amended). These include Deptford Pink *Dianthus armeria*, Bluebell *Hyacinthoides non-scripta*, Meadow Clary *Salvia pratensis* and Early Spider-orchid *Ophrys sphegodes*.

3.7.2. A single record of Deptford Pink was returned that relates to a location approximately 4.3km north-west of the site and dates from 2010.

3.7.3. Two records were returned for Bluebell. Both records are given to an accuracy to the nearest 10km and cannot be accurately located. The most recent record dates from 2016.

[7] http://www.nonnativespecies.org

3.7.4. Two records were returned for Meadow Clary; the nearest being recorded in 2011 approximately 0.2km east of the site. The most recent record was from 2013 and it relates to a location approximately 1.7km south-east of the site.

3.7.5. Six records were returned for Early Spider-orchid. The closest accurate record relates to a location approximately 4km north-east of the site and dates from 2011. The most recent record was recorded in 2014 in the same 10km grid square as the site.

3.7.6. In addition, a total of 16 plants listed as non-native invasive species on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) were recorded in the data search area. These include Three-cornered Garlic *Allium triquetrum*, Hottentot-fig *Carpobrotus edulis*, *Cotoneaster* sp., Wall Cotoneaster *Cotoneaster horizontalis*, Late Cotoneaster *Cotoneaster lacteus*, New Zealand Pygmyweed *Crassula helmsii*, Montbretia *Crocosmia x crocosmiiflora*, Nuttall's Waterweed *Elodea nuttallii*, Japanese Knotweed *Fallopia japonica*, Giant Hogweed *Heracleum mantegazzianum*, Indian Balsam *Impatiens glandulifera*, Curly Waterweed *Lagarosiphon major*, Virginia-creeper *Parthenocissus quinquefolia*, False Acacia *Robinia pseudoacacia*, Japanese Rose *Rosa rugosa* and Variegated Yellow Archangel *Lamiastrum galeobdolon subsp. argentatum*. The closest invasive species record to the site is that of Japanese Rose recorded in 2016 approximately 0.3km south-west of the site. Three-cornered Garlic was recorded approximately 0.3km north-east of the site in 2014. The most recent invasive species records are of Virginia Creeper and *Cotoneaster* sp., which both date from 2018 and relate to a location approximately 1.9km north-west of the site.

4. WILDLIFE USE OF THE SITE

4.1. General observations were made during the surveys of any faunal use of the site and land outside of the applicant's ownership, with specific attention paid to the potential presence of protected species.

4.2. Bats

4.2.1. Building B4 in the west of the site and building B5 in the southern parcel of land outside of the applicant's ownership (see Plan ECO2) both have low potential to support roosting bats, with gaps present under the roof panels of building B4 and under the weather boarding of building B5. Dense Ivy cover is also present on the south-eastern corner of building B5. All other buildings on site offer negligible bat roosting opportunities.

4.2.2. Numerous records of bat species were returned by the data search. A total of nine or ten bat species were recorded including Noctule *Nyctalus noctula*, Leisler's Bat *Nyctalus leisleri*, Serotine *Eptesicus serotinus*, *Myotis* sp., Whiskered Bat *Myotis mystacinus*, potential Brandt's Bat *Myotis brandtii*, Brown Long-eared Bat *Plecotus auritus*, Soprano Pipistrelle *Pipistrellus pygmaeus*, Nathusius' Pipistrelle *Pipistrellus nathusii* and Common Pipistrelle *Pipistrellus pipistrellus*. Most records of bats are located greater than 3km distance from the site in north and central Brighton. However, there are some records of bats within 1km of the site including three records of Common Pipistrelle and single records of *Myotis* sp. and either a Whiskered Bat or Brandt's Bat.

4.2.3. Six records were returned for Noctule. The closest record relates to a location approximately 2.9km north-east of the site and dates from 2015. The most recent record dates from 2019 and relates to a location approximately 3.8km north-west of the site.

4.2.4. Two records were returned for Leisler's Bat, both dating from 2018. The closest record is located approximately 4km north-west of the site.

4.2.5. A total of 51 records were returned for Serotine. The closest record relates to a location in a 1km grid square approximately 3.3km north of the site at its closest point and dates from 2016. The most recent record dates from 2019 and relates to a location approximately 4.4km north-west of the site. Three Serotine bat roosts including a maternity roost were recorded in the north of Brighton close to Wild Park Local Nature Reserve (LNR).

4.2.6. Two records of a *Myotis* sp. were returned. The closest and most recent record relates to a location approximately 0.6km east of the site and dates from 2019.

4.2.7. A single record of a Whiskered Bat was returned that relates to a location approximately 4.6km north-west of the site and dates from 2013.

4.2.8. A single record of either a Whiskered Bat or Brandt's Bat was returned. This record is of a grounded bat recorded in 2010 in Brighton Marina approximately 0.3km south-east of the site.

4.2.9. Two records were returned for Brown Long-eared Bat. The closest record is of a roosting bat in 2012 and located approximately 3.4km north-west of

the site. The most recent record dates from 2018 and relates to a location approximately 4km north-west of the site.

4.2.10. Nine records were returned for Soprano Pipistrelle. The closest record relates to a location approximately 2.9km north-east of the site and dates from 2015. The most recent record dates from 2019 and relates to a location approximately 3.8km north-west of the site.

4.2.11. Four records were returned for Nathusius' Pipistrelle. The closest record relates to a location approximately 4.1km north-west of the site and dates from 2014. The most recent record dates from 2018 and relates to a location approximately 4.4km north-west of the site.

4.2.12. A total of 41 records were returned for Common Pipistrelle. The closest record relates to a location approximately 0.4km north-west of the site and dates from 2010. This record relates to a hibernating Common Pipistrelle. The most recent record dates from 2019 and relates to a location approximately 3.8km north-west of the site. There are a few records of Common Pipistrelle roosts within the data search area.

4.3. **Badgers**

4.3.1. No evidence of the presence of Badgers was recorded during Ecology Solutions' survey work in May 2020. Given the nature of the habitats present, and the use of the land surrounding the site and land outside of the applicant's ownership, it is considered highly unlikely that Badgers would be present in this location.

4.3.2. No Badger records were returned by SxBRC.

4.4. **Other Mammals**

4.4.1. The site and land outside of the applicant's ownership contains limited suitable habitat for Hedgehog *Erinaceus europaeus* foraging and dispersal, confined to the tall ruderal and scrub present in the southern parcel of the land outside of the applicant's ownership. Although these areas are relatively isolated in nature, lying between the operational part of the site to the north and a busy road to the south.

4.4.2. The data search returned a total of 74 records of Hedgehog within the past 10 years. The closest record is located approximately 0.6km north-west of the site and dates from 2010. The most recent record dates from 2018 and is located approximately 3.9km south-east of the site.

4.4.3. A single record for Dormouse *Muscardinus avellanarius* was returned by the data search. The record dates from 2013 and relates to a location in a 1km grid square approximately 4.4km north of the site at its nearest point.

4.4.4. Due to the site's location, approximately 250m from the English Channel, eight records of marine mammals were returned within the data search area in the past 10 years. These include six records of Common Seal *Phoca vitulina*, a single record of Grey Seal *Halichoerus grypus* and two records of Bottle-nosed Dolphin *Tursiops truncates*. The majority of these records are located within or in close proximity to Beachy Head West

Marine Conservation Zone (MCZ), which lies approximately 0.3km south-west of the site at its closest point.

4.5. **Birds**

4.5.1. A number of common bird species were identified during the survey work undertaken in May 2020, primarily associated with the on-site buildings and scrub. Bird species recorded by sight or call during the surveys include Herring Gull *Larus argentatus*, Feral Pigeon *Columba livia*, Robin *Erithacus rubecula*, Blackbird *Turdus merula*, Starling *Sturnus vulgaris* and House Sparrow *Passer domesticus* (all within the site). Carrion Crow *Corvus corone* was recorded flying over the site.

