OUTLINE PLANNING APPLICATION
LAND ADJACENT TO ST JULIAN'S HOUSE
OLD ST MELLONS

PMG DEVELOPMENT LIMITED

OUTLINE PLANNING APPLICATION FOR A RESIDENTIAL DEVELOPMENT OF UP TO 160 UNITS WITH ASSOCIATED INFRASTRUCTURE, LANDSCAPING AND ACCESS ALL MATTERS EXCEPT FOR ACCESS RESERVED FOR FUTURE CONSIDERATION

ENVIRONMENTAL STATEMENT

AUGUST 2020

Consultant Team

Applicant	PMG Development Ltd Unit 2, Mulberry Drive Oak Tree Court Cardiff Gate Business Park Cardiff CF23 8RS
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Architects	Powell Dobson (Cardiff) Suite 1F Building One Eastern Business Park Wern Fawr Lane Old St. Mellons Cardiff CF3 5EA
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Ecology & Trees	The Environmental Dimension Partnership First Floor, The Bonded Warehouse Atlantic Wharf Cardiff CF10 4HF
Landscape and Visual Impact	WYG Group (Cardiff) 5th Floor Longcross Court 47 Newport Road Cardiff CF24 0AD

Ground Conditions	Integral Géotechnique (Wales) Ltd Intégral House 7 Beddau Way Castlegate Business Park, Caerphilly CF83 2AX
Drainage	Shear Design 7 Ashtree Court Woodsy Close Cardiff Gate Business Park Cardiff CF23 8RW
Heritage	Red River Archaeology Unit 3 Ringside Business Park Heol Y Rhosog Cardiff CF3 2EW
Noise	Hunter Acoustics Henstaff Court Business Center Llantrisant Road Pontyclun Cardiff CF72 8NG
Agricultural Land and Soil Resource	Land Research Associates Lockington Hall Business Centre Lockington Derby DE74 2RH

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CHAPTER 1
Introduction

The Environmental Statement

2.1 This Environmental Statement (ES) has been prepared on behalf of PMG Development Ltd (The Applicant) to accompany an outline application with some matters reserved for the residential development of Land adjacent to St Julian's House, Bridge Road, Old St Mellons, Cardiff.

2.2 The area of land subject of this application extends to approximately 4.69 hectares and is identified on the 'Application Site Boundary' plan.

2.3 The proposed development consists of up to 160 dwellings, access, parking, landscaping, open space and drainage. A full description of the development is set out in Chapter 3 of this ES.

2.4 This Chapter sets out the context for the ES. It provides a broad overview of the site and its surroundings, and describes the applicants and the application. It also outlines the need for an Environmental Impact Assessment (EIA) in the context of this proposed development scheme, and provides an overview of the EIA process. Finally, it provides a synopsis of the contents of the ES and outlines the methodology that has been adopted in undertaking it.

Overview of the Scheme

The Site & Surroundings – Summary

2.5 The application site is situated just to the south-east of junction 30 of the M4 corridor, east of the A4232 link road. On the western side of the link road is both the Cardiff Gate Retail Park and other large superstores accessed via Dering Road.

2.6 The land immediately to the south of the site – along Bridge Road - forms a new community of approximately 1020 new homes, village centre and all associated works granted planning permission in 2014 (ref.13/00578/DCO).

2.7 The total site area to which the application relates is approximately 4.69 hectares. The land is owned or controlled by PMG Developments Limited. The boundary of the development site is edged red on the site location plan in **Figure 1.1**.

2.8 Construction is well underway on the site to directly south of the Application Site and many of the new housing units have been completed. This development directly adjoins the southern boundary of the Application Site and therefore the proposals put forward in this scheme acknowledge and reflect this relationship.

