wardell-armstrong.com

ENERGY AND CLIMATE CHANGE
ENVIRONMENT AND SUSTAINABILITY
INFRASTRUCTURE AND UTILITIES
LAND AND PROPERTY
MINING AND MINERAL PROCESSING
MINERAL ESTATES
WASTE RESOURCE MANAGEMENT

ROBERTSON PROPERTY LTD AND CARDIFF COUNCIL

ATLANTIC WHARF, BUTETOWN MASTERPLAN AND CARDIFF ARENA AND HOTEL

EIA SCOPING REPORT

JUNE 2021

wardell armstrong

Wardell Armstrong
Tudor House, 16 Cathedral Road, Cardiff, CF11 9LJ, United Kingdom
Telephone: +44 (0)29 2072 9191 www.wardell-armstrong.com

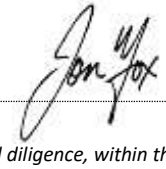
DATE ISSUED:	**JUNE 2021**
JOB NUMBER:	**CA12099**
REPORT NUMBER:	**001**
VERSION:	**V1.0**
STATUS:	**Final**

ROBERTSON PROPERTY LTD AND CARDIFF COUNCIL

ATLANTIC WHARF, BUTETOWN MASTERPLAN AND CARDIFF ARENA AND HOTEL

EIA SCOPING REPORT

JUNE 2021

PREPARED BY:		
Sarah Smith	Principal Environmental Consultant	
REVIEWED BY:		
Lauren Williamson	Associate Director	pp 
APPROVED BY:		
Jon Fox	Director	

CONTENTS

APPENDICES

1 INTRODUCTION

1.1 Overview

1.1.1 This Scoping Report has been prepared by Wardell Armstrong LLP (hereafter referred to as 'WA' on behalf of Robertson Property Ltd and Cardiff Council (hereafter referred to as the 'Applicants') in support of a request for a formal Scoping Opinion under the Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017 (the 'EIA Regulations'), regarding the proposed development of part of the Atlantic Wharf, Butetown Masterplan area, and the proposed development of the Cardiff Arena and associated hotel (the 'Proposed Development') on land at Cardiff Bay (the 'Site').

1.1.2 The Proposed Development falls under Schedule 2(10b) of the EIA Regulations, *"urban development projects, including the construction of shopping centres and car parks, sports stadium, leisure centres and multiplex cinemas"* and meets the applicable thresholds and criteria given the size of the development. A Schedule 2 development constitutes EIA development if it is *"likely to have significant effects on the environment by virtue of factors such as its nature, size or location"*.

1.1.3 Given the scale and nature of the Proposed Development, the Applicants will undertake an EIA to assess potentially significant environmental effects. This Scoping Report sets out the proposed scope of the EIA to be undertaken in respect of the Proposed Development. As required by Regulation 14 of the EIA Regulations, the Scoping Report includes the following information:

- a plan sufficient to identify the land (**Appendix A**);
- a brief description of the nature and purpose of the development, including its location and technical capacity (**Chapter 2**); and
- its likely significant effects on the environment (considered within **Chapters 4** to **17**).

1.1.4 This report also sets out the proposed methodologies to be used in assessing potentially significant environmental effects and, where relevant, potential mitigation measures that may be implemented.

1.2 Policy Context

1.2.1 In February 2021, *Future Wales: The National Plan 2040* was published, which forms the National Development Framework for Wales, setting out the direction for

development to 2040. The National Plan aims to provide a clear, long term spatial strategy for Government policy, action and investment in Wales.

1.2.2 Alongside the National Plan, *Planning Policy Wales* (PPW) was republished in February 2021 (Edition 11). PPW outlines land use planning policies, supported by topic based Technical Advice Notes, and has been designed to ensure the planning system supports the delivery of sustainable development and improves social, economic, environmental and cultural well-being.

1.2.3 Cardiff Council's Local Development Plan (LDP) was adopted on 28th January 2016 and is the basis for decision making on land use planning in Cardiff. The purpose of the LDP is to guide and manage development in Cardiff through to 2026. The LDP is supported by Supplementary Planning Guidance covering a range of planning-based topics. The Council is currently in the process of preparing a new LDP for Cardiff to replace the existing Local Development Plan. The new plan will be called the Cardiff Replacement Local Development Plan and will shape Cardiff over the period 2021 to 2036.

2 DESCRIPTION OF THE SITE AND PROPOSED DEVELOPMENT

2.1 The Application Site

2.1.1 The Site is located within the Inner Harbour area of Cardiff Bay, Cardiff, as shown on the Location Plan (Drawing 0371-RIO-XX-XX-DR-A-01052-1) in **Appendix A**). The relevant planning authority is Cardiff Council.

2.1.2 The application Site comprises two main elements: a large part of the Atlantic Wharf, Butetown Masterplan and the arena and hotel development encompassed within this. It is the Applicants intention to submit one overarching hybrid planning application for the Proposed Development with the Atlantic Wharf, Butetown Masterplan element submitted in outline and the arena and hotel element submitted in detail.

Atlantic Wharf, Butetown Masterplan (Outline)

2.1.3 The outline element of the hybrid application will promote the area of the Atlantic Wharf, Butetown Masterplan that is primarily under the control of Cardiff Council, and will deliver the key early elements of the Masterplan such as the leisure offerings and associated car parking.

2.1.4 The Masterplan area to be submitted in outline will encompass the arena and hotel as well as a large portion of the Inner Harbour between Schooner Way at its northern extent and the A4232 at its southern boundary.

2.1.5 The outline application Site, which encompasses an area of approximately 14.2 hectares (ha) sits between Bute East Dock and the Future Inn to the east, Lloyd George Avenue to the west, the A4232 and the Wales Millennium Centre to the south and Schooner Way and Silurian Park to the north. The Site is currently occupied by County Hall and its car park, the Red Dragon Centre and its car park, part of Silurian Park, Schooner Way and Hemingway Road.

2.1.6 This area of the Site is relatively flat but contains a number of below ground constraints including a Welsh Water sewer which runs underneath the existing Red Dragon Centre, various telecommunications apparatus and the Dock Feeder. The Site contains a number of buildings which will need to be demolished should planning permission be granted, as well as areas of mature trees that will need to be cleared in the Red Dragon Centre car park and near its entrance along Bute Place.

Arena and Hotel (Full)

2.1.7 The proposed location for the arena and hotel sits between Cardiff County Hall to the east, Hemingway Road to the south and residences within Halliard Court and Lloyd George Avenue to the north and west. This area of the Site is currently utilised as surface car parking for County Hall and also includes the southern extent of Schooner Way and part of Silurian Park in the north west corner of the proposed Site.

2.1.8 This area of the Site is relatively flat but contains a number of below ground constraints including the buried West Dock wall which bisects the Site from east to west, a Welsh Water sewer which runs underneath Schooner Way, and an Associated British Ports (ABP) culvert at the eastern boundary of the Site which runs from north to south. The Site is also surrounded by residential properties to the north and west, and both Silurian Park and the existing County Hall car park contain a number of mature trees.

2.1.9 There are no designated sites within the Site boundary. The Severn Estuary, approximately 1.3 kilometres (km) to the southeast of the Site is designated a Ramsar site, Site of Special Scientific Interest (SSSI), Special Area of Conservation (SAC) and a Special Protection Area (SPA). A number of Listed Buildings are located to the southwest of the Site beyond Lloyd George Avenue, along Bute Street.

2.2 The Proposed Development

Atlantic Wharf, Butetown Masterplan

2.2.1 The overarching Atlantic Wharf, Butetown Masterplan aims to deliver a leisure led mixed use development to enhance Cardiff Bay's credentials as a nationally significant visitor destination. The masterplan proposes a mix of uses including residential, offices, retail, leisure and transport but seeks to place key leisure infrastructure (including the arena and Event Square) as the focus areas of the plan. An Illustrative Masterplan (Drawing 0371-RIO-XX-XX-DR-A-01051-1) is provided in **Appendix B**.

2.2.2 The majority of the Masterplan proposals will form the subject of the hybrid planning application and are anticipated to include:

- Cardiff Arena and Hotel (a new 15,000 capacity indoor arena and 182-bedroom hotel);
- a new Red Dragon Centre – redevelopment to deliver:
    - a new leisure offer (relocating Hollywood Bowl, the gym, casino etc.);

- an Odeon LUX; and
- a new food and beverage offering;

- 150 residential dwellings;
- Cultural Quarter: a new cultural quarter adjacent to the Wales Millennium Centre (WMC) including the WMC Academy, This is Wales visitor attraction and the Contemporary Art Museum;
- Commercial Quarter: a new 170,000sqft headquarter office building fronting onto an event square, a new 150 bed 4 star plus, 14 storey hotel, located on the site of the existing County Hall and a new mixed use development fronting Lloyd George Avenue to the west and the new event square to the east, comprising a residential led development with the opportunity for vertically integrated mixed uses including offices, hotels and residential with the potential to deliver 250 residential dwellings;
- Event Square: a major new event square and family attraction to the south of the arena and north of the new Red Dragon Centre;
- Residential Quarter: a new residential quarter on the site of the existing County Hall with the potential to deliver 600-700 residential dwellings; and
- Car Parking: a consolidation of the existing surface car parking into two multi-storey car parks (MSCP) delivered in two phases including a new 1,500 space MSCP between the Red Dragon Centre and existing Future Inns Hotel and a new 500 space MSCP at the north of the existing County Hall site.

Arena and Hotel

Enabling Works

2.2.3 Due to the location and constrained nature of the application Site for the arena and hotel, enabling works to clear and prepare the Site would be required prior to the construction of the arena and hotel. The enabling works would comprise:

- Highway works including the stopping up and realignment of Schooner Way and the provision of new access arrangements to County Hall.
- Utility diversions including the diversion of a large Welsh Water surface water sewer underneath Schooner Way, a high voltage 11 kilovolt (kV) electricity line,

low pressure gas main, telecommunications, potable water supply, and traffic signal cables.

- Site clearance including tree / vegetation removal and removal of current car parking.
- Initial landscaping works focussed on the new highway and any alterations to Schooner Way.
- Further Ground Investigations.
- Site compound and hoarding.

Arena

2.2.4 Cardiff Arena will comprise a 15,000 capacity indoor arena with the ability to host approximately 140 events each year, including a wide range of entertainment based content including music, comedy, family shows and occasional international sporting events.

2.2.5 The arena would contain the following basic facilities:

- Arrival atrium.
- Main event space.
- Changing / locker areas, medical rooms and storage rooms.
- Office and administration areas, production facilities.
- Toilets.
- Food and retail concessions.
- Restaurants and kitchens.
- Executive suites / loges.
- Circulation spaces.
- Service yard and marshalling areas.
- Plant rooms and technology rooms.
- Box office.

2.2.6 The arena building is proposed to be located on the existing County Hall car park between the ABP culvert easement and a proposed green buffer fronting onto the

residential properties located on Lloyd George Avenue to the west. In order to accommodate the arena, the southern extent of Schooner Way is proposed to be stopped up. The arena site will also include a plaza to the south of the building entrance which would be created through the relocation of the existing Travelodge on Hemingway Road and the partial stopping up of Hemingway Road from the roundabout at the entrance to County Hall.

Hotel

2.2.7 The hotel will comprise a 182 bed hotel to replace the current Travelodge on Hemingway Road that sits within the area proposed as the arena plaza.

2.2.8 The hotel would comprise the following basic facilities:

- 182 bedrooms with a mix of standard, premium and accessible.
- 51 space car park including 5 Electric Vehicle (EV) spaces.
- Restaurant.
- Bar.
- Kitchen.
- Foyer.
- Reception.
- Public WC.
- Staff room.
- Office.
- Plant.
- Bin storage.

2.2.9 The hotel will be located to the north of the arena fronting onto Schooner Way. In order to accommodate the hotel, Schooner Way would be stopped up to through traffic and the southern extent of Silurian Park would be used.

2.2.10 The hotel building would be six storeys in height and provide the following facilities on each floor:

- Ground floor: hotel entrance, lobby, car park, plant and back of house operations.

- First floor: guest bedrooms, restaurant and back of house operations.
- Second – Fifth floors: guest bedrooms and back of house operations.
- Roof level: small plant.

2.2.11 The exact location of the main entrance is likely to be at the building's northern or western elevation.

2.3 Phasing of the Proposed Development

2.3.1 The Proposed Development would be brought forward in phases, anticipated to be as follows:

- Phase 1a: enabling works, construction of arena and hotel, and associated infrastructure and landscaping (anticipated timescales: 2022 – 2025).
- Phase 1b: construction of 1,500 space MSCP, demolition of existing Travelodge hotel, and associated infrastructure and landscaping (anticipated timescales: 2022 – 2025).
- Phase 2: construction of new Red Dragon Centre, demolition of existing Red Dragon Centre, construction of a pedestrian bridge over A4232, and associated infrastructure and landscaping (anticipated timescales: 2024 – 2027).
- Phase 3: construction of Event Square, construction of new cultural buildings, and associated infrastructure and landscaping (anticipated timescales: 2027 – 2028).
- Phase 4: construction of residential development fronting Lloyd George Avenue, construction of commercial office building, and associated infrastructure and landscaping (anticipated timescales: 2028 – 2030).
- Phase 5: construction of Residential Quarter, construction of 150 bed 4 star plus hotel, demolition of existing County Hall office, construction of 500 space MSCP, and associated infrastructure and landscaping (anticipated timescales: 2026 – 2030).

2.4 Requirement for EIA

2.4.1 Prior to planning consent being granted, there is a statutory requirement under the EIA Regulations to undertake an EIA and prepare an Environmental Statement (ES) for any development that is likely to result in a significant adverse effect upon the environment.

2.4.2 Schedule 1 of the EIA Regulations lists all development types for which an EIA is mandatory. Schedule 2 of the EIA Regulations lists all development types for which EIA is not mandatory, but which may be appropriate depending on the scale and nature of the proposed project, and the sensitivity of the site and its surroundings.

2.4.3 The Proposed Development falls under Schedule 2(10b) of the EIA Regulations (Urban Development Projects), the threshold criteria for which is a development that includes:

- more than 1 hectare of urban development which is not dwellinghouse development; or
- more than 150 dwellings; or
- the overall area of the development exceeds 5 hectares.

2.4.4 Due to the size and scale of the current proposals and following a review of the environmental effects considered within planning applications submitted for similar developments in the surrounding area, it is considered likely that an EIA will be required.

2.4.5 As such an EIA will be undertaken, and an Environmental Statement prepared and submitted in support of the hybrid planning application, on a voluntary basis.

3 PROPOSED SCOPE OF THE ENVIRONMENTAL STATEMENT

3.1 Introduction

3.1.1 The EIA will be undertaken in accordance with the EIA Regulations, having regard to Schedule 4 which sets out the information for inclusion within an Environmental Statement. Paragraph 5 of Schedule 4 states that the description of likely significant effects in the EIA should identify *"direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the development"* on the environment.

3.2 Proposed Scope of Assessment

3.2.1 Regulation 4 outlines the topics to be considered as part of the EIA process, setting out aspects of the environment which are likely to be significantly affected by the Proposed Development. These environmental factors are outlined as follows along with confirmation of where these topics are considered in the Scoping Report:

- **Population:** Traffic and Transport (Chapter 4), Air Quality (Chapter 8), Noise and Vibration (Chapter 9), Socio-economics (Chapter 11), Townscape and Visual (Chapter 13), Wind Microclimate (Chapter 16) and Daylight, Sunlight and Overshadow (Chapter 17).
- **Human health:** Traffic and Transport (Chapter 4), Water Resources (Chapter 5), Ground Conditions (Chapter 6), Air Quality (Chapter 8), Noise and Vibration (Chapter 9), Socio-economics (Chapter 11) and Human Health (Chapter 12).
- **Biodiversity:** Biodiversity (Chapter 7).
- **Land:** Ground Conditions (Chapter 6).
- **Soil:** Ground Conditions (Chapter 6).
- **Water:** Water Resources (Chapter 5).
- **Air:** Air Quality (Chapter 8).
- **Climate:** Water Resources (Chapter 5), Biodiversity (Chapter 7), Air Quality (Chapter 8), Climate Change (Chapter 14), Wind Microclimate (Chapter 16) and Daylight, Sunlight and Overshadow (Chapter 17).
- **Material assets:** Ground Conditions (Chapter 6), Cultural Heritage (Chapter 10), Socio-economics (Chapter 11) and Materials and Waste (Chapter 15).

- **Cultural heritage:** Cultural Heritage (Chapter 10).
- **Landscape:** Townscape and Visual (Chapter 13).
- **Major accidents and disasters:** Water Resources (Chapter 5), Ground Conditions (Chapter 6) and Climate Change (Chapter 14).