4.5.2. House Sparrow was recorded nesting within scrub on site (see Plan ECO2), whilst Starling were seen with young within scrub on site and are thought to have either nested on or close by the site. A large number of Herring Gull were seen to be roosting on the gas storage tank guide frame, and although there was no evidence of nesting, there is the potential for them to do so. Anecdotal evidence was given for Herring Gull nesting on a small flat roofed section of building B2 although there was no evidence to suggest that they were nesting at the time of the survey.

4.5.3. Herring Gull, Starling and House Sparrow are on the Red List of Birds of Conservation Concern, devised by a group of organisations including the RSPB to give an indication of the status of UK breeding bird populations[8].

4.5.4. Ecology Solutions found the site and land outside of the applicant's ownership to support some suitable nesting habitat for locally present bird species in the form of scrub, the roofs of suitable buildings and the gas storage tank guide frame.

4.5.5. A large number of bird records were returned by the data search. A total of 19 bird species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) and / or under Annex I of the Birds Directive were recorded in the data search area. These include Dotterel *Charadrius morinellus*, Avocet *Recurvirostra avosetta*, Bewick's Swan *Cygnus columbianus*, Whooper Swan *Cygnus cygnus*, Common Scoter *Melanitta nigra*, Red-throated Diver *Gavia stellate*, Black-throated Diver *Gavia arctica*, Great Northern Diver *Gavia immer*, Slavonian Grebe *Podiceps auritus*, Black-tailed Godwit *Limosa limosa*, Black Tern *Chlidonias niger*, Red Kite *Milvus milvus*, Osprey *Pandion haliaetus*, Merlin *Falco columbarius*, Hobby *Falco subbuteo*, Barn Owl *Tyto alba*, Quail *Coturnix coturnix*, Firecrest *Regulus ignicapillus* and Crossbill *Loxia curvirostra*. The majority of these protected bird records are either given to an accuracy to the nearest 1km or 10km.

4.5.6. The records in closest proximity to the site are of Common Scoter, Red-throated Diver, Black-throated Diver, Slavonian Grebe, Avocet, Black Tern and Red Kite, which were all recorded in the same 1km grid square as the

[8] Red List species are those that are globally threatened, whose population or range has declined rapidly in recent years (i.e. by more than 50% in 25 years), or that have declined historically and not recovered. Amber List species are those whose population or range has declined moderately in recent years (by at least 25% but less than 50% in 25 years), those whose population has declined historically but recovered recently, rare species (fewer than 300 breeding pairs or 900 individuals), those with internationally important populations in the UK, those with localised populations, and those with an unfavourable conservation status in Europe.

site with dates ranging from 2011 to 2018. All these birds, with the exception of Red Kite, are shorebirds associated with Brighton Marina Local Wildlife Site (LWS). They are not considered to be reliant on this section of coastline for breeding and were recorded during the winter period or periods of passage migration. Bewick's Swan, Whooper Swan, Quail, Red Kite, Hobby and Barn Owl were all recorded in Sheepcote Valley LWS within the 1km grid square approximately 0.5km north-east of the site at its nearest point. The most recent records in the locality date from 2018 and are of Common Scoter, Red-throated Diver, Black-throated Diver, Black Tern, Red Kite, Merlin, Hobby and Barn Owl.

4.5.7. In addition, 24 bird species listed as species of principal importance under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 were recorded in the search area. These include Bewick's Swan, White-fronted Goose *Anser albifrons*, Common Scoter, Lapwing *Vanellus vanellus*, Curlew *Numenius arquata*, Herring Gull, Turtle Dove *Streptopelia turtur*, Cuckoo *Cuculus canorus*, Wood Warbler *Phylloscopus sibilatrix*, Skylark *Alauda arvensis*, Tree Pipit *Anthus trivialis*, Yellow Wagtail *Motacilla flava*, Dunnock *Prunella modularis*, Ring Ouzel *Turdus torquatus*, Song Thrush *Turdus philomelos*, Spotted Flycatcher *Muscicapa striata*, Starling, House Sparrow, Tree Sparrow *Passer montanus*, Linnet *Carduelis cannabina*, Bullfinch *Pyrrhula pyrrhula*, Reed Bunting *Emberiza schoeniclus*, Corn Bunting *Emberiza calandra* and Yellowhammer *Emberiza citrinella*.

4.5.8. Of these species, four were recorded in the same 1km grid square as the site, including Common Scoter, Herring Gull, Curlew and Starling. These were all recorded in either Brighton Marina LWS or Black Rock Beach LWS approximately 0.4km and 0.2km south of the site boundary respectively. In addition, species such as Corn Bunting, Cuckoo, Dunnock, House Sparrow, Linnet, Ring Ouzel, Skylark, Song Thrush, Spotted Flycatcher, Tree Pipit, Yellow Wagtail and Yellowhammer were all recorded in countryside areas in 1km grid squares approximately 0.4km east and 0.5km north-east of the site. The most recent three records of species of principal importance are of Skylark and Corn Bunting, all of which date from 2019 and relate to a location approximately 1.9km north-east of the site.

4.6. **Reptiles**

4.6.1. The site and land outside of the applicant's ownership contains limited suitable habitats for foraging and dispersing reptiles including scrub and tall ruderal vegetation; however, the areas suitable for reptiles are generally small and isolated and it is therefore considered unlikely that reptiles would be present on site. Additionally, no reptiles were recorded during the survey work undertaken.

4.6.2. There are 97 records of Slow Worm *Anguis fragilis* in the data search area, the nearest being recorded approximately 1.3km north-west of the site in 2010 and the most recent being from 2019, located approximately 3.8km to the north-west.

4.6.3. A single record for Adder *Vipera berus* was returned by the data search from the past 10 years. The record dates from 2015 and was recorded at a location approximately 2.8km north of the site.

4.6.4. There are 19 records of Common Lizard *Zootoca vivipara* in the search area, the nearest being located approximately 0.2km south-east of the site in 2010 and the most recent being from 2018, located approximately 3.5km to the north-west of the site.

4.7. **Amphibians**

4.7.1. The disused gas storage tanks offer negligible opportunities for breeding amphibians. The site and land outside of the applicant's ownership offers some suitable habitat for amphibians in their terrestrial phase, however, these habitats are generally small and isolated and there are no other waterbodies within the locality. Their presence is therefore considered unlikely.

4.7.2. Two records for Great Crested Newt *Triturus cristatus* were returned by the data search. The closest was recorded in 2010 approximately 2.4km north-east, with the most recent recorded in 2012 approximately 3.3km north-west of the site.

4.7.3. Ten records for Common Toad *Bufo bufo* were returned from the past 10 years. The most recent record dates from 2017 at a location approximately 3.5km north-west of the site. The closest record was recorded approximately 2.1km north-west of the site in 2010.

4.7.4. Four records were returned for Smooth Newt *Lissotriton vulgaris* from the past 10 years. The closest and most recent record dates from 2014 and was recorded approximately 3.5km north-west of the site.

4.7.5. The data search returned 96 records for Common Frog *Rana temporaria* from within the search area. The closest relates to a location approximately 0.2km south-east of the site in 2010. The most recent records date from 2018, with the closet of these recorded approximately 3.9km north-west of the site.

4.8. **Invertebrates**

4.8.1. Given the habitats present, it is likely a varied assemblage of common invertebrate species utilises the site and land outside of the applicant's ownership. There is no evidence to suggest that any rare or notable species would be present on site.