2.9 The Application Site sits within a varied landscape of primarily low grade agricultural land to the north and east, the completion of a new housing development to the south and a small

green buffer to the west between the site and the Pontprennau Link Road. A smaller development for 4x four-bedroom dwellings was granted in 2018 on the western side of Bridge Road, situated to the north of two dwellings known as 'The Forge' and 'Kubair'. Planning permission for these dwellings lengthens the residential nature of the western boundary of the Application Site. The site itself is classified as Grade 3 a and Grade 2 Agricultural Land and consists of areas of unmaintained grassland and hedgerows with occasional trees.

2.10 The north-western corner of the site is bounded by a small number of existing residential properties and their associated outbuildings. Some of these properties are accessed by a private lane which runs adjacent to the northern boundary of the site. This lane provides access to an estate which is situated to the north-east of the Application Site.

The Proposed Development – Summary

2.11 The application for which this ES has been prepared relates to the development of Land adjacent to St Julian's House, Bridge Road, Old St Mellons, Cardiff. The indicative proposes a residential development of up to 160 units with associated infrastructure, landscaping and access. All matters except for access are reserved for future consideration.

2.12 The proposed development of Land adjacent to St Julian's House forms part of Strategic Site G in the Cardiff Local Development Plan (LDP) and is further known as 'Land East of Pontprennau Link Road', with the site being allocated as a Residential-led Strategic Site. The policy also advises that this site shall be delivered in a phased manner, and as such this Application can be deemed as a further phase of the existing development to the south.

2.13 It is envisaged that the site will include a mixture of dwelling types and sizes, with the majority being family sized homes. Dwellings are envisaged to predominantly be two to three-storey in height and in keeping with the surrounding development.

2.14 In terms of access, the site will be accessed via Bridge Road as well as new vehicular accesses from the development site in the south and east. Pedestrian and cycle links into the site are proposed to be provided from all aspects of the site.

2.15 Boundary treatment along the external boundaries of the site will largely consist of hedgerows and planting, which will be retained and bolstered where necessary in the interests of preserving the character of the site, and the ecological benefits of the hedgerows. The application also includes new landscaping features.

The Planning Application

2.16 This outline application with all matters reserved expect access is submitted on behalf of PMG Development Ltd for the residential development of Land adjacent to St Julian's House, Bridge Road. Although the application is submitted in outline form, a suite of supporting information is submitted which establishes the following:

- Form and massing;
- Layout and Landscaping;
- Character areas;
- Movement; and
- Land uses.

2.17 Details regarding access are submitted for full approval as part of this application. All other detailed design aspects will be considered and dealt with by means of a subsequent Reserved Matters application.

2.18 In addition to the Environmental Statement, the following documents are submitted in support of this outline planning application:

- Completed application forms;
- Agricultural Holdings Certificate;
- Site Location Plan;
- Illustrative Masterplan;
- Block Plan;
- Parameters Plan;
- Design and Access Statement;
- Environmental Impact Assessment comprising Environmental Statement, Technical Appendices and Non-Technical Summary;
- Planning Statement;
- Transportation Assessment;
- Heritage Assessment;
- Ecological Assessment;
- Green Infrastructure Assessment;
- Soil Resource Statement and Site Investigatory Report;
- Arboricultural Technical Note;
- Arboricultural Impact Assessment and Tree Protection Plan;
- Landscape Visual Impact Assessment;
- Geotechnical Desk Study incorporating Preliminary Risk Assessment for land contamination;
- Drainage Strategy;
- Noise Assessment; and
- Agricultural Land Assessment.

The EIA Process

2.19 Environmental Impact Assessment (EIA) is a process that is designed to improve the environmental design of a development scheme as it evolves, and to provide decision-makers with sufficient information about any significant environmental effects arising from a specific proposal. This helps to ensure that both the importance of any predicted effects, and the scope for reducing them, are properly understood by the public and the relevant determining authority before a decision is made on the overall merits of the scheme.

2.20 The process of and legal requirement for EIA emanates from European Council Directive 85/337/EEC which came into force in 1988. This Directive has been amended and is now included in Directive 2011/92/EU of 13 December 2011. The European Parliament adopted a revised version of the EIA directive (2014/52/EU) in 2014 to be transposed by member states into their own legislation by May 2017.