3.2.2 Information relating to the scope of each of the technical chapters of the ES, covering the environmental topics listed in Section 3.2.1, together with a preliminary summary of baseline information and the potential significant effects related to each of these aspects, is provided in **Chapters 4** to **17** of this Scoping Report. Details relating to the non-technical chapters, and the technical aspects to be 'scoped out' of the ES, are provided in this chapter.

3.2.3 A Non-Technical Summary of the ES will be produced as a separate standalone document.

3.3 Non-Technical Chapters

3.3.1 The following non-technical chapters will be included within the ES:

- Introduction: this chapter will outline the background to the application and provide a brief overview of the proposals.
- Site Description: this chapter will describe the location of the Proposed Development and provide a broad overview of the current state of the Site and surrounding area. Detailed baseline information will be provided within the relevant technical chapters.
- Development Description: this chapter will describe the Proposed Development, including a description of the proposed construction and operational phase activities (to the extent of information available at the time of assessment).
- Consideration of Alternatives: this chapter will describe any reasonable alternatives considered by the Applicants, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.
- Approach to Environmental Impact Assessment: this chapter will detail the requirement for EIA, set out the applicable legislative and policy context of the Proposed Development, outline the overarching methodology for assessing

potentially significant environmental effects, and list the schemes to be considered within the cumulative assessment.

- Consultation: this chapter will detail the scope of the ES and describe how it was determined and provide an overview of consultation undertaken in respect of the Proposed Development and EIA.
- Summary of Residual and Cumulative Effects: this chapter of the ES will summarise the residual significant effects and the cumulative effects identified within the technical chapters of the ES.
- Conclusions: This will form the final chapter of the ES and will summarise the Environmental Impact Assessment undertaken for the Proposed Development.

3.3.2 In accordance with Regulation 17(4) of the EIA Regulations, the ES will be prepared by competent experts and will be accompanied by a statement outlining the relevant expertise and / or qualifications of these experts.

3.3.3 The ES will also be accompanied by a reference list detailing the sources used for the descriptions and assessments included in the Environmental Statement, and a glossary of abbreviations used in the ES.

3.4 Approach to EIA

Evaluation of Significant Effects

3.4.1 The ES will set out the assessment methodologies relevant to each environmental topic, based on recognised guidance and good practice. Each technical assessment will consider potential effects of the Proposed Development and evaluate the significance of these effects.

3.4.2 To evaluate the significance of effects, consideration of the sensitivity of a receptor, and the magnitude of change that could affect that receptor, is required.

Receptor Sensitivity

3.4.3 The sensitivity or value of a receptor may be classified by its proximity to the Proposed Development, its use, or its importance, as informed by legislation, policy, and guidance, and qualified by professional judgement.

Magnitude of Change

3.4.4 The magnitude of change that could affect a receptor as a result of the Proposed Development would be identified on a scale of change from minor alterations to major change or loss of a receptor. For some environmental topics, guidance on levels of acceptability means such change is based on quantitative parameters whilst for other topics this can be informed by professional judgement using qualitative parameters.

Determining Significance

3.4.5 Significance is determined with reference to the sensitivity of receptors that could be affected, together with the magnitude of change likely to occur. This is often determined across the environmental topics through a significance evaluation matrix.

3.4.6 For some environmental topics e.g., Biodiversity and Townscape and Visual, variations in this approach may be applicable and where relevant will be detailed in the assessment methodology section of each ES chapter.

3.4.7 Definitions for the categories used within the matrix will be derived for each environmental topic and outlined in each ES chapter, along with descriptions of receptor sensitivity, magnitude of change and levels of significant effect.

3.4.8 **Table 3.1** outlines the overall significance matrix that will be used for the EIA. Effects can be beneficial or adverse.

Table 3.1 Matrix for Evaluating Significance

		Magnitude of Change				
		Very Low	**Low**	**Medium**	**High**	**Very High**
Sensitivity	**Very Low**	Negligible	Negligible	Negligible	Minor	Minor
	Low	Negligible	Negligible	Minor	Moderate	Moderate
	Medium	Negligible	Minor	Moderate	Major	Major
	High	Minor	Moderate	Major	Major	Major
	Very High	Minor	Moderate	Major	Major	Major

3.4.9 Major effects, where accepted limits or standards are exceeded will be determined as significant in EIA terms.

3.4.10 Moderate effects, within accepted limits or standards, but close to reaching the relevant threshold may be determined as significant, although there may be scenarios where such effects are considered not significant based on the specific circumstances being considered and professional judgement.

3.4.11 Minor effects, well within accepted limits or standards, or negligible effects, will be determined as not significant.

Assessment Scenarios

3.4.12 The EIA will consider the likely significant effects of the Proposed Development during construction and upon completion / operation of the development, assuming a likely 'worst case' scenario for the purposes of assessment.

3.4.13 The EIA will consider the Proposed Development as a whole (both outline and detailed elements) as well as assessing likely significant effects following completion of the first phase of development (the arena and hotel development).

3.4.14 A baseline scenario of 2021 will be considered, with work anticipated to commence in 2022.

3.4.15 In order to assess likely significant effects arising during construction, a peak construction year will be defined based on peak construction traffic movements and activity in order to assess a worst-case scenario.

3.4.16 The phased works for the Proposed Development as set out in Section 2.3 of this Scoping Report are anticipated to be completed in 2030 and this fully operational scenario will be considered within the EIA.

3.5 Cumulative Effects Assessment

3.5.1 In accordance with Schedule 4 of the EIA Regulations, the ES will consider potential significant effects arising from the cumulation of effects with other existing and / or approved projects. It is proposed that the ES will consider the schemes set out within **Table 3.2**, within the assessment of cumulative effects.

3.5.2 A review of planning applications submitted to Cardiff Council between 2016 and May 2021 has been undertaken to identify potential development schemes that could give rise to in-combination effects with the Proposed Development.

3.5.3 The EIA Regulations outline cumulative schemes as being *"other existing and / or approved development"* therefore the schemes in **Table 3.2** are either permitted schemes (under construction or not yet implemented), submitted schemes (with the potential for applications to be determined prior to submission of the Proposed Development application), and schemes subject to appeal procedures with potential to be determined prior to submission of the Proposed development application).

3.5.4 Of these potential cumulative schemes, consideration has been given to those which have also been determined as EIA development and thus likely to give rise to potentially significant environmental effects. Small development schemes in close proximity to the Site have also been considered due to their location.

Table 3.2 Schemes for consideration within Cumulative Effects Assessment

Scheme	Description	Status
16/00660/MJR The Wharf, Schooner Way, Atlantic Wharf	Mixed use residential development of 180 dwellings with A1 (retail) and A3 (food and drink) use to ground floor and associated works.	Under construction
17/01292/MJR Land at Suffolk House, Trade Street, Butetown	Outline planning permission for the demolition of existing buildings and re-development of the site for new student residential accommodation.	Planning permission granted February 2018
17/01906/MJR Custom House, Custom House Street and former York Hotel, City Centre	Redevelopment of the site to provide a 248-bed hotel (class C1) and ancillary restaurant (class A3), including partial demolition of Custom House, retention and restoration of the Custom House Façade, demolition of the former York Hotel and associated access, parking and ancillary works.	Under construction
17/01300/MJR East Bay Close, Atlantic Wharf	Erection of student block to form 711 No student rooms and ancillary accommodation plus landscaping and car parking.	Under construction
17/02615/MJR Land on the north and south side of John Street, Callaghan Square, Butetown	Hybrid application comprising of full application for the proposed mixed use commercial building on the south site No. 1 John Street outline application proposed mixed use commercial & leisure hotel for the north site No. 2 John Street including associated parkin, public realm and landscape works.	Under construction
18/00735/MJR Brains Brewery, Crawshay Street, Butetown	Full planning application for an office building providing business (use class B1) floorspace, with ancillary gym (use class D2), marketplace / retail (use class A1) and food and drink (use class A3) uses; a multi-storey car park (sui generis) with ancillary retail (use class A1); and public realm, access, drainage and other infrastructure works required for the delivery of Central Quay (Phase 1)	Under construction

Table 3.2 Schemes for consideration within Cumulative Effects Assessment		
Scheme	**Description**	**Status**
18/01280/MJR Land adjacent to 12 – 14 Drake Walk, Atlantic Wharf	Six storey serviced accommodation comprising serviced apartments with ground floor commercial / amenity space, re-routing of public riverside walkway and renovation of existing dock feeder footbridge.	Planning permission granted August 2020
18/01705/MJR Site of former Marland House and NCP Car Park, Central Square	Erection of a transport interchange with an associated concourse and ancillary retail / commercial units (use classes A1 / A2 / A3), 305 residential apartments (use class C3), 10,318sqm (GIA) office floorspace (use class B1), a 249-space car park, public realm and related infrastructure and engineering works.	Under construction
18/02634/MJR Plot J, Capital Quarter, Tyndall Street, Atlantic Wharf	Full planning application for 307 private rented sector (PRS) units and associated works.	Under construction
19/00632/MJR Part of land at Schooner Way, Atlantic Wharf	Proposed mixed-use development comprising residential (12 units), office (use class B1 520sqm), local needs retail (use class A1 two units x 117sqm each), café (use class A3 120sqm), restaurant (use class A3 360sqm), plus undercroft parking.	Awaiting decision
19/01930/MRJ Crawshay Court, Curran Road, Butetown	188-unit apartment building with ancillary areas, parking, public open space, A1 / A3 unit(s) and a residents roof terrace.	Planning permission granted July 2020
19/02851/MJR Site adjacent to St Mary the Virgin Church, Bute Street, Butetown	New build 2 form entry primary school & flying start and special resource base to replace existing St Mary the Virgin CIW Primary School.	Permitted May 2020
20/00102/MJR The Brewery, Crawshay Street, Butetown	Refurbishment and extensions to former brewhouse for a mixed-use development and retention of associated chimney.	Planning permission granted May 2020
20/00204/MJR 1, 2 and 3-7 Percy Street and Penarth Road, Butetown	Demolition of former BMW car showroom, workshop and offices along with five residential units fronting onto Percy Street.	Approved March 2020

Table 3.2 Schemes for consideration within Cumulative Effects Assessment		
Scheme	**Description**	**Status**
20/00262/MJR Part of Canal Park adjacent to Cardiff and Vale College, Dumballs Road, Butetown	Construction of 3G pitch with floodlighting and spectator seating plus changing facilities with external pathways all within fenced enclosure.	Under construction
20/00384/MJR Cardiff and Vale College, Dumballs Road, Butetown	Construction of multi-use games area sports pitches with airdome cover plus changing pavilion and amendments to parking layout.	Under construction
21/00783/MJR Land at Curran Embankment, Butetown	Demolition of existing buildings / structures and the comprehensive mixed-use redevelopment to provide up to 2,500 new homes (class C3), business space (class B1) and a mix of complementary leisure, food and drink, hospitality, retail and health and wellbeing uses (class A1, A2, A3, C1, D1 and D2); creation of new open space (including a new riverside park and water taxi stop); new pedestrian, cycle and vehicular access points; pedestrian footbridge; vehicular and cycle parking facilities; landscaping; public realm and other associated ancillary and highways works. all matters reserved other than vehicular access.	Application validated April 2021
Land at Channel View, Grangetown	Hybrid planning application for mixed-use development. Outline planning permission is sought for: The redevelopment and extension of part of the existing Channel View Estate to provide up to 321 residential apartments and houses (Use Class C3), up to 285sqm of retail floorspace (Use Class A1), communal gardens incorporating allotments and picnic areas, formal and informal children's play space, landscaping, cyclepaths/footpaths, drainage infrastructure, roads and parking; The regeneration of the Marl public open space to include new/improved sports pitches, children's play space, a new 'beach', water features, landscaping, and cyclepaths/footpaths; The provision of a new bus/cycle/pedestrian link between Channel View Road and South Clive Street and a new cycle/pedestrian link between South Clive Street and Ferry Road; The provision of a new parking area; Together with associated works (all matters reserved for future consideration). Full planning	Pre-Application Consultation

Table 3.2 Schemes for consideration within Cumulative Effects Assessment		
Scheme	**Description**	**Status**
	permission is sought for a first phase of development comprising of new tower blocks (8-12 storeys) providing 79 elderly-persons (over 55s) accommodation units, a 115sq.m community cafe, communal gardens incorporating allotments and picnic areas, landscaping, drainage infrastructure, footpaths, roads, parking and associated works.	

3.6 Mitigation

3.6.1 Mitigation measures to avoid, reduce or offset the consequences of the Proposed Development will be embedded within its design whilst others may require adherence to particular constraints on construction methodology or mode of operation. The final assessment of significance will take into account the mitigation measures and constraints that have been incorporated into the Proposed Development (i.e., the assessment of residual effects).

3.7 Aspects to be scoped out of the EIA

3.7.1 Specific chapters / assessment will not be included for the following topics, as it is considered that these will be addressed sufficiently elsewhere within the ES or planning application, and / or the Proposed Development is unlikely to result in significant environmental effects relevant to these topics.

Risks of Major Accidents and / or Disasters

3.7.2 The EIA Regulations state that an EIA should consider the vulnerability of the development to risks of major accidents and / or disasters, relevant to the project concerned.

3.7.3 'Risk' can be defined as 'the likelihood of an impact occurring, combined with effect or consequence(s) of the impact on a receptor, if it does occur'; a 'Major Accident' can be defined as 'events that threaten immediate or delayed serious damage to human health, welfare and / or the environment'; and a 'Disaster' can be defined as 'naturally occurring extreme weather events (e.g. storm, flood, temperature) or ground-related hazard events (e.g. subsidence, landslide, earthquake) with the potential to cause an event or situation. Disaster and natural disaster are often used interchangeably.

3.7.4 Owing to the nature of the Proposed Development, it is considered that the likelihood of it resulting in / causing an event to occur that threatens (either immediate or delayed) serious damage to human health, welfare and / or the environment is low.

3.7.5 The design of the Proposed Development will also incorporate measures to reduce the vulnerability of the development to naturally occurring extreme weather events (i.e., flooding, storms and extreme temperatures) and / or ground related hazard events (e.g., subsidence, earthquakes and ground contamination).

3.7.6 Such scenarios will be considered across the relevant environmental topics of the ES, for example the Water Resources, Ground Conditions, Climate Change and Human Health chapters. It is therefore proposed that the topic of major accidents and / or is considered sufficiently elsewhere within the ES and a standalone chapter is not required.

3.8 Consultation

3.8.1 Consultation on the Proposed Development has commenced with submission of a request for pre-application advice to Cardiff Council regarding the hybrid planning application. The Scoping Report will form the basis of a request for a formal Scoping Opinion from Cardiff Council, seeking agreement on the proposed scope of the EIA outlined in **Chapters 4** to **17**.

3.8.2 The Applicants also have a Planning Performance Agreement (PPA) in place with Cardiff Council. The PPA provides an opportunity for improved communication between the Applicants and the Council as work progresses towards the submission of the hybrid planning application. As part of the PPA, the Applicants will seek further technical consultation with relevant Council officers, as appropriate, in relation to the proposed scope of the EIA to ensure the assessment work being undertaken is considered robust.

3.8.3 Details of all consultations undertaken with regard to the EIA will be reported in the Environmental Statement produced as part of the application submission.

4 TRAFFIC AND TRANSPORT

4.1 Introduction

4.1.1 A Traffic and Transport assessment will be undertaken by WSP and will be included as a chapter within the ES.

4.2 Legislation, Policy and Guidance

4.2.1 The assessment will be carried out with due regard to the following:

- Wales Transport Strategy (March 2021)
- Well-being of Future Generations (Wales) Act (2015)
- Future Wales: The National Plan 2040 (February 2021)
- Planning Policy Wales (Edition 11, February 2021)
- Cardiff Local Development Plan 2006 – 2026 (Adopted January 2016)
- Cardiff's Transport White Paper: Transport Vision to 2030 (January 2020)
- Cardiff Council Supplementary Planning Guidance
- Active Travel Guidance (Welsh Government, February 2020)
- Technical Advice Note (TAN) 18: Transport (March 2007)
- The Guidelines for the Environmental Assessment of Road Traffic (GEART) (Institute of Environmental Assessment, 1993)
- Design Manual for Roads and Bridges (DMRB)

4.3 Baseline Conditions

4.3.1 The baseline traffic and transport conditions will be primarily taken from the South East Wales Traffic Model (SEWTM) which is held by Transport for Wales (TfW). This model will provide Origins / Destinations for base year trips and will be utilised in conjunction with traffic count data. In addition to this, a bespoke VISSIM microsimulation traffic model will be developed to assess the impacts of the Proposed Development. The model extent will be broadly in-line with that proposed by Cardiff Council's highway department outlined in **Figure 4.1**.

Figure 4.1 Model Extent

4.3.2 Signal data will be obtained from Cardiff Council for the junctions identified with yellow markers in **Figure 4.1**. Where necessary LinSig traffic models will be developed to determine signal timings for the base and future years.