4.8.2. The data search returned a large data set of invertebrates. Nine invertebrate species listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) were recorded in the search area, including Stag Beetle *Lucanus cervus*, Purple Emperor *Apatura iris*, Small Blue *Cupido minimus*, Adonis Blue *Polyommatus bellargus*, Silver-spotted Skipper *Hesperia comma*, Chalkhill Blue *Polyommatus coridon*, White-letter Hairstreak *Satyrium w-album*, Brown Hairstreak *Thecla betulae* and Wart-Biter *Decticus verrucivorus*. The majority of these species are protected from sale only, with the exception of Wart-Biter which is fully protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Records of butterfly species associated with chalk grassland, (including Small Blue, Adonis Blue and Chalkhill Blue) are particularly abundant in the search area. No records of protected invertebrate species

were recorded within the site boundary. The closest accurate record is of a Small Blue recorded approximately 0.5km south-east of the site in 2014. Small Blue, Adonis Blue, Chalkhill Blue, Silver-spotted Skipper, White-letter Hairstreak and Wart-Biter were all recorded in 2019; the closest record being of a Silver-Spotted Skipper located approximately 1km north-west of the site.

5. ECOLOGICAL EVALUATION

5.1. The Principles of Ecological Evaluation

5.1.1. The guidelines for ecological evaluation produced by CIEEM propose an approach that involves professional judgement, but makes use of available guidance and information, such as the distribution and status of the species or features within the locality of the project.

5.1.2. The methods and standards for site evaluation within the British Isles have remained those defined by Ratcliffe[9]. These are broadly used across the United Kingdom to rank sites so priorities for nature conservation can be attained. For example, current SSSI designation maintains a system of data analysis that is roughly tested against Ratcliffe's criteria.

5.1.3. In general terms, these criteria are size, diversity, naturalness, rarity and fragility, while additional secondary criteria of typicalness, potential value, intrinsic appeal, recorded history and the position within the ecological / geographical units are also incorporated into the ranking procedure.

5.1.4. Any assessment should not judge sites in isolation from others, since several habitats may combine to make it worthy of importance to nature conservation.

5.1.5. Further, relying on the national criteria would undoubtedly distort the local variation in assessment and therefore additional factors need to be taken into account, e.g. a woodland type with a comparatively poor species diversity, common in the south of England, may be of importance at its northern limits, say in the border country.

5.1.6. In addition, habitats of local importance are often highlighted within a local Biodiversity Action Plan (BAP). The Sussex BAP has been considered as part of this assessment and is referenced below.

5.1.7. Levels of importance can be determined within a defined geographical context from the immediate site or locality through to the international level.

5.1.8. The legislative and planning policy context are also important considerations and have been given due regard throughout this assessment.

5.2. Habitat Evaluation

Designated Sites

5.2.1. **Statutory Sites.** The site and land outside of the applicant's ownership falls within Brighton and Lewes Biosphere Reserve.

5.2.2. The United Nations Educational, Scientific and Cultural Organisation (UNESCO) is a UN organisation that promotes international awareness of science, education, culture and communication. In 1971 UNESCO launched a scientific programme called Man and the Biosphere

[9] Ratcliffe, D A (1977). *A Nature Conservation Review: The Selection of Biological Sites of National Importance to Nature Conservation in Britain*. Two Volumes. Cambridge University Press, Cambridge.

Programme (MAB) to tackle issues that can detrimentally affect people and their local environments. A primary aim of the MAB programme is preserving natural resources through efficient resource management, as well as forecasting how current actions may affect our future environment.

5.2.3. The MAB programme currently operates 669 Biosphere Reserves across 120 different countries, with the aim of ensuring environmental, economic and social sustainability comprising terrestrial, marine and coastal ecosystems. These reserves constitute three concentric zones; a transition area, a buffer zone and a core protected ecosystem, which is deemed to contribute to the conservation of landscapes, ecosystems, species and genetic variation. While transition areas permit greater economic and human development, buffer zones are prioritised for scientific research and limited activity, and core areas are strictly protected.

5.2.4. Collectively, these reserves form the World Network of Biosphere Reserves (WNBR). Whereas each reserve is associated with UNESCO, the sites are nominated by national governments and remain under domestic jurisdiction.

5.2.5. There are six biosphere reserves across the UK, including Brighton and Lewes Downs, which was designated in 2014. The local administrative authorities for the Brighton and Lewes Downs reserve are Brighton and Hove City Council, Lewes District Council, Adur District Council, the South Downs National Park Authority, Natural England, the Sussex Inshore Fisheries & Conservation Authority, and the Marine Management Organisation.

5.2.6. The core area of Brighton and Lewes Downs biosphere reserve is made up of 14 SSSIs, covering 1,832 ha. Buffer zones surround and adjoin the core areas, covering 20,479 ha including the South Downs National Park and the coastal and marine conservation zone, Beachy Head West.

5.2.7. The transition area of the reserve covers 7,203 ha of land and sea, incorporating the urban areas of Brighton and Hove, Lewes, Newhaven, Peacehaven, Shoreham, Southwick and Telscombe. Sustainable development is encouraged here through wildlife-rich housing estates, green roofing and the provision of bat and bird boxes as well as the inclusion of various parks and green spaces. Healthy local food production is also promoted, and sustainable fishing for local consumption is permitted in the transition areas that are made up of sea.

5.2.8. The main qualifying feature of many of the SSSIs within the Biosphere Reserve is the presence of lowland chalk grassland. This habitat is one of the richest wildlife habitats in the country, containing up to 40 species of flowering plants per metre square and attracting many unique invertebrate species, as well as mammals and birds.

5.2.9. Other designations that fall within the 5km search area include Brighton to Newhaven Cliffs SSSI approximately 50m south; Beachy Head West MCZ approximately 0.3km south; Whitehawk / Race Hill LNR approximately 0.7km north-west; Beacon Hill LNR approximately 2.8km east; Bevendean Down LNR approximately 2.1km north-west; Wild Park LNR approximately

3.5km north-west; Castle Hill Special Area of Conservation (SAC) and SSSI located approximately 4km north-east of the site and Castle Hill National Nature Reserve (NNR) located approximately 4.3km north-east of the site as shown on Plan ECO1.

5.2.10. Brighton to Newhaven Cliffs SSSI, whilst only approximately 50m to the south of the site boundary at its closest point, measures approximately 167.5 ha in size and is located largely to the east of the site as shown on Plan ECO1. The SSSI has been in the main designated for geological reasons, however, it is found to support some rare and uncommon plants growing both on the cliff face and within the cliff-top chalk grassland. The site also supports a locally important colony of breeding seabirds and a diverse community of beetles.

5.2.11. The site and land outside of the applicant's ownership falls into an Impact Risk Zone (IRZ) associated with Brighton to Newhaven SSSI such that Natural England consider that development within this zone has the potential to impact the SSSI in some way. The planning proposals fall within the IRZ residential category that states that in cases where any residential development of 10 units or more is to be developed, the local planning authority should consult with Natural England in regard to potential impacts on the SSSI.

5.2.12. Beachy Head West MCZ has been designated for its intertidal wave cut chalk platforms and subtidal chalk ridges. The chalk reef supports an abundance of wildlife including rare species such as Blue Mussel *Mytilus edulis*, Native Oyster *Ostrea edulis* and Short-snouted Seahorse *Hippocampus hippocampus*.

5.2.13. Whitehawk / Race Hill, Beacon Hill and Bevendean Down LNRs have all been designated for their species-rich chalk grassland supporting colonies of Adonis Blue Butterfly *Polyommatus bellargus* and Chalkhill Blue Butterfly *Polyommatus coridon*.

5.2.14. Wild Park LNR supports areas of ancient woodland, chalk scrub and species-rich chalk grassland.

5.2.15. Castle Hill SAC, SSSI and NNR has been designated for its species-rich grassland that is rich in orchid species including Fragrant Orchid *Gymnadenia conopsea*, Common Spotted-orchid *Dactylorhiza fuchsii*, Pyramidal Orchid *Anacamptis pyramidalis* and Autumn Lady's-tresses *Spiranthes spiralis*. The SSSI also supports an abundance of butterfly species.