2.21 These Directions became law in England and Wales through the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 (as amended). These Regulations came into effect on 14th March 1999, and have been and continue to be, superseded over time by updated Regulations not least the Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017 [2016 No. 567 (W.136)] (as amended). These Regulations came into effect on 16th May 2017.

2.22 The primary purpose of the Town and Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017 is to transpose the changes made to the EIA Directive in respect of land use planning. The changes will be applied in respect of other consent regimes subject to EIA through separate regulations.

2.23 The EIA Directive changes incorporated into the Regulations include the following:

- Insert a definition of EIA;
- Amend when a member state may exempt a project from the provisions of the Directive
- Ensure that developers provide certain information where a screening request is made;
- Provide for a coordinated procedure, where appropriate, for assessments required by the EIA Directive together with the Habitats or Birds Directives 1;
- Amend the criteria used to screen whether a project is subject to EIA;
- Provide that environment statements are based on a scoping opinion when one is provided;
- Increase the public consultation period to 30 days;
- Provide that notification of the public consultation and documents associated with it are made accessible electronically;
- Set out information that must be provided in making a decision to grant or refuse consent;
- Ensure decisions are made objectively and authorities avoid conflict of interest;
- Change the requirement for competent authorities to provide 'full reasons' to 'main reasons' for screening decisions on planning applications in accordance with the Directive;
- Ensure that EIA documentation is produced and assessed by competent experts;
- Reinforce the enforcement system for infringements of the Directive; and,
- Make transitional provisions for projects where screening or scoping procedures have been initiated, or where the environmental statement has been submitted, under the existing regime before the date that these Regulations come into force.

2.24 The key output of the EIA process is the preparation of the Environmental Statement (ES). This accompanies the application for planning permission and provides the environmental information necessary for the determining authority to reach its decision about the proposal. This information includes a description of the development, the measures proposed to ameliorate any adverse environmental effects, and the overall predicted environmental impacts of the scheme.

2.25 This ES has been prepared in order to report on the EIA which has been undertaken for the proposed development of Land adj. St Julian's House. The individual studies and surveys that form the component parts of the EIA and that have informed the preparation of this ES have been carried out by sub-consultants appointed by PMG Developments Ltd, in conjunction with the preparation of the design of the site.

Statutory Basis for Undertaking EIA

2.26 The Town & Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017 (Welsh SI 2017 No. 567 (W.136)) classify industrial installation projects for the production of electricity, steam and hot water exceeding a development area of 0.5 hectares as 'Schedule 2' development, whereby EIA is discretionary rather than mandatory (Schedule 2, paragraph 3 (a).

2.27 Schedule 3 sets out the criteria which should be considered when determining whether or not EIA is required for Schedule 2 development. These relate to:

(i) Characteristics of Development;
(ii) Location of Development;
(iii) Types and Characteristics of the Potential Impact.

2.28 Paragraphs 32 to 34 of the accompanying Welsh Office Circular 11/99 provide additional advice on Schedule 2 developments. The Secretary of State's view is that, in general, EIA will be needed for Schedule 2 developments in three main types of case:

a) for major developments which are of more than local importance;
b) for developments which are proposed in particularly environmentally sensitive or vulnerable locations; and
c) for developments with unusually complex and potentially hazardous environmental effects.

2.29 Paragraph A18 of Annex A to the Circular, which provides the indicative thresholds and criteria for the identification of schedule 2 development requiring EIA in the case of urban development projects on previously developed land states that *'…in addition to the physical scale of such developments, particular consideration should be given to the potential increase in traffic, emissions and noise. EIA is unlikely to be required for the redevelopment of land unless the new development is on a significantly greater scale than the previous use, or the types of impact are of a markedly different nature, or there is a high level of contamination…'*.

Screening for EIA

2.30 A request for a Screening Opinion (to determine whether, having regard to the thresholds and criteria in Schedules 2 and 3 of the Regulations, EIA was needed in this case) was submitted to the Cardiff City Council (CCC) on the 20th March 2020 (a copy of which is in Technical **Appendix 1.1**).