4.3.3 The base year model will be calibrated and validated against an appropriate data source.

4.3.4 The forecast models will be developed based on SEWTM traffic forecasts. This is to say that any background traffic growth and/or traffic arising from committed schemes will be as per the assumptions underpinning the SEWTM model.

4.3.5 For the With Development scenario, it is assumed that an AM weekday peak and PM event and non-event peak will be modelled. Where the proposals result in the closure of roads, a first principles approach to reassignment will be applied.

4.3.6 Impacts of the proposed Metro will be assessed through factoring down of the forecast trip matrices in line with anticipated mode shifts from the proposed schemes.

4.3.7 Key routes for walking and cycling will be identified and quantified where these numbers are available from Cardiff Council counts.

4.3.8 Modelling results will be summarised as a modelling chapter to inform the wider Transport Assessment.

4.3.9 Desk top studies of personal accident injuries will be undertaken to understand the existing situation together with site visits along key routes and the location of the Proposed Development.

4.3.10 Baselining of the existing origins of trips and modes will be undertaken for the existing Motorpoint Arena and trips within Cardiff to inform the key routes and travel mode.

4.4 Scope of Assessment – Key Receptors and Potential Impacts

4.4.1 Potential traffic and transport impacts during the construction and operational phases of the Proposed Development to be addressed by the ES are as follows:

- Severance (separation of people from places or other people or obstruction of pedestrian access to essential facilities).
- Driver Delay (traffic delays to non-development traffic).
- Pedestrian Delay (ability of pedestrians to cross roads due to changes in traffic volume, composition and speed and the level of pedestrian activity, visibility and physical conditions of the Proposed Development).
- Pedestrian Amenity (effect of the Proposed Development on the experience of pedestrian journeys due to changes in traffic flow, composition, and separation from traffic).
- Fear and Intimidation (due to increase in traffic volume and its proximity or lack of protection).
- Accidents and Safety (risk of collisions occurring through the Proposed Development changing the character of existing traffic).

4.5 Assessment Methodology

4.5.1 To assess the potential significance of traffic effects, the thresholds set out within the Guidelines for the Environmental Assessment of Road Traffic (GEART) will be considered along with the traffic flow data contained in the Transport Assessment (TA) produced for the hybrid planning application.

4.5.2 To establish whether an environmental assessment of traffic effects should be carried out on receptors GEART provides two rules:

1. include highway links where traffic flows are predicted to increase by more than 30%; and

2. include sensitive areas where traffic flows are predicted to increase by 10% or more.

4.5.3 According to GEART, predicted traffic flow increases below 10% are generally not considered to be significant as daily variations in background traffic flow may fluctuate by this amount. Changes in traffic flows below this level are, therefore, assumed not to result in significant environmental effects and will not be assessed further as part of the traffic and transport assessment within the ES.

4.5.4 The traffic and transport assessment will identify existing traffic flows and the potential impacts of changes to traffic flows on the following:

- local roads;
- road users;
- land uses;
- environmental resources; and
- sensitive receptors (including users and occupiers) fronting roads.

4.5.5 The sensitivity of each highway link included in the assessment will be assigned in accordance with GEART, based on proximity to the highway link and the highway environment.

4.5.6 Sensitivity judged as High or Medium results in Rule 2 (sensitive areas where traffic flows are predicted to increase by 10% or more) being considered. Sensitivity judged as Low or Negligible results in Rule 1 being considered (where traffic flows are predicted to increase by more than 30%).

4.5.7 The assessment of any likely significant traffic and transport effects will be determined by considering the sensitivity of the receptor against the magnitude of change, with the details presented in the ES.

4.5.8 Mitigation proposals will form part of the Transport Assessment and it is considered these will be in accordance with national and local policy and guidance to inform the transport solutions:

- continue to make best use of existing transport infrastructure by maintaining and managing it well;
- adapt it to a changing climate and upgrade it to support modal shift; and

- where new infrastructure is needed use the Sustainable Transport Hierarchy.

4.5.9 To assist in delivery and operation, a number of plans will be developed for key land uses to promote sustainable routes and travel choice during construction, operation and event days.

4.6 Consultation

4.6.1 Consultation has taken place with Cardiff Council highways and traffic modelling teams to develop the appropriate scope of the study area for assessment within the Transport Assessment and the level of transport modelling required. The consultation is ongoing through regular meetings to consider key design matters and solutions.

4.6.2 Consultation has also taken place with TfW to consider the development and delivery of the Metro project and its relevant phases of delivery. Further consultation has also taken place with the Analytical Unit of TfW to consider the requirements of the South East Wales Transport Model and its use within the Transport Assessment.

5 WATER RESOURCES

5.1 Introduction

5.1.1 A Water Resources assessment will be undertaken by Wardell Armstrong LLP and will be included as a chapter within the ES. The Water Resources ES chapter will consider the potential issues arising from the construction and operation of the Proposed Development in relation to the hydrological and hydrogeological environment. It will assess the potential impacts on surface waters including rivers and surface waterbodies, groundwater, private water supplies and other abstractions, and potential water dependant hydro-ecological sites.

5.2 Legislation, Policy and Guidance

5.2.1 The assessment will be carried out with due regard to the following:

- European Union (EU) Water Framework Directive (WFD) 2000/60/EC
- European Directive: The Groundwater Daughter Directive 2006/118/EC
- European Directive: The Priority Substances Directive (2008/105/EC)
- Environmental Protection Act 1990
- Water Resources Act 1991
- The Water Environment (Water Framework Directive) (England and Wales) Regulations 2003
- Flood and Water Management Act 2010
- Future Wales: The National Plan 2040 (February 2021)
- Planning Policy Wales (Edition 11, February 2021)
- Cardiff Local Development Plan 2006 – 2026 (Adopted January 2016)
- Technical Advice Note (TAN) 15: Development and Flood Risk (2004)

5.3 Baseline Conditions

5.3.1 A Desk Study will be undertaken to identify the baseline conditions of the Site and surrounding area in respect of water resources and flood risk. This will include a review of existing data from Natural Resources Wales (NRW) and Cardiff Council on abstractions, discharges, and private water supplies, alongside published maps from the British Geological Survey (BGS) and NRW.

5.3.2 From a preliminary review of available information including NRW's Flood Risk Map Viewer, the Site is situated in Flood Zone B (areas known to have flooded in the past).

Surface Water Features

5.3.3 There are no mapped watercourses within the Site boundary. The Site is adjacent to Atlantic Wharf, and canal feeders enter the wharf to the north of the Site.

5.3.4 Roath Basin is located c.300m south of the Site, and Roath Dock is located c.390m southeast.

5.3.5 The River Taff is located c.550m west of the Site. Cardiff Bay is located c.300m south of the Site.

5.3.6 Under the Water Framework Directive (WFD) the Site is located within the Taff d s Cynon Operational Catchment and the Taff – conf Rhondda R to Castle Street surface water body. The Taff – conf Rhondda R to Castle Street has an ecological status of Moderate and a chemical status of Fail.

Geology

5.3.7 Published BGS superficial deposits mapping records the Site as underlain by Tidal Flat Deposits (clay, silt and sand). The area to the north of the Site is mapped as being underlain by Glaciofluvial Sheet Deposits (Devensian sand and gravel). Alluvium (clay, silt, sand and gravel) is mapped as underlying the area to the northwest of the Site, and is associated within the River Taff and Taff Vale.

5.3.8 Published BGS bedrock geology mapping records the Site to be underlain by Mercia Mudstone.

Hydrogeology

5.3.9 The Tidal Flat Deposits are classified by NRW as a Secondary (Undifferentiated) Aquifer. The Mercia Mudstone is classified by NRW as a Secondary B Aquifer. The Site is not located within a Source Protection Zone (SPZ).

5.3.10 Under the WFD the Site is located within the SE Valleys Southern Devonian Old Red Sandstone and Triassic Mercia Mudstone groundwater body. The chemical and quantitative status of the groundwater body are both classified as Good.

Abstractions

5.3.11 NRW have indicated that there are two groundwater and two surface water abstractions within 2km of the Site. The closest are the two surface water abstractions

associated with the industrial factories to the east of the Site, adjacent to Atlantic Wharf. The data regarding private water supplies has been requested from Vale of Glamorgan Council.

Hydro-ecology

5.3.12 The Severn Estuary is located 1.6km southeast of the Site and is designated as a Special Area of Conservation (SAC), Site of Special Scientific Interest (SSSI), Special Protection Area (SPA) and RAMSAR (Wetland of International Importance).

Off-Site Sources of Contamination

5.3.13 The closest notable potential sources of off-site contamination are the factories to the east of Atlantic Wharf.

Sensitive Receptors

5.3.14 The following sensitive receptors have been flagged following preliminary baseline research:

- Surface water in the River Taff;
- Surface water in Atlantic Wharf;
- Groundwater within the Mercia Mudstone bedrock aquifer (Secondary B);
- Groundwater within the Tidal Flat deposits (Secondary (undifferentiated) aquifer); and
- Severn Estuary hydro-ecologically designated site.

5.4 Scope of Assessment – Key Receptors and Potential Impacts

5.4.1 The assessment will identify potential impacts on the water environment during the construction and operational phases of the Proposed Development. The potential hydrological and hydrogeological impacts requiring consideration are broadly grouped as follows:

- impacts to groundwater levels and flow due to construction activities such as excavations and creation of impermeable surfaces;
- impacts to groundwater quality due to construction or operational activities such as use of machinery or wastewater drainage; and
- impacts on surface water quality due to construction or operational activities such as use of machinery or wastewater drainage.

5.4.2 Potential effects of the Proposed Development in relation to flood risk and drainage will be undertaken by Arup and included as an appendix to the Water Resources ES chapter.

5.4.3 A WFD screening assessment will be undertaken to assess the Proposed Development in terms of potential impacts for each WFD classification test (e.g. General Chemical Assessment and Groundwater Dependent Terrestrial Ecosystems Test), as well as the potential for the Proposed Development to hinder programmes of WFD mitigation measures planned in other parts of the waterbody. The WFD Assessment will form an appendix to the Water Resources ES chapter.

5.5 Assessment Methodology

5.5.1 A qualitative assessment will be undertaken using a combination of professional judgement, legislation and other statutory policy and guidance, which will be considered in the preparation of this assessment. Legislation and other statutory policy and guidance are outlined in Section 5.2.

5.5.2 The impact assessment is based on the receptor sensitivity and the potential magnitude of impact. These two criteria provide an assessment of the potential level of impact on receptors.

5.5.3 **Table 5.1** sets out the criteria for determining the sensitivity of receptors, which documents a hierarchy of factors relating to the water environment. When a receptor meets multiple criteria or there is an absence of verified published data, the highest applicable sensitivity category is assigned to allow an assessment of the worst-case scenario.

Table 5.1: Criteria for Determining Receptor Sensitivity

Sensitivity	Criteria	Typical Examples
Very High	Receptor has a high quality and rarity on a national or regional scale and limited potential for substitution. Receptor is highly vulnerable to impacts that may arise from the project and recoverability is long-term or not possible.	Source Protection Zone 1; abstractions for public drinking water supply.
High	Receptor has a high quality and rarity on a local scale and limited potential for substitution. Receptor is generally vulnerable to impacts that	Principal Aquifer providing a regionally important resource or supporting a site protected under EU and UK habitat legislation (i.e. Groundwater Dependent

Table 5.1: Criteria for Determining Receptor Sensitivity		
Sensitivity	**Criteria**	**Typical Examples**
	may arise from the project and recoverability is slow and/or costly.	terrestrial ecosystems GWDTEs); Source Protection Zone 2 or 3; surface water protected under EU or UK habitat legislation (e.g. SSSI, SAC, Ramsar Site); designated Salmonid / Cyprinid Waters and/or fishery present; nationally and internationally designated sites hydro-ecological receptors.
Medium	Receptor has a medium quality and rarity, local scale and limited potential for substitution/replacement, receptor is somewhat vulnerable to impacts that may arise from the project and/or has moderate to high recoverability.	Secondary A Aquifer; Secondary B Aquifer providing water supply to private abstractions; Groundwater in peat deposits; surface water classified as a 'main river'; abstractions for non-potable use; statutory designate hydro-ecological receptors.
Low	Receptor with a low quality and rarity, local scale and limited potential for substitution. Receptor is not generally vulnerable to impacts that may arise from the project and/or has high recoverability.	Secondary B Aquifers; Secondary Undifferentiated Aquifers; ordinary watercourse; abstractions for industrial use (i.e. dust suppression); non-statutory designated hydro-ecological sites.
Very Low	Attribute has a very low environmental importance and/or rarity on local scale. Receptor is of negligible value, not vulnerable to impacts that may arise from the project and/or has high recoverability.	Man-made feature with no ecological importance (i.e. land drains).
Note: Professional judgement based on the baseline condition of the receptor should be used to determine a receptor's sensitivity.		

5.5.4 **Table 5.2** describes the guideline criteria used to assess the magnitude of change from the baseline condition that may result from the Proposed Development.

Table 5.2: Criteria for Determining the Magnitude of Change	
Magnitude of Change	**Typical Example**
High	Total loss of, or alteration to, the baseline resource such that post-development characteristics or quality would be fundamentally and irreversibly changed.
Medium	Loss of or alteration to the baseline resource such that post-development characteristics or quality would be partially changed.
Low	Small changes to the baseline resource, which are detectable but the underlying characteristics or quality of the baseline situation would be similar to pre-development conditions.
Negligible	A very slight change to the baseline conditions, which is barely distinguishable, and approximates to the 'no change' situation.

5.5.5 The scale of impacts is determined in relation to the sensitivity of the receptor and the potential magnitude of change from baseline conditions, using the matrix shown in **Table 5.3**. Impacts can be either beneficial or adverse; and minor, moderate or major; or negligible.

Table 5.3: Matrix for Determining Scale of Potential Impacts						
		Receptor Sensitivity				
		Very High	High	Medium	Low	Very Low
Magnitude of Change	High	Major	Major	Moderate	Moderate	Minor
	Medium	Major	Moderate	Moderate	Minor	Minor
	Low	Moderate	Minor	Minor	Negligible	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible

5.5.6 Guideline criteria for categories of significant effect are included in **Table 5.4**. Impacts that have been determined to be major or moderate are considered to have a significant effect and require mitigation to address them. Impacts that are identified as minor or negligible are not considered to have a significant effect and no further mitigation is required.

Table 5.4: Guideline Criteria for Categories of Significant Effect			
Scale of Impact	**Significant Effect?**	**Definition**	**Guideline Criteria**
Major	Yes	A fundamental change to the environment	Changes in water quality or quantity affecting widespread catchment or groundwater resources of strategic significance or changes resulting in substantial loss of conservation value to aquatic habitats and designations.
Moderate	Yes	A large, but non-fundamental change to the environment	Changes in water quality or quantity affecting part of a catchment or groundwaters of moderate vulnerability, or changes resulting in loss of conservation value to aquatic habitats or designated areas.
Minor	No	A small but detectable change to the environment	Localised changes in drainage patterns or groundwater flow, or changes resulting in minor and reversible impacts on surface and groundwater quality or aquatic habitats.
Negligible	No	No detectable change to the environment	No impact on drainage patterns, surface and groundwater quality or aquatic habitat.

6 GROUND CONDITIONS (INCLUDING MAJOR HAZARDS)

6.1 Introduction

6.1.1 A Ground Conditions assessment will be undertaken by Arup and will be included as a chapter within the ES.

6.1.2 The ground conditions assessment will address the potential effects related to geology, hydrogeology and contamination that will need to be considered in light of the Proposed Development.

6.2 Legislation, Policy and Guidance

6.2.1 The assessment will be carried out with due regard to the following:

- Environmental Protection Act 1990
- Environment Act 1995
- Contaminated Land (Wales) Regulations 2006
- Future Wales: The National Plan 2040 (February 2021)
- Planning Policy Wales (Edition 11, February 2021)
- Cardiff Local Development Plan 2006 – 2026 (Adopted January 2016)

6.3 Baseline Conditions

6.3.1 A Desk Study will be undertaken to establish the baseline conditions of the Site with regard to ground conditions. This study will include a review of published geological maps and information and topographical maps and information and identifying historical and current land use information along with available Ground Investigation information.

6.3.2 Ground investigations and a geotechnical interpretative report prepared for the proposed arena site will also be used to inform the assessment.

6.3.3 The information collated through the Desk Study and other reports will be used to develop a conceptual site model in order to identify sensitive receptors that could be potential affected by the Proposed Development.

6.3.4 The study area will include all potential contaminated land sites that intersect the Proposed Development and those sites that have plausible pollutant linkages that may impact the Proposed Development, typically within 250m of the Site. However, contamination pollution linkages will be considered on a case by case basis.