5.2.16. SACs are designated under the Habitats Directive, the Directive is transposed into UK legislation by the Conservation of Habitats and Species Regulations 2017, commonly known as the Habitats Regulations.

5.2.17. Special Protection Areas (SPA), SACs and Ramsar Sites are jointly referred to as European Sites; MCZs are referred to as European offshore marine sites.

5.2.18. The key section of the Habitats Regulations relevant to the current proposal is Regulation 63, which states inter alia:

63.—(1) A competent authority, before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project which—

(a) is likely to have a significant effect on a European site or a European offshore marine site (either alone or in combination with other plans or projects), and
(b) is not directly connected with or necessary to the management of that site,

must make an appropriate assessment of the implications of the plan or project for that site in view of that site's conservation objectives.

(5) In the light of the conclusions of the assessment, and subject to regulation 64, the competent authority may agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the European site or the European offshore marine site (as the case may be).

5.2.19. Standard engineering and management practice in respect of pollution control, dust and traffic management should be implemented during the construction phase of the development to avoid potential adverse effects upon Brighton to Newhaven Cliffs SSSI. The application will outline mitigation measures necessary to mitigate construction-phase impact, including any inherent mitigation. These will be secured in an appropriate method through the planning permission. It is considered unlikely that the development proposals will have any significant (direct or indirect) effect upon the conservation objectives and integrity of the local statutory designations.

5.2.20. **Non-statutory Sites.** The site and land outside of the applicant's ownership are not subject to any non-statutory designations. The closest such site is Sheepcote Valley LWS approximately 0.1km east of the site and has been designated for its diversity of habitats including species-rich chalk grassland and scrub.

5.2.21. Black Rock Beach and Volk's Railway LWSs lie approximately 0.2km south and south-west of the site respectively and have been designated for their species-rich vegetated shingle supporting such species as Tree-mallow *Lavatera arborea*, Yellow Horned-poppy *Glaucium flavum*, Thrift *Armeria maritima subsp. maritima* and Babington's Leek *Allium ampeloprasum var. babintonii*.

5.2.22. Brighton Marina LWS lies approximately 0.4km south of the site and supports a diversity of marine habitats that in turn support an assemblage of marine species.

5.2.23. The implementation of the standard engineering practices as detailed above in relation to Brighton to Newhaven Cliffs SSSI will also avoid any potential adverse effects upon the LWSs within the vicinity of the site.

5.2.24. A number of additional designated sites are located in the wider area as identified on Plan ECO1, but no significant adverse effects are anticipated from the proposed development at the site.

Habitats

5.2.25. The majority of the habitats present on site and on the land outside of the applicant's ownership are of limited intrinsic nature conservation value, including the buildings, hardstanding, amenity grassland, disturbed ground and tall ruderal. The areas of scrub are considered to be of some ecological interest for the foraging and nest-building opportunities they offer faunal species, as opposed to any significant intrinsic ecological value.

5.2.26. None of the above habitats pose an overriding ecological constraint in themselves that would prevent the development proceeding.

Invasive Non-native Species

5.2.27. *Cotoneaster* sp. is located in an area of scrub in the southern parcel of the land outside of the applicant's ownership. Some species of Cotoneaster are listed under Schedule 9 Part II of the Wildlife & Countryside Act 1981, making it an offence to cause these species to grow in the wild. Clearance works taking place in this area will either remove specimens carefully and dispose of these at an approved facility, or (if specimens are to be retained) will be mindful not to disturb these specimens or the ground around them.

5.2.28. To prevent the spread of invasive non-native species, any other such species identified within or immediately adjacent to the site during the demolition and construction works will be treated with caution and will be removed or avoided (with suitable barriers installed where necessary) as is deemed most appropriate.

5.2.29. Butterfly-bush is present across the majority of the areas of hardstanding and scrub within the site and the land outside of the applicant's ownership. Butterfly-bush is classed as a non-native invasive species by the Non-native Species Secretariat. Red Valerian was also recorded across areas of hardstanding within the site and within the land outside of the applicant's ownership, and is listed on the Sussex Invasive Non-native Species Register. It is noted that the control of this species is not a legal requirement, but nonetheless where works are proposed within or close to the boundary vegetation all reasonable measures should be taken to prevent its spread. Where present on site, the vegetation is to be removed and the material should be disposed of at an approved facility.

5.3. **Faunal Evaluation**

Bats

5.3.1. **Legislation.** All bats are protected under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended) and included on Schedule 2 of the Conservation of Habitats and Species Regulations 2017 ("the Habitats Regulations"). These include provisions making it an offence:

- Deliberately to kill, injure or take (capture) bats;
- Deliberately to disturb bats in such a way as to:-

(i) be likely to impair their ability to survive, to breed or rear or nurture their young; or to hibernate or migrate; or

(ii) affect significantly the local distribution or abundance of the species to which they belong;

- To damage or destroy any breeding or resting place used by bats;
- Intentionally or recklessly to obstruct access to any place used by bats for shelter or protection (even if bats are not in residence).

5.3.2. While the legislation is deemed to apply when bats are not in residence, Natural England guidance suggests that certain activities such as re-roofing can be completed outside sensitive periods when bats are not in residence provided these do not damage or destroy the roost.

5.3.3. The words deliberately and intentionally include actions where a court can infer that the defendant knew that the action taken would almost inevitably result in an offence, even if that was not the primary purpose of the act.

5.3.4. The offence of damaging (making worse for the bat) or destroying a breeding site or resting place is an absolute offence. Such actions do not have to be deliberate for an offence to be committed.

5.3.5. European Protected Species licences are available from Natural England in certain circumstances, and permit activities that would otherwise be considered an offence.

5.3.6. In accordance with the Habitats Regulations Natural England must apply the three derogation tests as part of the process of considering a licence application. These tests are that:

1. the activity to be licensed must be for imperative reasons of overriding public interest or for public health and safety;
2. there must be no satisfactory alternative; and
3. the favourable conservation status of the species concerned must be maintained.

5.3.7. Licences can usually only be granted if the development is in receipt of full planning permission.

5.3.8. **Site Usage.** Building B4 in the west of the site and building B5 in the southern parcel of land outside of the applicant's ownership both have low potential to support roosting bats, with gaps present under the roof panels of building B4 and under the weather boarding of building B5. Dense Ivy cover is also present on the south-eastern corner of building B5. All other buildings on site offer negligible bat roosting opportunities.

5.3.9. **Mitigation and Enhancement.** A single emergence / re-entry survey is recommended for buildings B4 and B5 to establish whether roosting bats are present and what level of mitigation may be required. This level of survey would accord to the current guidelines of survey effort for buildings with considered low roosting suitability. The survey should be completed across the main bat season of May to August / September.

5.3.10. The demolition of the buildings and structures possessing negligible bat roost potential can proceed without supervision. In the event that any bat is discovered, work will cease, advice sought and a Natural England licence may be required.

5.3.11. Careful consideration will be required as to the need for lighting and its extent and design. Lighting should be directional and should be designed specifically to avoid upward spill, using cowls as appropriate. These measures would also benefit non-diurnal bird species.

5.3.12. The landscape strategy should seek to improve the floristic diversity of the site and provide greater foraging opportunities for locally present bats.

5.3.13. As a further enhancement, a number of bat boxes could be provided on new buildings within the site to increase post-development roosting opportunities.

Hedgehogs

5.3.14. **Legislation.** Hedgehog is a species of principal importance for the conservation of biodiversity under Section 41 (England) of the NERC Act 2006.

5.3.15. The NERC Act 2006 requires the Secretary of State to:

… take such steps as appear… to be reasonably practicable to further the conservation of the living organisms and types of habitat included in any list published under this section, or… promote the taking by others of such steps.