6.3.5 The study area used to assess the potential impacts on geology and hydrogeology will consider features within the redline boundary of the Proposed Development, as well as hydrogeological features and sensitive receptors within 500m of the Proposed Development.

6.3.6 The following sources of information will be consulted:

- available 1:10,000 and 1:2,500 scale historical and present-day Ordnance Survey maps, dating between 1880 and 2020;
- available historical and present-day aerial photography, dating between 1942 and 2020;
- geological mapping information obtained from the British Geological Survey (BGS);
- BGS online GeoIndex Onshore database and the BGS Lexicon;
- environmental sensitivity information from the Lle database; and
- available historical ground investigation reports.

6.3.7 Prior to industrial development the Site was part of a salt marsh. Construction of the Cardiff Docks started in the early 1800s. The docks development generally included importing material to reclaim land from the marshes. The Site contained parts of the Bute East and Bute West Docks. The Site also contains a reservoir (now infilled), a timber pond (now infilled), timber yards, a wagon works, an iron foundry, sawmills, engine houses and a high density of railway trackways and sidings.

6.3.8 By the early 1940s, both the reservoir and the timber pond had been infilled and these areas are dominated by railway sidings and trackways.

6.3.9 By the mid-1960s, the coal staithes were no longer annotated along the dock walls and by the early 1970s, Bute West Dock had been infilled. The majority of railway sidings were also removed by the late 1970s.

6.3.10 By the mid to late-1980s, the construction of the County Hall had taken place, along with the A4234 (Hemingway Road) and Schooner Way. The most southernly part of the Bute East Dock had been reclaimed and subsequently infilled.

6.3.11 The A4232 had been constructed by the early 1990s, including the road tunnel through the Site. By 1999, the Red Dragon Centre had been built to the north of the A4232.

6.3.12 The Site area is known to have been targeted by bombing raids during World War II. Therefore, there is a risk of encountering unexploded bombs within the Site. The high-level World War II unexploded bomb risk map from Zetica UXO indicates the Site to be in an area of moderate risk. This is summarised as areas having *"a bomb density between 11 and 50 bombs per 1,000 acres that may contain potential WWII targets*. *Action to mitigate the risk is considered essential, albeit more likely that a reduced scope of work is required compared with that needed for high-risk regions".*

6.3.13 A high-level summary of the published geology and ground conditions is presented below.

6.3.14 The BGS Geology of Britain online viewer and geology map (Sheet ST17NE) shows the Site to be underlain by superficial deposits of Tidal Flat Deposits (Estuarine Alluvium) and Glaciofluvial Deposits, which overlie the Mercia Mudstone Group bedrock.

6.3.15 Given the historical development of the area as dockland, more recently reclaimed, the natural ground is expected to have been disturbed and overlain by made ground materials.

6.3.16 The thickness of made ground will be variable and heterogenous, with the most significant thicknesses anticipated to be within the infilled dock, reservoir and timber pond features. The made ground is likely to comprise a mixture of natural reworked and man-made materials.

6.3.17 Made ground is considered to be a potential source of contamination.

6.4 Scope of Assessment – Key Receptors and Potential Impacts

6.4.1 The assessment will consider the potential for significant environmental effects on sensitive receptors during construction and operational phases of the Proposed Development.

6.4.2 It is anticipated that sensitive receptors potentially affected by the Proposed Development during construction will be:

- demolition / construction workers given the potential for human health hazards during such works; and
- groundwater due to potential for pollution arising from construction phase activities.

6.4.3 It is anticipated that sensitive receptors potentially affected by the Proposed Development during operation will be:

- Site end users and maintenance workers that may be exposed to the potential sources of contamination present within the Proposed Development area such as reused made ground and ground gas. This may impact the identified human receptors. Reuse of made ground within landscaped areas may result in leaching of contaminants into the underlying groundwater; and
- Piled foundations may be required. This may impact human and environmental receptors. This may result in the creation of pathways for contamination and ground gas migration.

6.5 Assessment Methodology

6.5.1 A qualitative assessment will be undertaken to assess the potential impacts on ground conditions during construction and operation and to determine the likely significance of such impacts.

6.5.2 A desk-based assessment of ground conditions will be undertaken to determine the baseline conditions within the Site. This will consider the sources of information outlined in Section 6.3.

6.5.3 The baseline information will be used to develop Conceptual Site Models (CSMs) for the Site.

6.5.4 The need for further focused assessment will be considered where existing or suspected contaminated land may have an effect as a result of construction and operation, i.e. by creating or altering pollutant linkages between sources of potential contaminants and sensitive receptors such as people, surface water and groundwater bodies.

6.5.5 The Conceptual Site Models will be used to establish the risks posed by the viable pollution linkages and the need or otherwise for further land contamination assessments.

6.5.6 The impact assessment of land contamination will be undertaken on the identified viable pollution linkages. The assessment criteria, including the sensitivity of the receptors and magnitude of impact will be derived from the DMRB guidance – LA109 Geology and soils[1].

[1] Design Manual for Roads and Bridges, Sustainability & Environment Appraisal, LA 109 Geology and soils, October 2019

6.5.7 Subject to the assessments, typical good pollution control and health and safety practice is likely to be sufficient to mitigate any potential effects from the presence of made ground during construction. These will be included in an outline Construction Environmental Management Plan (CEMP) anticipated to be produced should the application receive planning permission.

6.5.8 Depending on the design, there may be a requirement to retain materials on-site for reuse. Measures will be taken to establish acceptable reuse and import criteria and procedures defined for ensuring that the suitability of material can be demonstrated and verified. A discovery strategy will be developed to enable unforeseen ground conditions to be addressed if or when encountered during construction. A Materials Management Plan will form part of an outline CEMP.

6.5.9 Ground investigations to assess for presence of contamination and levels of ground gas will be undertaken during the design phases. Ground investigations will also be undertaken to investigate other potential sources of contamination. The results of the ground investigation will also inform further UXO risk assessments.

6.5.10 If an unacceptable risk of ground gas to the Proposed Development is identified, appropriate gas protection measures will be incorporated into the development design.

6.5.11 As part of the detailed design, an assessment of potential risks associated with deep piled foundations (if required) with respect to human health and controlled waters will be undertaken.

6.6 Consultation

6.6.1 It is proposed that the following consultees will be consulted with to obtain available information on ground conditions:

- Cardiff Council Pollution Control
- Natural Resources Wales

7 BIODIVERSITY

7.1 Introduction

7.1.1 A Biodiversity assessment will be undertaken by Phlorum and will be included as a chapter within the ES.

7.2 Legislation, Policy and Guidance

7.2.1 The assessment will be carried out with due regard to the following:

- The Environment (Wales) Act 2016
- The Conservation of Habitats and Species Regulations 2017 (as amended)
- The Wildlife and Countryside Act 1981 (as amended)
- Protection of Badgers Act 1992
- Countryside and Rights of Way (CRoW) Act 2000
- Future Wales: The National Plan 2040 (February 2021)
- Planning Policy Wales (Edition 11, February 2021)
- Cardiff Local Development Plan 2006 – 2026 (Adopted January 2016)
- Cardiff Supplementary Planning Guidance: Ecology and Biodiversity Technical Note (November 2017)
- Technical Advice Note (TAN) 5: Nature Conservation and Planning (2009)
- Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland: Terrestrial, Freshwater, Coastal and Marine (2019)

7.3 Baseline Conditions

7.3.1 A Preliminary Ecological Appraisal Report (PEAR) was produced by Mott MacDonald in February 2020 which presented the findings of the Preliminary Ecological Appraisal (PEA) undertaken for the arena and hotel area of the application Site. The PEA comprised an Extended Phase 1 Habitat Survey undertaken in December 2018 and updated in January 2020, alongside the findings of a desk study. A building inspection was also undertaken of buildings in this area of the Site for signs of bat presence, along with ground based tree inspections for potential roost features.

7.3.2 The PEA identified the arena and hotel area of the Site as predominantly hardstanding, in the form of carparks and roads, along with associated amenity grassland, scattered coniferous and broadleaved trees, scrub, and areas of landscape planting.

7.3.3 The PEA concluded that this area of the Site has potential to support nesting birds, bats and hedgehogs. In addition, wall and Himalayan cotoneaster species, which are non-native invasive species listed under Schedule 9 of the Wildlife and Countryside Act (as amended), were also recorded as present. Following the Preliminary Roost Assessment (PRA) of buildings, two buildings (council offices and a hotel) were subject to further surveys during May and June 2020. As no bat emergence / re-entry activity was recorded, no further recommendations were made for these buildings. Recommendations are made in the Bat Survey Report (Mott MacDonald, July 2020) for three trees identified as having low suitability for roosting bats.

Further Data Collection

7.3.4 Given the Proposed Development Site includes the wider Atlantic Wharf Masterplan area, further desk study and survey work is being undertaken to identify the baseline conditions relevant to the biodiversity assessment within this area.

7.3.5 A data search will be undertaken to inform an Ecological Impact Assessment (EcIA) along with a Phase 1 Habitat Survey to capture additional information about the Site as a whole. A preliminary bat roost assessment of existing buildings and preliminary ground level bat roost assessment of existing trees for the entire Site will also be carried out to inform the EcIA. The PEA stated that a feeder culvert for Bute East Dock beneath the arena and hotel area of the Site, was not inspected due to access restrictions and therefore will also require further investigation as bats are known to roost in culverts.

7.4 Scope of Assessment – Key Receptors and Potential Impacts

7.4.1 Potential impacts on biodiversity during the construction and operational phases of the Proposed Development will be assessed through an EcIA to be presented as a chapter of the ES.

7.4.2 The EcIA will include an assessment of the effects of the Proposed Development on important ecological features and detail any necessary mitigation measures in accordance with CIEEM 2019 guidelines. The EcIA will reference the results provided within the ecological reports undertaken to date and those results from the further surveys outlined in Section 7.3.

7.4.3 The PEA produced by Mott MacDonald in February 2020 identified the Seven Estuary (RAMSAR, Special Area of Conservation (SAC), Special Protection Area (SPA) and Site of Special Scientific Interest (SSSI)) within 2km of the Site, but no designated sites within 1km.

7.4.4 Protected and notable species recorded within 1km of the Site included: otter, birds, bats, badgers, hedgehogs, reptiles and amphibians. Considering the habitats on Site, birds, bats and hedgehogs were considered the main species of concern.

Habitats Regulations Assessment

7.4.5 The PEA considered the potential for impacts on the qualifying features of the Severn Estuary SSSI/SAC/SPA both during construction and post-construction, and it was concluded that a Habitats Regulations Assessment (HRA) was not required. Given the PEAR was focussed on the arena and hotel element of the Proposed Development, when considering the wider Site, a HRA is anticipated to be required.

7.4.6 HRA is usually carried out by the Local Planning Authority (LPA). In order to inform a HRA the EcIA will set out the HRA information to allow Cardiff Council to assess the significance of potential impacts arising from the Proposed Development on the qualifying features of the Severn Estuary SAC and SPA designations.

7.5 Assessment Methodology

7.5.1 The EcIA for the EIA will include the following:

- description of the baseline conditions of the application Site provided by the desk, Extended Phase 1 Habitat Surveys and other relevant surveys;
- an assessment of the value of ecological features (designations, habitats, and species) and their 'Ecological Importance';
- an assessment of the potential ecological impacts of the Proposed Development including habitat loss and fragmentation, disturbance and potential off-site impacts and whether those impacts are likely to result in significant effects on features of Ecological Importance;
- an assessment of Biodiversity Net Gain of the Proposed Development;
- an assessment of the potential cumulative impacts of the Proposed Development with other developments, if necessary;
- proposed mitigation measures in respect of any significant adverse effects;

- identification of residual effects, considering proposed mitigation measures; and
- a description of any proposed enhancement measures.

7.6 Consultation

7.6.1 It is anticipated that consultation with Cardiff Council's Ecologist, Natural Resources for Wales, the Wildlife Trust of South and West Wales and any other local wildlife groups in the area will be undertaken and any responses will inform the Biodiversity assessment work.

8 AIR QUALITY

8.1 Introduction

8.1.1 An Air Quality assessment will be undertaken by Wardell Armstrong LLP and will be included as a chapter within the ES.

8.2 Legislation, Policy and Guidance

8.2.1 The assessment will be carried out with due regard to the following:

- The Environment Act 1995
- Future Wales: The National Plan 2040 (February 2021)
- Planning Policy Wales (Edition 11, February 2021)
- Cardiff Local Development Plan 2006 – 2026 (Adopted January 2016)
- DEFRA Clean Air Strategy 2019
- Environmental Protection UK (EPUK) and Institute of Air Quality Management (IAQM) 'Land-Use Planning & Development Control: Planning for Air Quality' (2017)
- DEFRA Local Air Quality Management Technical Guidance (2016) (LAQM.TG(16))
- IAQM 'Guidance on the assessment of dust from demolition and construction' (2014)
- The Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007

8.3 Baseline Conditions

8.3.1 A desk-based study of baseline air quality in the vicinity of the Proposed Development has been undertaken, utilising data obtained from the Department for Environment, Food and Rural Affairs (DEFRA) website and Cardiff Council.

8.3.2 The air quality study area lies within Cardiff Council, which has declared four Air Quality Management Areas (AQMAs) covering a number of roads across its administrative area. Details of these have been obtained from the 2020 LAQM Annual Progress Report prepared by Cardiff Council. The AQMAs have been declared for exceedance of the annual mean objective for NO_2 and incorporate the following areas:

- Cardiff City Centre: former St Mary Street AQMA with the addition of Westgate Street in Cardiff City Centre;
- Llandaff: centre on Cardiff Road through Llandaff village;
- Stephenson Court: from northeast and northwest boundaries of Stephenson Court, northwest boundary of Burgess Court, northwest and southwest boundaries of Four Elms Court, southwest corner of Four Elms Court, south across Newport road to the junction with Orbit Street, west across Newport Road to the southeast corner of Stephenson Court; and
- Ely Bridge: a number of residential premises along the A48 Cowbridge Road West, Western Avenue and A4119 through Llandaff Village Cardiff Road.

8.3.3 Traffic data will be reviewed against the EPUK / IAQM traffic generation thresholds to determine the exact extent of the air quality study area, particularly in relation to the four AQMAs.

8.3.4 As of 2019, Cardiff Council operated three automatic monitoring locations and 101 NO_2 diffusion tubes to monitor local air quality, although none are located within close proximity to the Proposed Development Site.

8.3.5 As there are no representative air quality monitoring locations in the vicinity of the Proposed Development Site, background pollutant concentrations have been obtained from the DEFRA default concentration maps. These are available through the DEFRA website and are provided for 1km x 1km grid squares across the UK. NOx, NO_2, PM_{10} and $PM_{2.5}$ concentrations have been obtained for the Proposed Development, and these show that current background concentrations are below the objective levels as shown in **Table 8.1**.

Table 8.1 Background Pollutant Concentrations	
Pollutant	**Pollutant Concentration (µg/m^3)**
Oxides of Nitrogen (NO_x)	24.17
Nitrogen Dioxide (NO_2)	17.20
Fine Particulate Matter (PM_{10})	13.67
Fine Particulate Matter ($PM_{2.5}$)	8.29

8.4 Scope of Assessment – Key Receptors and Potential Impacts

8.4.1 The Air Quality assessment will use local mapping and appropriate data sources such as those outlined in Section 8.3 to identify relevant sensitive receptors (both human and ecological) that may be affected by changes in air quality as a result of the construction and operation of the Proposed Development.

8.4.2 During the construction phase of the Proposed Development, there is the potential for dust soiling and human health effects as a result of dust and fine particulate matter (PM_{10}) emissions. These effects may be experienced at existing sensitive receptors as a result of demolition, earthworks and construction activities taking place at the Site, and through the track-out of dust and dirt onto the public highway. As such, a construction dust assessment, in accordance with current IAQM guidance, will be undertaken as part of the air quality assessment.

8.4.3 For the construction phase assessment, existing sensitive human receptors located within 350m of the Site boundary and/or within 50m of the route that construction vehicles will take (within 500m of the Site entrance) have been identified. There do not appear to be any existing sensitive ecological receptors located within 50m of the Site boundary and/or the routes that construction vehicles will take.

8.4.4 During the operational phase, there is the potential for air quality effects at existing sensitive receptors, including ecological receptors where relevant, as a result of emissions from development generated vehicles.

8.4.5 The exact extent of the air quality study area for the operational phase will be determined through a review of detailed traffic data upon receipt and will be reviewed against EPUK / IAQM criteria. Sensitive receptor locations will be identified within 200m of the roads that will be affected by development generated vehicles. Consideration will be given to Cardiff Council's AQMAs. Current guidance from the IAQM and Natural England establishes a change of 1000 Annual Average Daily Traffic (AADT) (and/or 200 AADT Heavy Goods Vehicles (HGVs)) on a road within 200m of a designated habitat site, either due to the development in isolation or in combination with other schemes, as a threshold above which possible air quality impacts should be considered in detail. Traffic data will be reviewed to ascertain whether this threshold is met at any designated site as a result of the Proposed Development.

8.5 Assessment Methodology

8.5.1 A qualitative assessment of Site preparation and construction phase effects (notably dust and particulate matter) will be undertaken in accordance with IAQM guidance. The assessment will identify relevant sensitive receptors (both human and ecological) that may be affected by changes in air quality as a result of the construction and operation of the development, and therefore require consideration within the assessment, using local mapping and appropriate data sources.

8.5.2 Air quality modelling will be undertaken with a quantitative assessment of the impact of exhaust emissions from road traffic associated with the operational phase of the Proposed Development on local pollutant concentrations. The modelling will predict the concentration of relevant pollutants (notably NO_2, PM_{10} and $PM_{2.5}$) at a number of sensitive receptors, both with and without the Proposed Development in operation, and will consider pollutant concentrations at proposed residential areas within the Proposed Development. The assessment will be completed in accordance with DEFRA's Technical Guidance and the results will be compared to the relevant Statutory Air Quality Standards and Objectives and considered in line with the most recent guidance from Environmental Protection UK and the IAQM.

8.5.3 The cumulative impacts of relevant developments will be assessed, with traffic data considering committed developments. Other proposed developments / activities which may have a cumulative effect upon local air quality will be considered following consultation with the Environmental Health department at Cardiff Council.

8.5.4 Recommendations for mitigation measures that should be implemented during the construction and operational phases will be set out in the ES chapter where required.

8.6 Consultation

8.6.1 In order to agree the scope of work for the Air Quality assessment, liaison will be undertaken with Cardiff Council's Environmental Health department and consideration will also be given to scoping responses from consultees where these relate to air quality.

9 NOISE AND VIBRATION

9.1 Introduction

9.1.1 A noise assessment will be undertaken by Wardell Armstrong LLP and will be included as a chapter within the ES.

9.2 Legislation, Policy and Guidance

9.2.1 The assessment will be carried out with due regard to the following:

- Future Wales: The National Plan 2040 (February 2021)
- Planning Policy Wales (Edition 11, February 2021)
- Cardiff Local Development Plan 2006 – 2026 (Adopted January 2016)
- Planning Guidance (Wales) Technical Advice Note (TAN) 11: Noise (1997)
- British Standard 'Methods for Rating and Assessing Industrial and Commercial Sound' (BS4142:2014+A1:2019)
- British Standard 'Guidance on Sound Insulation and Noise Reduction for Buildings' (BS8233:2014)
- British Standard 'Code of Practice for Noise and Vibration Control on Construction and Open Sites' – Part 1: Noise (BS5228-1:2009+A1:2014) and Part 2: Vibration (BS5228-2:2009+A1:2014)
- Noise Council 'Environmental Noise Control at Concerts'
- Institute of Acoustics (IOA) 'Good Practice Guide on Control of Noise from Pubs and Clubs'

9.3 Baseline Conditions

9.3.1 The baseline noise and vibration conditions will be set out in the ES chapter. Noise monitoring (daytime and night-time) will be undertaken to establish the existing acoustic environment at existing and proposed noise sensitive receptor locations, measured in accordance with guidance, at final locations to be agreed with Cardiff Council.

9.3.2 The noise ambient and background sound levels in the vicinity of the Site and at local sensitive receptors, is likely to be dominated by local road traffic, and there could be some noise from nearby construction works during the time of any noise surveys. All

noise sources will be observed during the baseline monitoring and reported within the baseline section of the Noise and Vibration chapter.

9.4 Scope of Assessment – Key Receptors and Potential Impacts

9.4.1 The Proposed Development Site is located within close proximity of existing residential receptors. To the east, the Site is bound by Bute East Dock and residential apartments on Galleon Way. To the south, the Site is bound by the Cardiff Bay Link Road (A4232) and beyond this lies Pierhead Street, with office buildings and residential apartments on Pierhead Street and Falcon Drive. To the west, the Site is bound by Lloyd George Avenue (A470) with Butetown branch railway line and residential dwellings on Bute Street beyond. To the north, the Site is bound by residential dwellings on Halliard Court and Schooner Drive.

9.4.2 The Proposed Development will also include sensitive receptors within the development. There is potential for the operations of the Proposed Development to have a noise impact on existing and proposed residential receptors.

9.4.3 Potential noise and vibration impacts during the construction and operational phases to be addressed by the ES are as follows:

- the impact of the construction phase noise and vibration of the Proposed Development on existing sensitive receptors;
- the impact of development led traffic on existing and proposed residential receptors;
- the impact of any existing noise sources upon the proposed receptors; and
- the impact of proposed sources of noise associated with the Proposed Development on existing and proposed sensitive receptors. Proposed sources of noise include:
    - Entertainment Noise – The assessment will consider low frequency noise between 63hz and 125hz and aimed to achieve -3dB below background noise levels. Overall entertainment noise will be assessed to aim for -10dB below background noise levels.
    - Plant – The assessment will consider the noise impact from plant throughout the development at the nearest receptors, during the daytime and night-time.

- Service Yard – The assessment will consider the potential impact from noise at the arena service yard. This will include potential noise during the daytime, and potential noise during the night-time following closure of events.
- HGV Movements – The assessment will consider noise from HGV's associated with the development such as deliveries during the daytime and night-time. In addition, the potential impact from HGV's and large vehicles associated with events at the Proposed Development during the daytime and night-time.
- Pedestrian Noise – The assessment will consider the potential impact from pedestrian noise associated with events associated with the Proposed Development at the nearest receptors. This will include noise generated by pedestrians walking on main routes and public transport stations. In addition, noise from pedestrians will be assessed from queuing points, taxi ranks and amenity areas such as smoking areas. Noise from pedestrians will be assessed during the daytime and night-time.

9.4.4 The intrusive nature of entertainment noise will be considered, particularly the potential noise impact from low frequency noise.

9.4.5 All sources of an industrial nature will be assessed in accordance with BS4142, and where required, mitigation will be suggested to reduce any significant impacts.

Limitations

9.4.6 The assessment will be reliant on the availability of suitable noise data provided by the Applicants or using Wardell Armstrong's database.

9.5 Assessment Methodology

9.5.1 The data gathered during noise monitoring, together with the Proposed Development layout and information regarding noise generating equipment and sources, will be used to inform a computer noise model in SoundPLAN v8 modelling software. This allows for specific and cumulative noise impacts to be considered.

9.5.2 Noise modelling is an important tool to accurately establish the propagation of noise across an area of interest, and the predicted noise levels will be used to assess any likelihood of an adverse impact due to the Proposed Development. Particular

attention will be given to the types of noise sources associated with the Proposed Development, the timings of their possible occurrence and the nature of the noise receptors in the area. The model will include noise breakout from events at the arena, all ancillary noise sources, and deliveries.

9.5.3 Where required, mitigation measure will be explored using the noise model to control noise emissions from the Proposed Development.

9.5.4 A qualitative construction noise and vibration assessment will be undertaken following guidance contained in BS5228-1 and BS5228-2. The Standards contain information on noise and vibration reduction measures and promote a 'best practicable means' (BPM) approach to control noise and vibration, minimising associated impacts on local residents. Advice on construction noise will be provided using the 'ABC' method presented in Annex E (informative) of BS5228.

9.5.5 Recommendations regarding the requirement and type of any mitigation measures will be made in the Noise and Vibration ES chapter based on the results of the noise modelling and data gathered during noise monitoring.

9.6 Consultation

9.6.1 Consultation will be undertaken with the Environmental Health Officer (EHO) at Cardiff Council in order to agree a suitable methodology for the assessment prior to commencing work on the assessment.

9.6.2 As part of the consultation, suitable noise limits would be agreed for the assessment of entertainment noise, low frequency entertainment noise, industrial noise, and pedestrian noise.

10 CULTURAL HERITAGE

10.1 Introduction

10.1.1 A Cultural Heritage assessment will be undertaken by Archaeology Wales and will be included as a chapter within the ES.

10.2 Legislation, Policy and Guidance

10.2.1 The assessment will be carried out with due regard to the following:

- The Ancient Monuments and Archaeological Areas Act 1979 (1979 Act)
- Historic Environment (Wales) Act 2016
- Planning (Listed buildings and Conservation Areas) Act 1990
- Future Wales: The National Plan 2040 (February 2021)
- Planning Policy Wales (Edition 11, February 2021)
- Technical Advice Note (TAN) 24: The Historic Environment (2017)
- Cardiff Local Development Plan 2006 – 2026 (Adopted January 2016)
- Cadw 'Conservation Principles for the sustainable management of the Historic Environment in Wales' (2011)
- Cadw Setting of Historic Assets in Wales (2017)
- City of Cardiff Council 'Tall Buildings Supplementary Planning Guidance' (2017)
- Guidance for the Submission of Data to the Welsh Historic Environment Records (HERs) (The Welsh Archaeological Trusts, 2018)
- Guidelines for digital archives (Royal Commission on Ancient and Historic Monuments of Wales, 2015)
- Standard and Guidance for Desk-Based Assessment (Chartered Institute for Archaeologists, 2020)

10.3 Baseline Conditions

10.3.1 A Historic Environment Desk Based Assessment (HEDBA) will be undertaken in order to provide an historic overview of the Site through research undertaken via Glamorgan Archives, the Central Register of Aerial Photographs for Wales (CRAPW), the National Monuments Record Wales (NMRW), the Royal Commission on the Ancient and Historic Monuments of Wales (RCAHMW), and the National Library of Wales (NLW).

10.3.2 The HEDBA will establish the presence of any non-designated assets of an archaeological nature within the Site or its vicinity through consultation with the Glamorgan-Gwent Archaeological Trust's (GGAT) Historic Environment Record (HER) and any available list of locally important buildings. A review of the results of any archaeological fieldwork undertaken in the vicinity of the Site will also be carried out.

10.3.3 The HEDBA will also include field observations from a site visit which may inform on the dates and extent of reclamation, disturbance likely to have been caused to original ground levels and the potential for below-ground archaeological remains.

10.3.4 While there are no Listed Buildings, Scheduled Ancient Monuments, Registered Parks and Gardens nor Conservation Areas within the bounds of the development Site, there are designated historic features in the vicinity. The nearest Listed Building comprises of the Grade II* Cardiff Bay station southwest of the Site (LB 13963). Cardiff Bay Station is within the Conservation Area of Mount Stuart Square which contains several Listed Buildings pertaining to the history of the docks. It was designated a Conservation Area in 1980, during the regeneration project, to protect the historical interest of the area.

10.3.5 The development area occupies the site of the former Bute East Dock, built in 1855 and the Bute West Dock, built in 1839, with their associated rail yards, ponds and infrastructure. The wider area of the Cardiff docklands, also named 'Butetown', became an epicentre for trade during the 19th and early 20th centuries, with 13 million tonnes of coal passing through the docks in the early 20th century.

10.3.6 A Written Scheme of Investigation (WSI) will be produced which will outline the study area to be agreed with Cardiff Council's archaeological advisors (GGAT-APM).

10.4 Scope of Assessment – Key Receptors and Potential Impacts

10.4.1 There are a large number of Listed Buildings to the south and southwest of the Site, comprising mostly commercial buildings and including those listed at higher grades, where their heritage significance could be affected through changes to their setting as a result of the Proposed Development.

10.4.2 Impacts on heritage assets during the construction and development process can be derived from a number of activities. These impacts may be direct (physical) impacts to on-site assets, or indirect effects on the setting of off-site assets.

10.4.3 The main assets that will likely be directly affected comprise the physical remains of the Bute West / East Docks and the associated features. The depth of the remains and

the depths of the groundworks required for the Proposed Development will play a large part in determining the scale of the impact.

10.4.4 Limitations include the potential for unknown archaeology, as well as the currently unknown depth of the dock structures below the existing ground level.

10.5 Assessment Methodology

10.5.1 The Cultural Heritage assessment presented in the ES will analyse the potential impact of the Proposed Development on the significance of designated heritage assets within the vicinity of the Site and consider the potential impact of the Proposed Development on off-site heritage assets through changes to their setting. The assessment will also determine the potential impact of the Proposed Development on any known and potential archaeological remains.

10.5.2 In describing the value of the heritage assets, the **Table 10.1** outlines the value levels used.

Table 10.1 Receptor Sensitivity / Value Criteria for Heritage Assets

Receptor Sensitivity / Value	Description
Very High	• World Heritage Sites (including nominated sites). • Assets of acknowledged international importance. • Assets that can contribute significantly to acknowledged international research objectives.
High	• Scheduled Monuments (including proposed sites). • Grade I and Grade II* listed buildings. • Other listed buildings that can be shown to have exceptional qualities in their fabric or historical associations not adequately reflected in the listing grade. • Conservation areas containing very important buildings. • Undesignated assets of schedulable quality and importance. • Assets that can contribute significantly to acknowledged national research objectives.
Medium	• Designated or undesignated assets that contribute to regional research objectives. • Grade II Listed Buildings. • Historic (unlisted) buildings that can be shown to have exceptional qualities in their fabric or historical associations. • Conservation areas containing buildings that contribute significantly to its historic character. • Historic townscape or built-up areas with important integrated historic character in their buildings or built settings (e.g. including street furniture and other structures).

Table 10.1 Receptor Sensitivity / Value Criteria for Heritage Assets	
Receptor Sensitivity / Value	**Description**
Low	• Designated and undesignated assets of local importance. • Assets compromised by poor preservation and/or poor survival of contextual associations. • Assets of limited value, but with potential to contribute to local research objectives.
Negligible	• Assets with very little or no surviving archaeological interest.
Unknown	• The importance of the resource has not been ascertained.

10.5.3 **Table 10.2** outlines the values used when describing the magnitude of potential impacts on the heritage assets. These usually have a secondary qualification such as Positive / Negative, Direct / Indirect, or Temporary / Permanent.

Table 10.2 Magnitude of Impact Criteria for Heritage Assets	
Magnitude of Impact	**Description**
High	• Change to most or all key archaeological materials / historic building elements / such that the resource is totally altered. • Comprehensive changes to setting.
Medium	• Changes to many key archaeological materials / historic building elements such that the resource is clearly modified. • Considerable changes to setting that affect the character of the asset or that it is significantly modified
Low	• Changes to key archaeological materials / historic building elements / such that the asset is slightly altered. • Slight changes to setting / change to setting of an historic building, such that it is noticeably changed.
Negligible	• Very minor changes to archaeological materials or setting. • Slight changes to historic buildings elements or setting that hardly affect it.
No Change	• No change to elements, parcels or components; no visual or audible changes; no changes arising from in amenity or community factors.

10.5.4 If necessary, the assessment will consider options to mitigate or improve the potential impact of the Proposed Development on the significance of historic assets.

10.6 Consultation

10.6.1 Consultation will be undertaken with GGAT's Archaeological Planning Department, to obtain approval for a WSI for the DBA to ensure quality and scope. GGAT's HER will be consulted to obtain baseline heritage data within the study area from the regional HER and Cadw, to obtain Scheduled Ancient Monument and Listed Building data within the wider 5km study area.

11 SOCIO-ECONOMICS

11.1 Introduction

11.1.1 A Socio-economics assessment will be undertaken by Arup and will be included as a chapter within the ES.

11.2 Legislation, Policy and Guidance

11.2.1 The assessment will be carried out with due regard to the following:

- Future Wales: The National Plan 2040 (February 2021)
- Planning Policy Wales (Edition 11, February 2021)
- Cardiff Local Development Plan 2006 – 2026 (Adopted January 2016)
- The Green Book, HM Treasury (2020)
- Employment Density Guide (3rd Edition), HCA (2015)

11.3 Baseline Conditions

11.3.1 The assessment of socio-economics within the ES will provide a description of the relevant baseline conditions in relation to the Site. This will include consideration of a range of demographic and economic data including data from the Office for National Statistics (ONS) including Census statistics, Welsh Index of Multiple Deprivation, Welsh Government (Stats Wales), the Business Register and Employment Survey, and Cardiff Council data including relevant education and health statistics, as well as other sources such as NHS Online and Ofsted data. The most up-to-date data will be used (e.g. mid-year population estimates as opposed to Census data) as appropriate.

Desk-based Baseline Assessment

11.3.2 A comprehensive baseline will be prepared to support the assessment of socio-economic impacts for the Proposed Development. This will cover a broad range of topics to build up an understanding of the people that live and work in the area, as well the existing housing stock and provision of social infrastructure. It is envisaged that the following topic areas and specific themes in **Table 11.1** will be considered:

Table 11.1 Desk-based Baseline Assessment Topics and Themes	
Subject	**Sub-topics**
Demographic	Population, age structure, ethnicity, deprivation
Economic	Economic activity, skills levels, employment by sector, economic performance
Housing	Housing tenure, household composition and size (including overcrowding), housing size
Social Infrastructure	Analysis of existing supply of social infrastructure, specifically GPs, primary schools, secondary schools, community centres, youth clubs, and open space/play space.