5.3.16. **Site Usage.** No evidence of Hedgehogs was recorded during the survey work undertaken. The site and land outside of the applicant's ownership contains limited and relatively isolated suitable habitat for Hedgehog foraging and dispersal, confined to the tall ruderal and scrub present in the southern parcel of the land outside of the applicant's ownership.

5.3.17. **Mitigation and Enhancements.** None required. However, in accordance with best practice and a precautionary approach any clearance of log piles or other Hedgehog shelter features should be subject to inspections to ensure that Hedgehogs are absent. In the unlikely event that an individual is encountered it should be carefully placed in an appropriate lidded box and immediately removed to an area of suitable habitat at the margins of the site away from working areas. Any vegetation clearance should be carried out in a systematic and controlled manner to allow Hedgehogs to disperse.

Birds

5.3.18. **Legislation.** Section 1 of the Wildlife & Countryside Act 1981 is concerned with the protection of wild birds, whilst Schedule 1 lists species that are protected by special penalties. All species of birds receive general protection whilst nesting.

5.3.19. **Site Usage.** A number of common bird species were identified during the survey work undertaken. The site and land outside of the applicant's ownership offers some opportunities for nesting and foraging birds in the form of scrub, the roofs of suitable buildings and the gas storage tank guided frame.

5.3.20. House Sparrow was recorded nesting within scrub on site, whilst Starling were seen with young within scrub on site.

5.3.21. **Mitigation and Enhancements.** In order to avoid impacts on nesting birds, and to avoid a potential offence under the Wildlife & Countryside Act 1981, all necessary clearance of vegetation and the demolition of suitable buildings and structures would be undertaken outside of the nesting season (typically March to July inclusive) wherever possible. Where this cannot be achieved a check survey for nesting birds should be undertaken by an ecologist immediately prior to clearance, with any confirmed nests left in situ, with a five-metre exclusion zone around it until the young have fledged.

5.3.22. Consideration should be given to incorporating native fruit-bearing plant species known to benefit birds into any proposed landscaping. This would compensate for any losses of foraging habitat and provide new foraging opportunities for bird species post-development.

5.3.23. As a further enhancement, bird boxes could be installed on new buildings to offer additional nesting opportunities for a range of species. Specific consideration should be given to Swift *Apus apus* nesting provisions.

Invertebrates

5.3.24. **Site Usage.** Given the habitats present, it is likely a varied assemblage of common invertebrate species utilises the site and land outside of the applicant's ownership. There is no evidence to suggest that any rare or notable species would be present.

5.3.25. **Mitigation and Enhancements.** It is recommended that any new planting be composed of native species rather than non-native species, as native species are known to support a greater assemblage of invertebrates.

6. PLANNING POLICY CONTEXT

6.1. The planning policy framework that relates to nature conservation in Brighton is issued nationally through the National Planning Policy Framework (NPPF) and locally through the policies of Brighton and Hove City Council. Any proposed development will be judged in relation to the policies contained within these documents.

6.2. National Policy

National Planning Policy Framework (February 2019)

6.2.1. Guidance on national policy for biodiversity and geological conservation is provided by the NPPF, published in March 2012, revised on 24 July 2018 and updated on 19 February 2019. It is noted that the NPPF continues to refer to further guidance in respect of statutory obligations for biodiversity and geological conservation and their impact within the planning system provided by Circular 06/05 (DEFRA / ODPM, 2005) accompanying the now-defunct Planning Policy Statement 9 (PPS9).

6.2.2. The key element of the NPPF is that there should be "*a presumption in favour of sustainable development"* (paragraphs 10 to 11). It is important to note that this presumption *"does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site"* (paragraph 177). 'Habitats site' has the same meaning as the term 'European site' as used in the Habitats Regulations 2017.

6.2.3. Hence the direction of Government policy is clear; that is, the presumption in favour of sustainable development is to apply in circumstances where there is potential for an effect on a European site, if it has been shown that there will be no adverse effect on that designated site as a result of the development in prospect.

6.2.4. A number of policies in the NPPF are comparable to those in PPS9, including reference to minimisation of impacts to biodiversity and provision of net gains to biodiversity where possible (paragraph 170).

6.2.5. The NPPF also considers the strategic approach that Local Authorities should adopt with regard to the protection, maintenance and enhancement of green infrastructure, priority habitats and ecological networks, and the recovery of priority species.

6.2.6. Paragraphs 174 to 176 of the NPPF comprise a number of principles that Local Authorities should apply, including encouraging opportunities to incorporate biodiversity in and around developments; provision for refusal of planning applications if significant harm cannot be avoided, mitigated or compensated for; applying the protection given to European sites to potential SPAs, possible SACs, listed or proposed Ramsar sites and sites identified (or required) as compensatory measures for adverse effects on European sites; and the provision for the refusal for developments resulting in the loss or deterioration of 'irreplaceable' habitats – unless there are 'wholly exceptional reasons' (for instance, infrastructure projects

where the public benefit would clearly outweigh the loss or deterioration of habitat) and a suitable compensation strategy exists.

6.2.7. National policy therefore implicitly recognises the importance of biodiversity and that with sensitive planning and design, development and conservation of the natural heritage can co-exist and benefits can, in certain circumstances, be obtained.

6.3. **Local Policy**

Brighton and Hove Local Plan 2005 (Retained)

6.3.1. The 2005 Brighton and Hove Local Plan has partly been superseded by the *City Plan Part 1*, adopted in March 2016. The remaining policies are currently being reviewed for eventual replacement by the *City Plan Part 2*.

6.3.2. Six saved policies concerning nature conservation are still operative.

6.3.3. *QD15: Landscape design* relates to the need for development proposals to provide suitable open space, integrating a development into its surroundings with minimal impact on the environment. Current existing landscape and nature conservation features should be retained and where appropriate, new ones created. The use of native species within the landscape plans will be encouraged.

6.3.4. *QD16: Trees and hedgerows* states that new development should accurately identify and seek to retain existing trees and hedgerows, and where feasible include new native tree and hedgerow planting.

6.3.5. *QD18: Species protection* sets out the requirements for the applicant to undertake an appropriate site investigation where there is evidence that the proposals could directly or indirectly affect a species of animal or plant, or its habitat that is protected under National or European legislation, or categorised as 'a declining breeder', 'endangered', 'extinct', 'rare' or 'vulnerable' in the British 'Red Data' books.

6.3.6. Permission will not be granted for any development that would be liable to cause demonstrable harm to such species and their habitats, and where appropriate, mitigation measures will be required to avoid any harmful impact on such species and their habitats. Additionally, and where practicable, the developer will be expected to enhance the habitat of the respective species.

6.3.7. Regard will be given to the achievement of Biodiversity Action Plan Targets.

6.3.8. *NC2: Sites of national importance for nature conservation* states that planning permission will not be granted for a proposal within, or in the setting of, an existing or proposed site of national importance for nature conservation where it is likely to have an adverse impact, directly or indirectly, on the nature conservation features of the site unless impacts can be appropriately mitigated against.

6.3.9. Where a development is likely to have a significant effect on sites of national importance for nature conservation, planning applications will

need to be accompanied by an Environmental Impact Assessments (EIAs).

6.3.10. *NC3: Local Nature Reserves (LNRs)* states that planning permission will not be granted for a proposal within or in the setting of an existing or proposed Local Nature Reserve where it is likely to have an adverse impact, directly or indirectly, on the nature conservation features of the site unless impacts can be appropriately mitigated against.

6.3.11. *NC4: Sites of Nature Conservation Importance (SNCIs)* states that planning permission will not be granted for a proposal within, or in the setting of, an existing or proposed Site of Nature Conservation Importance (SNCI) where it is likely to have an adverse impact, on the nature conservation features of the site unless impacts can be appropriately mitigated against.

Brighton and Hove City Plan Part 1 (March 2016)

6.3.12. The City Plan Part 1 was adopted by Brighton and Hove City Council on 24 March 2016. The plan provides an overarching strategy for emerging Neighbourhood Plans and will be supported in due course by the City Plan Part 2.