Study Area

11.3.3 The baseline assessment will, as applicable, examine baseline data relevant to the Proposed Development at four scales to draw meaningful comparison and inform the likely sensitivity of receptors. The geographies chosen for the assessment of different baseline topics will be flexible and reflect the scale of impact for the related assessment theme (for example, construction employment is expected to generally have a wider geographical impact than healthcare needs), but may include:

- Neighbourhood (Butetown Ward)
- Pan-neighbourhood (Butetown, Grangetown and Splott Wards)
- City (Cardiff)
- Regional (Cardiff Capital Region)

11.4 Scope of Assessment – Key Receptors and Potential Impacts

11.4.1 The Socio-economics assessment will consider potential impacts in relation to the following:

- Housing
- Employment

- Social Infrastructure (includes education, healthcare, recreation and community facilities)
- Community Cohesion (includes community networks, access and participation in public spaces)

In-scope Receptors and Applicable Development Phases

11.4.2 **Table 11.2** sets out the in-scope receptors and the applicable development phases for assessment:

Table 11.2 In-scope Receptors and Applicable Development Phases

Receptor	Assessment	Scale	Construction Phase	Operation Phase
People seeking employment	Employment	City (Operation), Regional (Construction)	✓	✓
Future businesses/public sector organisation on site	Employment	Site		✓
Existing businesses/public sector/third sectors organisations on site	Employment and Community Cohesion	Site	✓	✓
Existing businesses/public sector/third sector organisations in surrounding area	Employment and Community Cohesion	Neighbourhood	✓	✓
People seeking residential accommodation	Housing	City		✓
Future residents	Social Infrastructure and Community Cohesion	Neighbourhood (for Community Cohesion) and Pan-neighbourhood		✓

Table 11.2 In-scope Receptors and Applicable Development Phases				
Receptor	**Assessment**	**Scale**	**Construction Phase**	**Operation Phase**
		(for Social Infrastructure)		
Existing residents	Social Infrastructure and Community Cohesion	Neighbourhood (for Community Cohesion) and Pan-neighbourhood (for Social Infrastructure)	✓	✓
Visitors	Employment, Social Infrastructure and Community Cohesion	Neighbourhood, City, Regional	✓	✓
Key: In-scope (✓)				

11.4.3 The sensitivity of receptors will be judged based on their capacity to continue to function effectively, informed by the relevant analysis of the baseline. For example, with regard to socio-economics, one factor which affects sensitivity is the extent to which the labour force has the appropriate specialist and/or transferrable skills to take up employment opportunities in different sectors.

11.5 Assessment Methodology

11.5.1 The assessment will be desk-based and combine quantitative and qualitative assessment.

11.5.2 The Socio-economic assessment will establish the relevant baseline conditions in relation to demographic and economic conditions in the vicinity of the Site. When assessing the effects, it is necessary to identify additional outputs; the assessment is therefore concerned with identifying additionality. The Treasury defines additionality in The Green Book (2020) as: "*...a real increase in social value that would not have occurred in the absence of the intervention being appraised*".

11.5.3 To compare the effects to the baseline on housing, employment and social infrastructure, the estimated population change and employment effects of the proposal will be quantified.

11.5.4 The assessment will consider both beneficial and adverse potential significant impacts of the Proposed Development on sensitive receptors during the construction and operational phases.

11.5.5 Where a potential significant adverse effect is identified during the iterative design process mitigation measures will be proposed for incorporation into the design to avoid this effect. This may include, for example, provision of or contributions to social infrastructure. In addition, as the Proposed Development will create new communities, enhancements to maximise community cohesion will also be recommended to the design team for incorporation into the design.

11.5.6 There is no definitive approach to assessing the significance of socio-economic effects. The assessment is therefore based on convention and professional judgement, drawing on Arup's own experience. It also considers the value and sensitivity of receptors from the baseline socio-economic characteristics based on their importance, size and potential for substitution, as well as the magnitude of the net additional impact based on qualitative and quantitative evidence (where applicable).

11.5.7 The Socio-economic assessment is likely to have some points of overlap or alignment with the Health assessment.

Assumptions

11.5.8 Assumptions will be compiled to support calculation of the appropriate level of social infrastructure which will need to be provided to support the Proposed Development. This will be drawn from a range of sources, including national and local guidance, service provider standards and best practice minimum standards, as necessary.

11.6 Consultation

11.6.1 There are no statutory consultees for the purpose of socio-economics. In line with best practice, short teleconferences will be arranged with key officers at Cardiff Council (e.g. economic development and regeneration, education, healthcare etc.), if required, to gauge the suitability of the methodology proposed, including any assumptions used, and explore and address any concerns around the Proposed Development in relation to socio-economic impacts (including provision of social infrastructure).

Consultation to Date

11.6.2 There is currently a live, informal consultation inviting views on the proposal. Previously there has been informal consultation with residents in the immediate vicinity of the site. More information can be found at:

https://atlanticwharfcardiff.co.uk/

12 HEALTH

12.1 Introduction

12.1.1 A human health assessment will be undertaken by Arup and will be included as a chapter within the ES.

12.2 Legislation, Policy and Guidance

12.2.1 The assessment will be carried out with due regard to the following:

- Public Health (Wales) Act 2017
- The Well-being of Future Generations (Wales) Act 2015
- Active Travel (Wales) Act 2015
- Future Wales: The National Plan 2040 (February 2021)
- Planning Policy Wales (Edition 11, February 2021)
- Cardiff Local Development Plan 2006 – 2026 (Adopted January 2016)
- Cardiff Council Supplementary Planning Guidance 'Planning for Health and Well-being' (2017)
- Cardiff and Vale University Health Board 'Shaping Our Future Wellbeing Strategy 2015 – 2025'
- Cardiff Public Services Board 'Cardiff Well-being Plan 2018 – 2023' (2017)
- Cardiff's Transport White Paper: Transport Vision to 2030 (January 2020)
- Active Travel Guidance (Welsh Government, February 2020)
- Health in Environmental Impact Assessment: A Primer for a Proportional Approach (Institute of Environmental Management and Assessment, 2017)
- Wales Health Impact Assessment Support Unit 'Health Impact Assessment: A Practical Guide' (2012)
- Wales Health Impact Assessment Support Unit 'Complete Quality Assurance Review Framework for Health Impact Assessment (HIA)' (2017)
- Rapid Health Impact Assessment Tool – Fourth Edition (NHS London HUDU, 2019)

12.3 Baseline Conditions

12.3.1 The assessment of human health within the ES will provide a description of the relevant public health profile (baseline conditions). The study area will include the ward (Butetown) within which the Proposed Development sits and consideration of the wards which are immediately adjacent to this ward:

- W39000572: Butetown
- W39000597: Splott
- W39000571: Adamsdown

12.3.2 Where available, data will also be identified at the Lower Super Output Area (LSOA) level, which represents smaller populations and is therefore more representative of the population close to the Proposed Development Site.

12.3.3 Baseline data will include consideration of the following:

- population demographics (i.e. age, gender);
- health statistics and deprivation rankings;
- education and income;
- housing;
- access to services, recreational facilities, and open space;
- physical environment; and
- safety.

12.3.4 Data sources will include, but not be limited to the following:

- Health Observatory Wales
- Office of National Statistics
- Wales Index of Multiple Deprivation

Evidence Base

12.3.5 An evidence base will be presented in relation to each of the health determinants considered. This will include a summary review of current literature related to these health determinants.

12.4 Scope of Assessment – Key Receptors and Potential Impacts

12.4.1 Health determinants are factors that can influence health outcomes and include social, environmental and economic factors. The health determinants most commonly considered within health assessments, and recommended by the various guidance available, include the following:

- Housing design and affordability
- Access to health and social care services and other social infrastructure
- Access to open space and nature
- Air quality, noise and neighbourhood amenity
- Accessibility and active travel
- Crime reduction and community safety
- Access to healthy food
- Access to work and training
- Social cohesion and inclusive design
- Climate change

12.4.2 The assessment will consider the groups who will be potentially affected by the Proposed Development including:

- residents living in close proximity to the Site;
- employees working in close proximity to the Site;
- employees of the construction and operational phases; and
- vulnerable people i.e. older people, children, young people, people with ill health, people with disabilities etc.

12.4.3 Cardiff Bay is a popular area for visitors; however, they will not be considered within the assessment as it is not possible to determine the health profile of this group. As they are only likely to visit the area for short periods of time, exposure to any health impacts is not considered likely to be significant.

12.4.4 The assessment will also consider cumulative effects on human health as a result of the Proposed Development.

12.5 Assessment Methodology

12.5.1 A qualitative assessment of the likely significant health effects will be carried out, based on the level of exposure of the population to changes in health determinants. The assessment will identify potential impacts related to the different stages of development (i.e. construction and operation) and will identify whether these would result in changes to health determinants that would be beneficial or adverse, direct or indirect and long-term or temporary. It will also take into account any mitigation measures embedded into the design of the Proposed Development. The approach for defining significance considers:

- the magnitude of the impact on a health determinant; and
- the size and sensitivity of the population exposed to the impact.

12.5.2 Most potential health effects cannot be reliably quantified because there are currently no robust or scientifically widely agreed upon methods for quantifying them, or because the types of data required cannot realistically be obtained. Therefore, a quantitative assessment of health effects has been scoped out.

12.5.3 The assessment will identify the beneficial and adverse effects of the Proposed Development on human health and describe measures to avoid or reduce any adverse impacts.

12.5.4 The assessment will take into account health and safety considerations relevant to the construction and operation of the Proposed Development including relevant legislation, guidance, best practice and control measures.

Limitations and Assumptions

12.5.5 The assessment will draw on other EIA assessment outputs such as the air quality assessment and noise assessment.

12.5.6 The assessment will consider the residual impacts identified by the above disciplines, after mitigation measures have been taken into account. It will also assume that any mitigation outlined by these topics would be effective. The findings from these assessments will inform the judgements made within the assessment.

12.5.7 Literature and baseline data used in the health assessment is limited to readily available public and published sources.

12.5.8 The health assessment identifies the impacts on the determinants of health, but there is less certainty regarding the resulting health effects of that impact as it is often

dependent on a range of other factors. For example, the Proposed Development may increase opportunities for employment in the local area, but the uptake of those opportunities by the population is less certain due to the individual choices people make.

12.6 Consultation

12.6.1 Consultation will be carried out with public health teams within Cardiff Council and also where applicable, with Public Health Wales.

12.6.2 It is also anticipated that relevant stakeholder groups, such as Age Cymru, Disability Wales, Sustrans (amongst others) would be invited to comment on the scope of the health assessment along with any potential mitigation measures.

13 TOWNSCAPE AND VISUAL AMENITY

13.1 Introduction

13.1.1 A Townscape and Visual Amenity assessment will be undertaken by Wardell Armstrong LLP and will be included as a chapter within the ES.

13.2 Legislation, Policy and Guidance

13.2.1 The assessment will be carried out with due regard to the following:

- Future Wales: The National Plan 2040 (February 2021)
- Planning Policy Wales (Edition 11, February 2021)
- Cardiff Local Development Plan 2006 – 2026 (Adopted January 2016)
- City of Cardiff Council 'Tall Buildings Supplementary Planning Guidance' (2017)
- National Landscape Character Area NLCA35 'Cardiff, Barry and Newport' (2014)
- LANDMAP – the Welsh landscape baseline
- Landscape Institute and IEMA 'Guidelines for Landscape and Visual Assessment' (GLVIA3) (2013)
- Landscape Institute 'Townscape Character Assessment' Technical Information Note 05/2017 (2017)

13.3 Baseline Conditions

13.3.1 The townscape and visual baseline conditions will be presented in the ES chapter, comprising desk-based study and informed by site visit observations. The site and contextual survey will assist in the definition of the scheme's visual envelope and study area extents, allows for the confirmation of the landscape character as described within the NLCA and LANDMAP publications and identification of potential visual receptors and representative photoview locations.

13.3.2 The Site does not lie within any designations such as Registered Parks and Gardens (RPGs), Areas of Outstanding Natural Beauty (AONBs) or National Parks, however, the Site lies adjacent to the Mount Stuart Square and Pierhead Conservation Areas to the southwest and south, respectively.

13.3.3 In terms of landscape character, the Site lies within NLCA 35 'Cardiff, Barry and Newport', and as defined by LANDMAP is within the Visual and Sensory Aspect Area

'Cardiff East, Landscape Habitat Aspect Area 'Cardiff Docks and Atlantic Wharf', and Cultural Landscape Service Aspect Area 'Cardiff East, amongst other Aspect Areas.

13.3.4 As well as the landscape character areas in which the Site is directly situated, the TVIA will also make reference to any adjacent or proximate areas identified within both published assessment of relevance to the Site and its wider landscape setting as appropriate and of relevance to the Study Area.

13.4 Scope of Assessment – Key Receptors and Potential Impacts

13.4.1 Based on the parameters of the Proposed Development, it is expected that there will be some townscape and visual impact. The level and significance of the resulting effects would be subject to the final layout, massing and height details.

13.4.2 It is anticipated that potential significant visual effects are most likely to be experienced by receptors in closest proximity to the Site and/or of higher sensitivity. As part of the baseline desk study work, a predicted visual envelope will be established. A series of viewpoints within the predicted visual envelope and the Study Area, selected in discussion with Cardiff Council, will illustrate key views and represent view experienced by key receptors looking towards the Site. The TVIA would also take into consideration any impacts upon the city's skyline, strategic views and vistas as set out within the Tall Buildings SPG as part of the assessment of visual effects.

13.5 Assessment Methodology

13.5.1 The Townscape and Visual Amenity assessment will be prepared in accordance with the guidelines set out in GLVIA3. 'Townscape' refers to areas where the built environment is dominant, including buildings, urban open spaces and the relationships between them. The assessment would consider the Site and the development proposals in the context of its surrounding urban setting, the wider landscape / townscape, relevant planning policy and landscape designations and would appraise the potential visual effects upon surrounding receptors and viewpoints. This would also involve the determination of the susceptibility and sensitivity of the townscape to the type of development proposed.

13.5.2 In accordance with the GLVIA3 approach to assessment, the two key components of Townscape and Visual Amenity chapter of the ES comprise:

- Assessment of townscape effects: referring to changes on the landscape as a resource in its own right, such as through alterations to the fabric, composition, and nature of the urban landscape and including direct impacts

(such as loss of vegetation and change built form within the Site itself) or indirect impacts (such as changes to tranquillity or receptor experience of the environment). Townscape effects do not need to be solely visible.

- Visual effects relate to the nature and magnitude of changes observed within views and the resulting impacts upon views experienced by identified receptors (e.g. residents, users of public rights of way or recreational facilities). Changes to the visual setting of protected cultural heritage features where relevant may also be considered (e.g. Scheduled Monuments and Conservation Areas).

13.6 Consultation

13.6.1 The Local Planning Authority would be consulted on the proposed scope and distribution of proposed assessed representative viewpoints to be included within the TVIA, and any supporting photo plates if appropriate. Agreement on the number and locations of assessed views would be agreed prior to undertaking the site visit and photographic survey work.

14 CLIMATE CHANGE

14.1 Introduction

14.1.1 A Climate Change assessment will be undertaken by Wardell Armstrong LLP and will be included as a chapter within the ES. The Climate Change ES chapter will identify and assess the likely significant effects of the Proposed Development on the climate (i.e. greenhouse gas / carbon emissions), and how to minimise these. The assessment also considers how the Proposed Development adapts to a changing climate, how other EIA topics / receptors could be affected, and how resilience can be designed into this.

14.2 Legislation, Policy and Guidance

14.2.1 The assessment will be carried out with due regard to the following:

- The Climate Change (Carbon Budgets) (Wales) (Amendment) Regulations 2021
- Environment (Wales) Act 2016
- Climate Change Act 2008
- Future Wales: The National Plan 2040 (February 2021)
- Planning Policy Wales (Edition 11, February 2021)
- Building Regulations Part L and L2A (2014)
- Building Regulations Part L and F Review and Review Stage 2A
- Cardiff Local Development Plan 2006 – 2026 (Adopted January 2016)
- European Investment Bank 'Methodologies for the Assessment of Project GHG Emissions and Emission Variations' (2020)
- IEMA 'Environmental Impact Assessment Guide to Climate Change Resilience and Adaptation' (2020)
- Institute of Environmental Management and Assessment (IEMA) 'Assessing Greenhouse Gas Emissions and Evaluating their Significance' (2017)
- European Commission 'Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment' (2013)

14.3 Baseline Conditions

14.3.1 The Climate Change ES chapter will set out the relevant baseline conditions for the Site. The assessment will be undertaken on the basis that there is a need for the Proposed Development, acknowledging that emissions will be created through new development. A baseline scenario will be identified which is able to meet the demands of the Proposed Development in technical terms. The Proposed Development will be compared to a standardised development, which will form the baseline scenario for the impact assessment. The standardised development, on an alternate site, would produce the same deliverables and meet the legislated and policy requirements. This approach will enable a comparison and consider where opportunities to reduce emissions further beyond regulatory policy are being taken by the Applicants e.g. on-site renewable energy.

14.3.2 The Site is in Cardiff Bay, South Wales. Wales is classified under Köppen-Geiger as having a 'Cfb' climate, more commonly known as a temperate oceanic climate. These are typically mid latitude climates with warm summers and mild winters. The mean average annual temperature in Wales is approximately 9.6°C. The annual average rainfall is 760 millimetres (mm). Within the region, significant variations in temperature arise from the combined effects of proximity to the coast, topography and, to a lesser extent, urban development.

14.3.3 The location of a site has a considerable influence when assessing vulnerability and adaptability to future climate change. The Climate Change chapter will review this in detail, however site location features that may have the potential to cause, mitigate or be at risk from climate change can be initially identified as:

- proximity to the River Taff and Cardiff Bay;
- proximity to Cardiff Docks (including Roath Basin, Roath Dock, and Blue East Dock);
- water features within the site boundary;
- presence of varying land uses surrounding the site e.g. areas of residential development; and
- the Site is within Flood Zone B (areas known to have flooded in the past).

14.3.4 The Proposed Development will impact global greenhouse gas concentrations. Therefore, within a climate change context, the key sensitive receptor to the impacts

of the development will be global climate. This receptor differs from others listed within an EIA context as it is not at a distinct local scale, but a global one.

14.4 Scope of Assessment – Key Receptors and Potential Impacts

14.4.1 The assessment will consider both potential impacts on climate and the resilience / adaptation of the Proposed Development to climate change.

14.4.2 The Climate Change assessment will be partly based upon the energy strategy prepared separately as part of the hybrid planning application. The potential environmental impact of the Proposed Development is the release of greenhouse gas (GHG) emissions into the environment as a result of decommissioning, construction and operational activities. The assessment will focus on carbon dioxide equivalent (CO_2e) emissions associated with the combustion of fossil fuels during decommissioning, construction, and operation phases, the purchase of electricity with regard to lighting and ventilation, and the embodied carbon within materials.

14.4.3 As climate change is a global phenomenon, highly localised climate change impacts as a direct result of emissions associated with the Proposed Development are not assessed in the same way as in other technical EIA disciplines, which consider the significance of effects on individual receptors within a specified geographical location.

14.4.4 It is certain that the emissions from the Proposed Development will contribute to global climate change. The assessment will consider these as far as possible given the information available at the outline planning stage. Effects that are deemed to be significant will have relative GHG emissions above the baseline scenario (negative impact on climate change) or below the baseline scenario (positive impact on climate change).

14.4.5 The assessment presented in the ES chapter will also consider potential significant effects of climate change on the Proposed Development. Following the IEMA guidance (2020), the assessment of resilience will use a combination of probability and consequence to reach a reasoned conclusion on the magnitude of the effect of climate change on the Proposed Development, including risk of vulnerability to increased heatwaves, flooding and extreme weather.

14.5 Assessment Methodology

14.5.1 To undertake the Climate Change assessment, the predicted energy demand of the Proposed Development as defined in the energy strategy will be converted to carbon dioxide equivalent (CO_2e) emissions using conversion factors available from DEFRA

and/or BEIS. In terms of CO_2e emissions, the project as a whole will be assessed for its 'relative emissions (Re)' or net emissions. This is expressed as the difference between absolute emissions generated by the proposed project and the baseline emissions.

14.5.2 The assessment will determine the potential likely significant beneficial or adverse effects of the Proposed Development when considering the difference between predicted emissions and the baseline scenario.

14.5.3 A key principle of EIA is to reduce the impact of a project's emissions through mitigation. Where any significant adverse effects are identified in terms of unacceptable levels of GHG emissions, mitigation measures will be set out within the ES chapter.

14.5.4 The ES chapter will also include a qualitative assessment of the vulnerability of the Proposed Development to climate change effects when considering long term climate change in the Cardiff region. This will ascertain potential risks to the Proposed Development by way of major accidents occurring due to changing climate.

15 MATERIALS AND WASTE

15.1 Introduction

15.1.1 A Materials and Waste assessment will be undertaken by Wardell Armstrong LLP and will be included as a chapter within the ES.

15.2 Legislation, Policy and Guidance

15.2.1 The assessment will be carried out with due regard to the following:

- European Community (EC) Framework Directive for Waste, 2008/98/EC (the Waste Framework Directive)
- EC Landfill Directive, 1999/31/EC
- Future Wales: The National Plan 2040 (February 2021)
- Planning Policy Wales (Edition 11, February 2021)
- Cardiff Local Development Plan 2006 – 2026 (Adopted January 2016)
- City of Cardiff Council Supplementary Planning Guidance 'Waste Collection and Storage Facilities' (2016)
- Technical Advice Note (TAN) 21: Waste (2014)
- Welsh Assembly Government 'Towards Zero Waste. One Wales: One Planet' (2010)
- IEMA 'Materials and Waste in Environmental Impact Assessment – Guidance for a proportionate approach' (2020)

15.3 Baseline Conditions

15.3.1 The Materials and Waste ES chapter will set out the relevant baseline conditions for the Site through a Desk Study review of existing information. The ES chapter will describe the study area for the materials and waste assessment including information on local waste arisings and the types and quantity of material use and waste generation associated with the existing operations at the Site.

15.3.2 The assessment will be designed and developed in line with the guidance published by IEMA in March 2020 'Materials and Waste in Environmental Impact Assessment – Guidance for a proportionate approach'.

15.3.3 The key themes driving the development of the Materials and Waste assessment and the associated information that will be gathered to inform the description of baseline conditions and the assessment will include:

- for each stage in the project, information on waste types, quantities and when and how they will be produced;
- where on the Site is it intended to store waste materials;
- procurement strategy to encourage sourcing of materials with recycled content;
- plans to reuse materials on Site;
- details of any anticipated hazardous wastes generated during the development;
- discussions / contracts with contractors for collection / treatment / disposal of waste materials;
- discussions /contracts with key suppliers with a focus on recycled material;
- responsibility for implementation of the proposals;
- methods employed for engaging the various trades / suppliers / architects / designers etc.; and
- relevant corporate policies, strategies, targets etc. that need to be considered and incorporated.

15.4 Scope of Assessment – Key Receptors and Potential Impacts

15.4.1 The baseline conditions set out in the ES chapter will be used to identify sensitive receptors for assessment via a sensitivity review. It is considered that the materials used for the Proposed Development may be sensitive receptors on the basis of availability and subsequent depletion of natural resources. For waste, landfill capacity is anticipated to be a sensitive receptor for assessment when considering waste disposal requirements in relation to the Proposed Development.

15.4.2 The Materials and Waste assessment will consider material consumption and waste generation and disposal across the construction (including demolition and enabling works) and operational phases of the Proposed Development.

15.4.3 The Proposed Development may lead to potential direct impacts on sensitive receptors in relation to material consumption and the generation and disposal of waste.

15.4.4 Potential indirect effects may arise from material consumption and waste generation with regard to haulage, noise, dust, nuisance, vehicle emissions and water pollution. It is anticipated that these effects will be considered as part of the other relevant EIA disciplines outlined within this Scoping Report.

15.4.5 A number of assumptions are likely to need to be made to assess the nature and extent of effects of waste material generated by the Proposed Development, to include:

- where uncontaminated excavated material arises during construction, this will be considered for re-use on Site; contaminated excavated material (if encountered) will either be treated on Site or removed offsite for treatment and disposal;
- where materials are available and suitable for re-use, measures will be taken to incorporate this within the construction process;
- where figures are not available for the calculation of waste arisings, assumptions will be made based on similar, constructed major infrastructure projects;
- where information on waste quantities and waste types is unavailable, this will typically be based on a defined plot size; therefore, will consider development parameters using the Rochdale Envelope (worst-case) principles, applied across the developable land extents; and
- any topsoil to be removed within the Site will either be re-used on Site or transported offsite to (if possible) another development site requiring topsoil, or (as a last resort) inert landfill.

15.5 Assessment Methodology

15.5.1 The Materials and Waste assessment will be undertaken in accordance with IEMA guidance (2020). An assessment of potential significant effects will be undertaken using professional judgement to consider the sensitivity of receptors, the magnitude of impact, and the extent to which primary (embedded), secondary (additional) and tertiary (inexorable) measures are anticipated to minimise potential impacts.

15.5.2 The potential quantities of waste and the various types of waste that can be anticipated from the groundworks, construction and operational phases (including maintenance) of the Site will be assessed. Consideration will also be given to the potential environmental impacts associated with the likely methods of storage of any excavated materials, as well as the management of the different waste streams present on Site at the different phases of the works.

15.5.3 Where required, mitigation measures will be outlined to:

- minimise waste generation;
- facilitate the re-use or recycling of waste on Site; and,
- minimise the potential exposure to harmful materials and nuisance as part of waste collection, temporary storage and transportation of waste from Site.

15.5.4 This will also include use of appropriate controls for any waste stored on Site, so as to avoid discharge of contaminated material to land or water.

15.5.5 Cumulative effects will also be considered as part of the assessment, taking into account the developments listed in **Table 3.2** (see Chapter 3).

16 WIND MICROCLIMATE

16.1 Introduction

16.1.1 A Wind Microclimate assessment will be undertaken by Arup and will be included as a chapter within the ES.

16.1.2 A safe and comfortable wind environment is integral to the success of any development. The assessment will consider the likely significant effects of the Proposed Development on the local wind environment, with respect to pedestrian wind comfort and safety, during both construction and operational phases.

16.2 Legislation, Policy and Guidance

16.2.1 The assessment will be carried out with due regard to the following:

- Future Wales: The National Plan 2040 (February 2021)
- Planning Policy Wales (Edition 11, February 2021)
- Cardiff Local Development Plan 2006 – 2026 (Adopted January 2016)
- City of Cardiff Council 'Tall Buildings Supplementary Planning Guidance' (2017)
- London Docklands Development Corporation 'The evaluation of the windiness of a building complex before construction' (T.V. Lawson, 1990)

16.3 Baseline Conditions

16.3.1 The baseline scenario will be the existing Site in terms of existing permanent buildings.

16.3.2 A review of the local wind climate (prevailing wind directions and strength) will be undertaken using long-term wind records measured at several weather stations in the area of Cardiff and corrected for terrain roughness conditions over the Site.

16.3.3 Wind microclimate conditions at the existing Site will be assessed following the methodology described below for the completed development.

16.4 Scope of Assessment – Key Receptors and Potential Impacts

16.4.1 As the Proposed Development is taller than some of the immediate surroundings along the prevailing wind directions, there is potential for excessive windiness within the development boundaries and in surrounding areas.

16.4.2 Sensitive receptors within the scheme will include building entrances, public / pedestrian routes, amenity spaces (seating and play areas), any public terraces or balconies. Sensitive receptors surrounding the scheme will include thoroughfares,

building entrances, waiting areas such as bus stops, retail frontages and amenity spaces. Sensitive receptors also include cyclists and vehicles.

16.5 Assessment Methodology

16.5.1 Initially a qualitative desk study will be undertaken to assess the environmental wind conditions that may affect pedestrians and cyclists in and around the Proposed Development compared to future intended use. The planning baseline will also be assessed. The assessment will be based on a review of architectural drawings provided by the design team, evaluation of aerial views of the Site and surroundings and Arup's previous extensive experience of wind tunnel studies around buildings. As the Proposed Development will be built in phases, environmental wind conditions at intermediate construction stages will be assessed.

16.5.2 As part of this initial assessment strategic advice will be provided with the aim to identify and minimise areas of potentially excessive windiness and help guide design development towards achieving a suitably comfortable and safe environment. This may include advice on likely suitable positions and size of landscaping elements as well as preferred locations of doors, pedestrian pathways and outdoor areas.

16.5.3 Levels of windiness will be compared to future usage using the Lawson LDDC criteria for comfort and distress (safety) as shown in **Table 16.1**. These include acceptable tolerable limits for activities such as 'Sitting', 'Standing', 'Strolling' and, 'Business Walking'. They also describe conditions that are unsafe for the public use less than once a year. These distress criteria are divided into two categories: 'able-bodied' and 'general public' (**Table 16.2**). The former describes conditions that may be unsafe for less able bodied members of the public (e.g. elderly, injured or cyclists) and the latter describes conditions that may be unsafe for all members of the public, and vehicles.

Table 16.1 Lawson Comfort Criteria

Comfort Criteria	Description
Long Term 'Sitting'	Reading a newspaper, eating and drinking.
'Standing' or short term 'Sitting'	Bus stops, window shopping, building entrances and parks.
Walking or 'Strolling'	General areas of walking and sightseeing.
Business 'Walking'	Areas where people are not expected to linger.

Table 16.2 Lawson Distress Criteria	
Distress Criteria	**Description**
'General Public Access'	Above which the less-able and cyclists may find conditions physically difficult at times of general windiness.
'Able Bodied Access'	Within which it becomes increasingly difficult for an able-bodied person to remain standing during windy conditions.

16.5.4 The significance of wind microclimate effects will be reported. A significant adverse effect will be identified as an area where wind conditions would be higher than the required levels for the intended future use. Exceedances of the distress criteria would present a potential safety risk in areas regularly used by pedestrians. Such conditions would be unacceptable for areas accessed by the general public and will be therefore considered to be significant adverse effects.

16.5.5 Depending on the outcomes of the initial desk studies, wind tunnel testing may be recommended to confirm acceptably of the geometry, and scope of mitigation for the detailed elements of the planning application, e.g. Plot J (the Hotel) and Plot I (the Arena).

16.5.6 Wind tunnel tests would be carried out to quantify conditions around the existing Site (baseline) and the Proposed Development and further develop the scope and design of any necessary mitigation. Tests would be undertaken using a 1:300 scale model of the development and building surroundings within a typical radius of 400m.

16.5.7 Gust and mean speeds will be measured in key locations around the development using Irwin probe anemometers. Measurements will be taken in areas of wind-sensitive activities or where it is expected there is significant windiness due to the geometry and exposure of the Proposed Development. For each test configuration, wind speeds will be measured for sixteen equal increments of wind directions.

16.6 Consultation

16.6.1 Consultation with the Local Planning Authority will be undertaken to discuss and agree the assessment approach.

17 DAYLIGHT, SUNLIGHT AND OVERSHADOW

17.1 Introduction

17.1.1 A Daylight, Sunlight and Overshadow assessment will be undertaken by Arup and will be included as a chapter within the ES.

17.2 Legislation, Policy and Guidance

17.2.1 The assessment will be carried out with due regard to the following:

- Building Research Establishment (BRE) 'Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice' (2011)
- British Standard (BS) 8206-2:2008: 'Lighting for Buildings – Part 2: Code of Practice for Daylighting'

17.2.2 The assessment will also review and incorporate any relevant guidance with regard to daylight, sunlight and overshadowing from the following:

- Future Wales: The National Plan 2040 (February 2021)
- Planning Policy Wales (Edition 11, February 2021)
- Cardiff Local Development Plan 2006 – 2026 (Adopted January 2016)
- City of Cardiff Council 'Tall Buildings Supplementary Planning Guidance' (2017)

17.3 Baseline Conditions

17.3.1 Baseline studies will be undertaken and will include a review of the current daylight and sunlight conditions within each of the surrounding residential properties, along with the sunlight availability to the surrounding amenity areas.

17.3.2 The following studies will be carried out to determine baseline conditions:

- daylight access of the existing residential buildings;
- sunlight access of the existing residential buildings; and
- solar access of the surrounding outdoor amenity areas.

17.3.3 The baseline assessment will be carried out using a digital three-dimensional (3D) model of the existing Site and surroundings.

17.4 Scope of Assessment – Key Receptors and Potential Impacts

17.4.1 The BRE guidelines suggest that residential properties have the highest requirement for daylight and sunlight and the ES chapter will identify sensitive receptors to take forward for assessment.

17.4.2 The assessment will consider the following potential impacts in relation to the operational phase of the Proposed Development:

- impact on daylight access of the existing residential properties due to physical obstruction;
- impact on sunlight access of the existing properties buildings due to physical obstruction and overshadowing;
- impact on daylight access of the Proposed Development itself;
- impact on sunlight access of the Proposed Development itself;
- solar access of the existing outdoor amenity spaces that can be affected by the Proposed Development; and
- solar access of the proposed outdoor amenity spaces within the Proposed Development.