6.3.13. *DA2: Brighton Marina, Gas Works and Black Rock Area* relates specifically to the development of the former gas works, Brighton Marina and Black Rock area and seeks to improve connectivity between these three areas. One element of the policy relates to conserving and enhancing biodiversity through the implementation of an ecological master plan that serves to ensure that wildlife habitats are integrated, and protected sites are safeguarded in accordance with Biosphere principles.

6.3.14. *CP10: Biodiversity* addresses the councils aim to conserve, enhance and restore biodiversity whilst promoting improved access to the South Downs Way Ahead Nature Improvement Area (NIA) which includes parts of the urban area, the urban fringe, the seafront and surrounding downs.

6.3.15. Under this policy, development proposals will be required to provide adequate and up-to-date information about the biodiversity that may be affected by the development; conserve existing biodiversity, protecting it from negative indirect effects; and provide net gains for biodiversity wherever possible.

Supplementary Planning Document (SPD) 11 – Nature Conservation and Development (2010)

6.3.16. SPD 11 – Nature Conservation and Development was formally adopted by Brighton and Hove City Council on 25 March 2010.

6.3.17. The aim of the SPD is to contribute to the City Council's commitment to sustainable development, whilst ensuring that the key principles of national planning guidance on biodiversity and nature conservation are met.

6.3.18. Additionally, the SPD aims to ensure that the Sussex BAP and Brighton and Hove Green Network are fully integrated into the local planning process.

6.4. **Discussion**

6.4.1. The proposals for the site and land outside of the applicant's ownership would be judged against the policies summarised above. Overall, it is considered that the development site and land outside of the applicant's ownership is of some limited ecological interest. Mitigation and enhancement measures have been recommended to offset any potential adverse impacts. Taking these on board it is considered that the potential effects of the development proposals on biodiversity and nerby designated sites is unlikely to be significant and the relevant policy requirements will be met.

7. SUMMARY AND CONCLUSIONS

7.1. Ecology Solutions was commissioned in February 2020 by St William Homes LLP to undertake an ecological assessment of Brighton Gasworks, East Sussex.

7.2. The proposals for redevelopment include the demolition of the existing buildings and structures on site, and the construction of up to 700 new dwellings and non-residential floorspace, along with public open space, new private and semi-private residential open space, access and parking.

7.3. **Statutory Sites.** The site and land outside of the applicant's ownership falls within Brighton and Lewes Biosphere Reserve. Other designations that fall within the search area include Brighton to Newhaven Cliffs SSSI approximately 50m south; Beachy Head West MCZ approximately 0.3km south; Whitehawk / Race Hill LNR approximately 0.7km north-west; Beacon Hill LNR approximately 2.8km east; Bevendean Down LNR approximately 2.1km north-west; Wild Park LNR approximately 3.5km north-west; Castle Hill SAC and SSSI located approximately 4km north-east of the site and Castle Hill NNR located approximately 4.3km north-east of the site.

7.4. The site and land outside of the applicant's ownership falls into an IRZ associated with Brighton to Newhaven SSSI and the local planning authority should consult with Natural England in regard to potential impacts on the SSSI.

7.5. Standard engineering and management practice in respect of pollution control, dust and traffic management should be implemented during the construction phase of the development to avoid potential adverse effects upon Brighton to Newhaven Cliffs SSSI. The application will outline mitigation measures necessary to mitigate construction-phase impact, including any inherent mitigation. These will be secured in an appropriate measure through the planning permission.

7.6. **Non-statutory Sites.** The site and land outside of the applicant's ownership is not subject to any non-statutory designations. The closest such site is Sheepcote Valley LWS approximately 0.1km east of the site.

7.7. Black Rock Beach and Volk's Railway LWSs lie approximately 0.2km south and south-west of the site respectively, and Brighton Marina LWS lies approximately 0.4km south.

7.8. Standard engineering practices will avoid any potential adverse effects upon the LWSs within the vicinity of the site and land outside of the applicant's ownership.

7.9. **Habitats.** The majority of the habitats present within the site and land outside of the applicant's ownership are of limited intrinsic nature conservation value, including the buildings, hardstanding, amenity grassland, disturbed ground and tall ruderal. The areas of scrub are considered to be of some ecological interest in the context of the site for the foraging and nest-building opportunities they offer faunal species, as opposed to any significant intrinsic ecological value.

7.10. None of the above habitats pose an overriding ecological constraint in themselves that would prevent the development proceeding.

7.11. It is recommended that the landscape strategy for the proposed development incorporate native species of local provenance, which would have greater benefit

for local wildlife.

7.12. **Invasive Species.** Cotoneaster have been recorded within the southern parcel of the land outside of the applicant's ownership. Some species of Cotoneaster are listed in the Wildlife and Countryside Act (WCA) 1981 (as amended) under schedule 9 Part II.

7.13. Butterfly-bush and Red Valerian have also been recorded within the site and land outside of the applicant's ownership. Butterfly-bush is classed as a non-native invasive species by the Non-native Species Secretariat, and Red Valerian is listed on the Sussex Invasive Non-native Species Register. Reasonable measures should be taken to prevent the spread of these plant species and are detailed within the report.

7.14. **Bats.** Buildings B4 in the west of the site and building B5 in the southern parcel of the land outside of the applicant's ownership both have low potential to support roosting bats. All other buildings on site offer negligible bat roosting opportunities.

7.15. Further surveys of the buildings offering bat roosting potential will be necessary to confirm the likely absence of any bat roost.

7.16. The demolition of the buildings and structures possessing negligible bat roost potential can proceed without supervision or further survey work. In the unlikely event that any bat is discovered, work will cease and a Natural England licence may be required.

7.17. Careful consideration will be required as to the need for lighting and its extent and design. Lighting should be directional and should be designed specifically to avoid upward spill, using cowls as appropriate. These measures would also benefit non-diurnal bird species.

7.18. The landscape strategy should seek to improve the floristic diversity of the site and provide greater foraging opportunities for locally present bats. As a further enhancement, a number of bat boxes could be provided on new buildings within the site to increase post-development roosting opportunities.

7.19. **Badgers.** No evidence of the presence of Badgers was recorded. Given the nature of the habitats present, and the use of the land surrounding the site and land outside of the applicant's ownership, it is considered highly unlikely that Badgers would be present in this location.

7.20. **Hedgehogs.** No evidence of Hedgehogs was recorded during the survey work undertaken.

7.21. The site and land outside of the applicant's ownership contains limited and relatively isolated suitable habitat for Hedgehog foraging and dispersal, confined to the tall ruderal and scrub present in the southern parcel of land outside of the applicant's ownership. A precautionary approach to any clearance of log piles or other Hedgehog shelter features should be subject to inspection to ensure that Hedgehogs are absent. In the event that an individual is encountered, it will be carefully placed in an appropriate lidded box and immediately removed to an area of suitable habitat at the margins of the site away from working areas. Any vegetation clearance should be carried out in a systematic and controlled manner to allow Hedgehogs to disperse.

7.22. **Birds.** A number of common bird species were identified during the survey work undertaken. The site and land outside of the applicant's ownership offers some opportunities for nesting and foraging birds in the form of scrub, the roofs of suitable buildings and the gas storage tank guide frame.

7.23. House Sparrow was recorded nesting within scrub on site, whilst Starling were seen with young within scrub on site.

7.24. In order to avoid impacts on nesting birds, and to avoid a potential offence under the Wildlife & Countryside Act 1981, all necessary clearance of vegetation and the demolition of suitable buildings and structures would be undertaken outside of the nesting season (typically March to July inclusive) wherever possible. Where this cannot be achieved a check survey for nesting birds should be undertaken by an ecologist immediately prior to clearance, with any confirmed nests left in situ, with a five-metre exclusion zone around it until the young have fledged.

7.25. Consideration should be given to incorporating native fruit-bearing plant species known to benefit birds into any proposed landscaping. This would compensate for any losses of foraging habitat and provide new foraging opportunities for bird species post-development. As a further enhancement bird boxes could be installed on new buildings in order to offer additional nesting opportunities for a range of species.

7.26. **Reptiles.** The site and land outside of the applicant's ownership contains limited suitable habitats for foraging and dispersing reptiles including scrub and tall ruderal vegetation; however, the areas suitable for reptiles are generally small and isolated and it is therefore considered unlikely that reptiles would be present on site.

7.27. **Amphibians.** The disused gas storage tanks offer negligible opportunities for breeding amphibians. The site and land outside of the applicant's ownership offers some suitable habitat for amphibians in their terrestrial phase, however, these habitats are generally small and isolated and there are no other waterbodies within the locality.

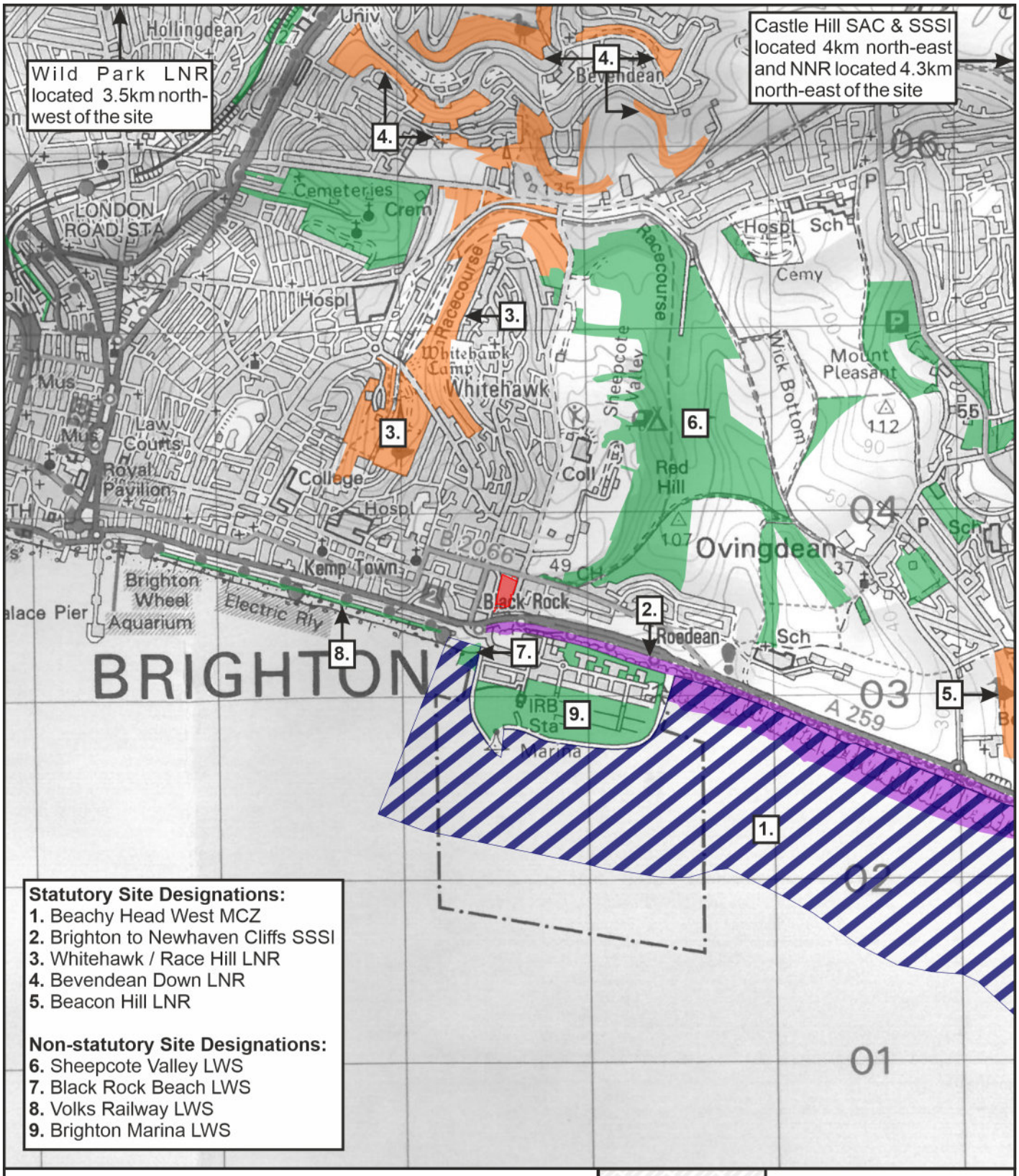
7.28. **Invertebrates.** Given the mix of habitats present it is likely that the site and land outside of the applicant's ownership supports a small assemblage of common and widespread invertebrates. It is recommended that any new planting be composed of native species rather than non-native species.

7.29. In conclusion, the site is of some limited ecological value and further surveys relating to bats have been recommended. Nonetheless, the site is considered likely to be able to accommodate any required mitigation and avoidance measures, and in doing so, significant effects are considered unlikely. Overall, there are no identified insurmountable constraints to being able to successfully bring forward a well-designed development within the site.

PLANS

PLAN ECO1

Site Location and Ecological Designations



KEY:

- SITE LOCATION
- LAND OUTSIDE OF APPLICANT'S OWNERSHIP
- SITE OF SPECIAL SCIENTIFIC INTEREST (SSSI)
- MARINE CONSERVATION ZONE (MCZ)
- LOCAL NATURE RESERVE (LNR)
- LOCAL WILDLIFE SITE (LWS)