17.4.3 The assessment will be carried out for the operational (completed) phase of the Proposed Development. The construction phase activities, and interim effects during this phase will not be included.

17.5 Assessment Methodology

17.5.1 To assess the potential effects of the operational phase of the Proposed Development on sensitive receptors, a digital three-dimensional (3D) model of the existing Site and Proposed Development will be created.

17.5.2 The model will enable a number of different studies to be carried out to address the above listed impacts. The following studies will be considered where relevant:

Daylight to Windows

- Vertical Sky Component (VSW)
- Daylight Distribution / No Sky Line
- Average Daylight Factor (ADF)

Sunlight to Windows

- Annual Probable Sunlight Hours (APSH)

Overshadowing

- Overshadowing to outdoor amenity spaces

17.5.3 The exact assessments to be carried out will vary between the existing residential development and existing outdoor amenity spaces, the Proposed Development and proposed outdoor amenity spaces. These will be specified upon closer examination of the existing Site and Proposed Development.

17.5.4 The detail of the assessment will vary depending on what is deemed appropriate for the detailed and outline elements of the hybrid planning application.

17.5.5 The assessment of the impact of mitigation measures is not included in the scope.

17.5.6 The assessment will not include right to light advice.

17.6 Consultation

17.6.1 Consultation with Cardiff Council as the Local Planning Authority will be undertaken to discuss and agree the assessment approach.

18 SUMMARY

18.1.1 This Scoping Report has been produced to inform Cardiff Council of the proposed scope of the Environmental Statement. In summary it is proposed that the Environmental Statement will include the following chapters:

- Introduction
- Site Description
- Development Description
- Consideration of Alternatives
- Approach to Environmental Impact Assessment
- Consultation
- Traffic and Transport
- Water Resources
- Ground Conditions
- Biodiversity
- Air Quality
- Noise and Vibration
- Cultural Heritage
- Socio-economics
- Health
- Townscape and Visual Amenity
- Climate Change
- Materials and Waste
- Wind Microclimate
- Daylight, Sunlight and Overshadow
- Summary of Residual and Cumulative Effects
- Conclusions

18.1.2 The planning application will be accompanied by an Environmental Statement and Non-Technical Summary in accordance with the EIA Regulations.

18.1.3 The Environmental Statement will draw upon the interactions identified in previous chapters of this report to provide an assessment of the scale and significance of the potential impacts which may occur as a result of the Proposed Development. The report will propose mitigation measures as appropriate to minimise any potential adverse impacts.

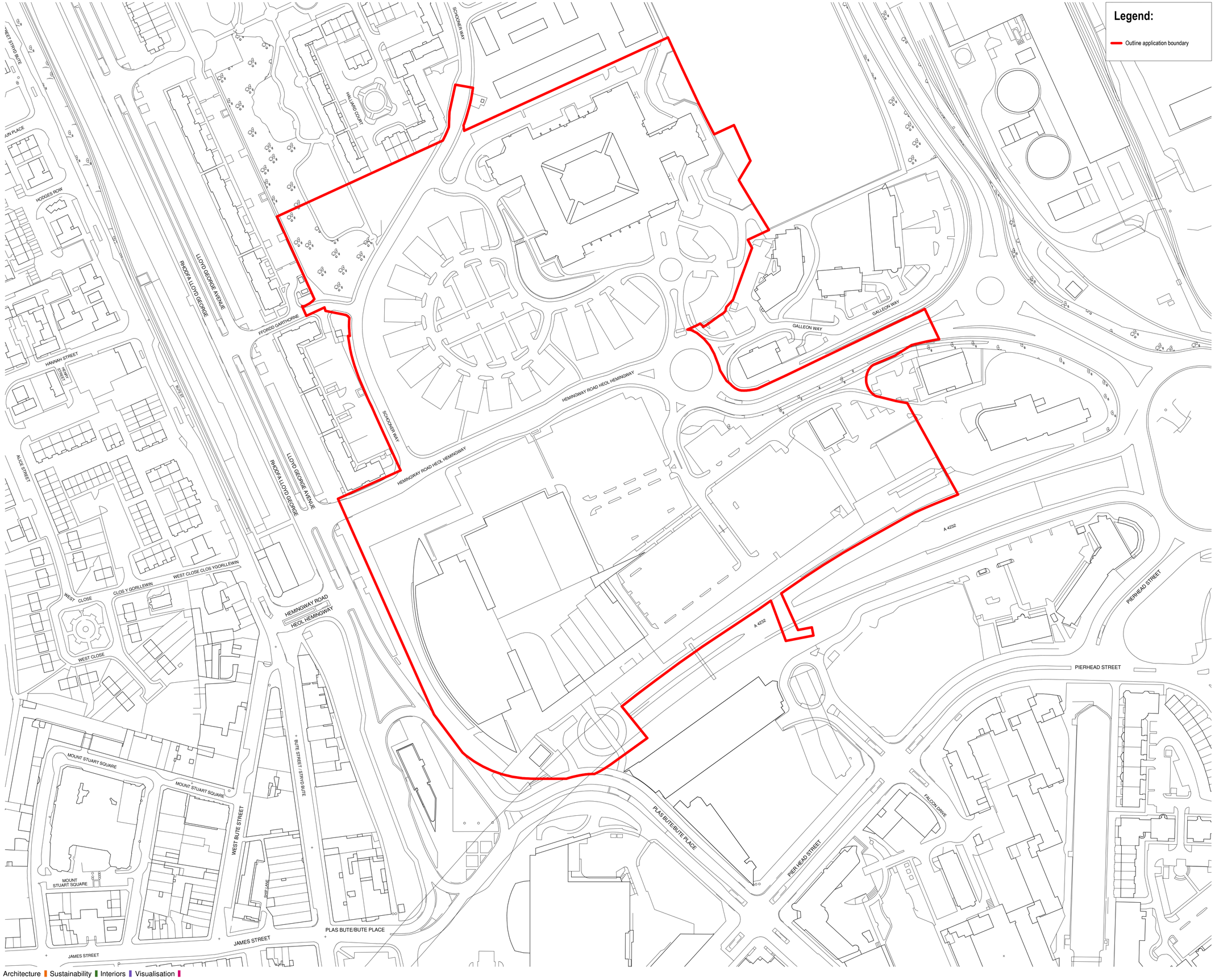
18.1.4 As an iterative process, the scope of the assessments will be refined following consultations with a wide range of authorities, statutory agencies, interested parties and public consultations.

18.1.5 The results of the studies and recommendations will be incorporated into the design of the scheme. Full regard will be given to the current national and local planning guidance in the preparation of the proposals and the Environmental Statement.

18.1.6 We hereby request on behalf of the Applicant, a formal Scoping Opinion under Regulation 14 of the Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017.

APPENDICES

Appendix A – Location Plan



Notes:

Rev	Description	Rev'd	Chk'd	Date
1	Arup changes	PJ	RR	14/05/21

STATUS: FOR INFORMATION

SUITABILITY NUMBER KEY:

WIP
S0 - Work in Progress*
SHARED
S1 - Fit for co-ordination**
S2 - Fit for information
S3 - Fit for internal review and comment
S4 - Fit for construction approval
DOCUMENTATION
D1 - Fit for costing
D2 - Fit for tender
D3 - Fit for contractor design
D4 - Fit for manufacture/ procurement

DOCUMENTATION - SIGN-OFF
A - Fit for construction
B - Fit for construction, with comments

ARCHIVE
AB - As Built
FC - Final Construction

* For internal pre-issue usage only.
** For model file usage only.

Rio
studio@rioarchitects.com
www.rioarchitects.com
@rioarchitects

Rio Cardiff
21a Allensbank Road
Cardiff CF14 3PN
+44 (0)29 2025 0066

Rio London
19 21 Hatton Garden
London EC1N 8BA
+44 (0)20 2691 7565

City of Cardiff Council

PROJECT TITLE :
Atlantic Wharf Development
Cardiff

DRAWING TITLE :
Location Plan

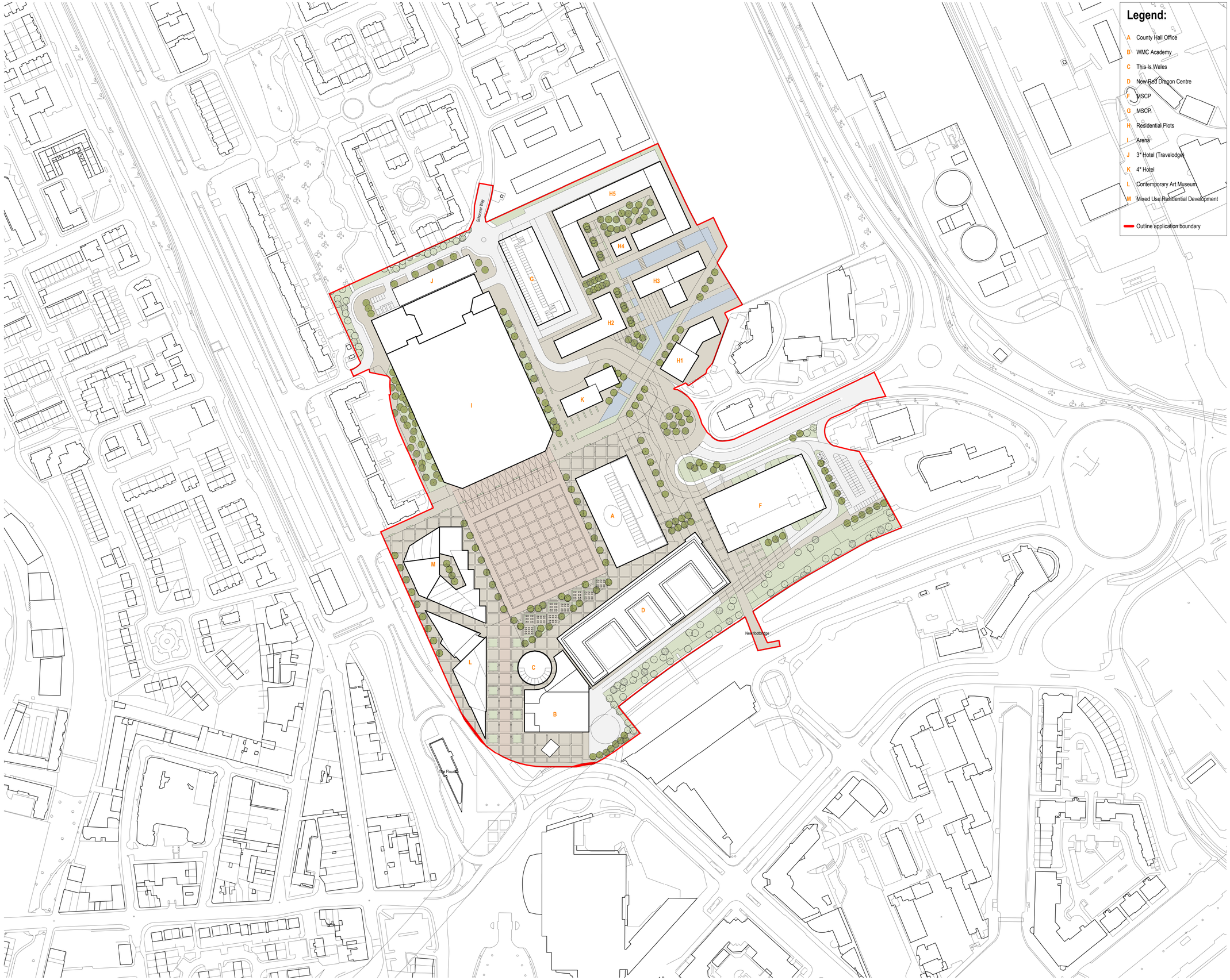
DRAWN BY :	CHECKED BY:	APPROVED BY :
PJ	DL	RR

JOB NO :	SCALE :
0371	1 : 1250 @ A1

SUITABILITY :	S2		
DATE :	13/05/2021	REVISION:	1

PROJECT	ORIGIN.	VOLUME	LEVEL	TYPE	DISCIP.	NUMBER
0371	RIO	XX	XX	DR	A	01052

Appendix B – Illustrative Masterplan



Legend:

- A County Hall Office
- B WMC Academy
- C This Is Wales
- D New Red Dragon Centre
- F MSCP
- G MSCP
- H Residential Plots
- I Arena
- J 3* Hotel (Travelodge)
- K 4* Hotel
- L Contemporary Art Museum
- M Mixed Use Residential Development

Outline application boundary

N

Notes:

Do not scale this drawing. Responsibility is not accepted by Rio Architects Ltd for errors made by others during the printing or scaling of this drawing. Use only written dimensions. It is the contractor's responsibility to verify all dimensions before commencing any work. Any discrepancies are to be notified in writing to Rio Architects Ltd immediately.

This drawing is to be read in conjunction with all other relevant project drawings, specifications and schedules prepared by Rio Architects Ltd and any other relevant consultants, specialists or subcontractors.

Rev	Description	Rev'd	Chk'd	Date
1	Arup changes	PJ	RR	14/05/21

STATUS: FOR INFORMATION

SUITABILITY NUMBER KEY:

WIP
S0 - Work in Progress*
SHARED
S1 - Fit for co-ordination**
S2 - Fit for information
S3 - Fit for internal review and comment
S4 - Fit for construction approval
DOCUMENTATION
D1 - Fit for costing
D2 - Fit for tender
D3 - Fit for contractor design
D4 - Fit for manufacture/ procurement

DOCUMENTATION - SIGN-OFF
A - Fit for construction
B - Fit for construction, with comments

ARCHIVE
AB - As Built
FC - Final Construction

* For internal pre-issue usage only.
** For model file usage only.

Rio

studio@rioarchitects.com
www.rioarchitects.com
@rioarchitects

Rio Cardiff
21a Allensbank Road
Cardiff CF14 3PN
+44 (0)29 2025 0066

Rio London
19 21 Hatton Garden
London EC1N 8BA
+44 (0)20 2691 7565

City of Cardiff Council

PROJECT TITLE :
Atlantic Wharf Development
Cardiff

DRAWING TITLE :
Atlantic Wharf Masterplan Outline Application Boundary

DRAWN BY : PJ | CHECKED BY: DL | APPROVED BY : RR

JOB NO : 0371 | SCALE : 1 : 1500 @ A1

SUITABILITY : S2

DATE : 13/05/2021 | REVISION: 1

PROJECT	ORIGIN.	VOLUME	LEVEL	TYPE	DISCIP.	NUMBER
0371	RIO	XX	XX	DR	A	01051

wardell-armstrong.com

STOKE-ON-TRENT
Sir Henry Doulton House
Forge Lane
Etruria
Stoke-on-Trent
ST1 5BD
Tel: +44 (0)1782 276 700

BIRMINGHAM
Two Devon Way
Longbridge Technology Park
Longbridge
Birmingham
B31 2TS
Tel: +44 (0)121 580 0909

BOLTON
41-50 Futura Park
Aspinall Way
Middlebrook
Bolton
BL6 6SU
Tel: +44 (0)1204 227 227

BRISTOL
Desklodge
2 Redcliffe Way
Bristol
BS1 6NL

BURY ST EDMUNDS
6 Brunel Business Court
Eastern Way
Bury St Edmunds
Suffolk
IP32 7AJ
Tel: +44 (0)1284 765 210

CARDIFF
Tudor House
16 Cathedral Road
Cardiff
CF11 9LJ
Tel: +44 (0)292 072 9191

CARLISLE
Marconi Road
Burgh Road Industrial
Estate Carlisle
Cumbria
CA2 7NA
Tel: +44 (0)1228 550 575

EDINBURGH
Great Michael House
14 Links Place
Edinburgh
EH6 7EZ
Tel: +44 (0)131 555 3311

GLASGOW
2 West Regent Street
Glasgow
G2 1RW
Tel: +44 (0)141 433 7210

LEEDS
36 Park Row
Leeds
LS1 5JL
Tel: +44 (0)113 831 5533

LONDON
Third Floor
46 Chancery Lane
London
WC2A 1JE
Tel: +44 (0)207 242 3243

NEWCASTLE UPON TYNE
City Quadrant
11 Waterloo Square
Newcastle upon Tyne
NE1 4DP
Tel: +44 (0)191 232 0943

TRURO
Baldhu House
Wheal Jane Earth Science Park
Baldhu
Truro
TR3 6EH
Tel: +44 (0)187 256 0738

International offices:

ALMATY
29/6 Satpaev Avenue
Hyatt Regency Hotel
Office Tower
Almaty
Kazakhstan
050040
Tel: +7(727) 334 1310

MOSCOW
21/5 Kuznetskiy Most St.
Moscow
Russia
Tel: +7(495) 626 07 67

wardell armstrong