N

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8757: BRIGHTON GASWORKS

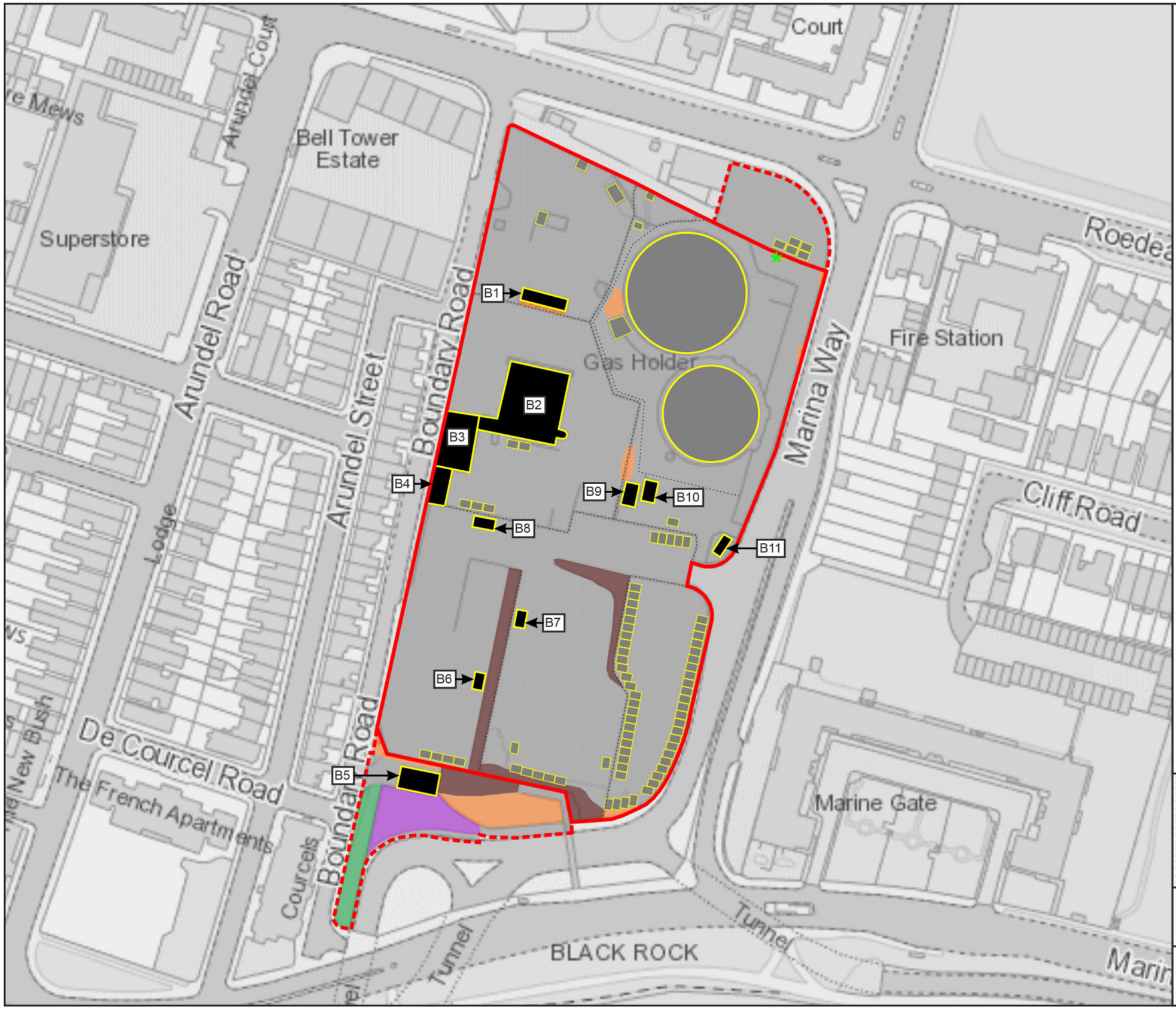
PLAN ECO1: SITE LOCATION AND ECOLOGICAL DESIGNATIONS

Rev: B

Jun 2020

PLAN ECO2

Ecological Features



KEY:

- SITE BOUNDARY
- LAND OUTSIDE OF APPLICANT'S OWNERSHIP
- HARDSTANDING
- AMENITY GRASSLAND
- SCRUB
- TALL RUDERAL
- DISTURBED GROUND
- BUILDING
- STRUCTURE
- DISUSED GAS STORAGE TANK
- FENCING
- HOUSE SPARROW NEST

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8757: BRIGHTON GASWORKS

PLAN ECO2:
ECOLOGICAL FEATURES

Rev: B

Jun 2020

PHOTOGRAPHS

PHOTOGRAPH 1: Hardstanding

PHOTOGRAPH 2: Disused Gas Storage Tank

PHOTOGRAPH 3: Scrub

PHOTOGRAPH 4: Disturbed Ground

PHOTOGRAPH 5: Exterior of Building B5

PHOTOGRAPH 6: Amenity Grassland

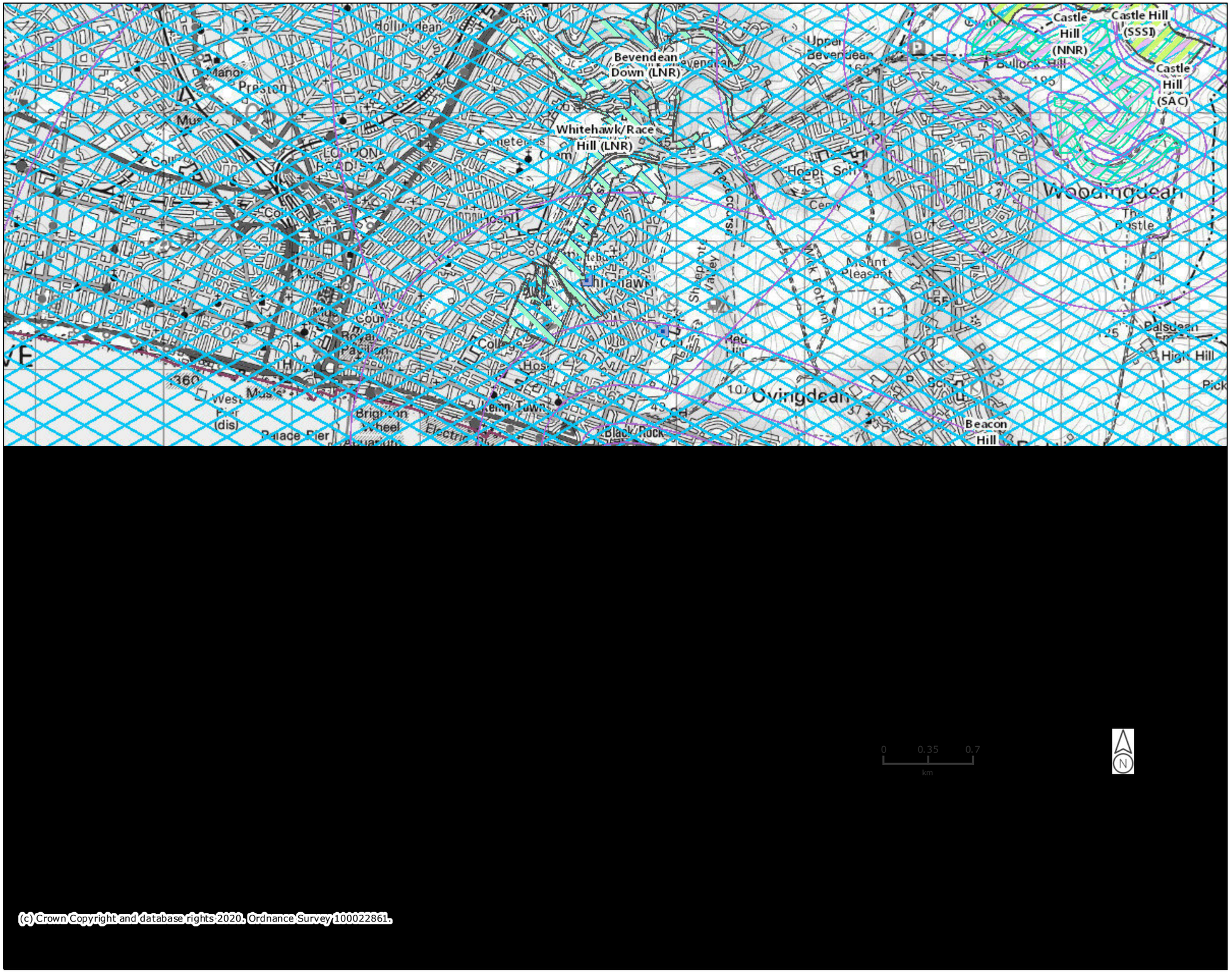
APPENDICES

APPENDIX 1

Information downloaded from Multi-Agency
Geographic Information for the Countryside (MAGIC)

[redacted]

8757. Brighton Gasworks



Legend

- Local Nature Reserves (England)
- National Nature Reserves (England)
- Ramsar Sites (England)
- Sites of Special Scientific Interest (England)
- SSSI Impact Risk Zones - to assess planning applications for likely impacts on SSSIs/SACs/SPAs & Ramsar sites (England)
- Special Areas of Conservation (England)
- Special Protection Areas (England)
- Biosphere Reserves (England)

Marine Conservation Zones (England)

- Designated
- Proposed
- Recommended

Ancient Woodland (England)

- Ancient and Semi-Natural Woodland
- Ancient Replanted Woodland

Granted European Protected Species Applications (England)

- Amphibian
- Bat
- Cetacean
- Invertebrate
- Other Mammal
- Plant
- Reptile

Projection = OSGB36
xmin = 525900
ymin = 99250
xmax = 541100
ymax = 106900

0 0.55 1.1
km

Map produced by MAGIC on 7 February, 2020.

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