2.31 A response was received from CCC on 11th May 2020 (a copy of which is in Technical **Appendix 1.2**). This concluded that an ES would be required for the proposals at Land adjacent to St Julian's House, albeit (as set out later in this Chapter) limited in 'scope'.

2.32 The Local Planning Authority's (LPA) reasoning for this view is as follows:

'the proposals have been considered and when assessed cumulatively with the adjoining St. Edeyrn's Development, are considered likely to realise such significant environmental effects as to warrant the submission of an Environmental Statement to allow the Local Planning Authority to fully understand the environmental impacts of the proposals.'

'The development is confirmed to be considered "housing development" within the category of 'Infrastructure Projects' within Schedule 2 of the Regulations (category 10 (b)), and as required by category changes and extension (category 13 (b)) my opinion must take into account any planning permission (implemented or not implemented), such as the Persimmon homes St. Ederyn's Development which cumulatively would result in development that exceeds the thresholds set within category 10 b of the above schedule.

Thereafter, Schedule 3 of the Town And Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017 ("The Regulations") requires the screening Authority to consider the likely impact…'

Scope of EIA

2.33 To assist the Local Planning Authority (LPA), a Scoping Report was produced by the Applicant under Regulation 13 of the EIA Regulations which set out the key environmental issues that the Applicant had identified, upon which the proposed development could have significant effects.

2.34 Although a formal scoping response has not been received from CCC to date, Case Officer Justin Jones provided an email response on 27th May 2020 which stated:

"The suggested chapters, as indicated in your screening request, are acceptable. In relation to air quality, I am happy that given the scope of the proposal air quality is not essential for the ES."

2.35 Accordingly, the ES addresses the environmental matters confirmed within the screening letter submitted.

Content and Format of the ES

2.36 The full ES comprises the following separate volumes:

- **Volume 1**: Main Document (this volume) – containing text along with figures and tables of direct relevance to the interpretation of the ES;
- **Volume 2**: Appendices – comprising detailed background surveys and reports referred to in Volume 1, along with other relevant supporting information;
- **Non-Technical Summary** (NTS).

2.37 This document, Volume 1 of the ES, comprises separate chapters. Those figures are of direct relevance to the interpretation of the text of the main report are contained at the rear of each chapter. Tables are embedded within the text where possible, and contained within the figures section where they are in A3 or landscape format. The contents of each subsequent chapter is summarised below:

- **Chapter 2** of the main document provides a detailed description of the site and its surrounding area, including relevant planning history;
- **Chapter 3** provides a detailed description of the proposal, outlining the parameters against which the EIA has been undertaken;
- **Chapter 4** provides an overview of the policy context within which the planning application will be assessed. It highlights the key issues arising from Planning Policy Wales (PPW) and relevant Technical Advice Notes (TAN's) and provides a summary of the most relevant adopted and emerging regional and local planning policies, along with other relevant plans and strategies;
- **Chapter 5** examines the need for the scheme and outlines the alternative options that have been considered as proposals have emerged;
- **Chapter 6** provides a summary of the scoping consultation carried out and an outline of the pre-submission consultation undertaken with the LPA and the local community / key stakeholders;

- **Chapter 7** sets out the socio-economic and community effects of the development and assesses the impact of the proposed scheme against these;

- **Chapters 8 – 15** provide an assessment of the following issues respectively:

    - Transportation;
    - Ecology;
    - Landscape and Visual Impact;
    - Ground Conditions;
    - Drainage;
    - Heritage;
    - Noise; and
    - Agricultural land and soil resource;

- **Chapter 16** provides a summary of the potential cumulative effects of the proposed built development at the application site and other developments identified within the immediate vicinity of the application site.

- **Chapter 17** provides a conclusion and a summary of the proposed mitigation measures that are included in the application scheme, and an outline of the residual effects that would be likely to arise from the implementation of the proposal.

2.38 The non-technical summary of the ES is available separately. This provides a 'plain language' overview of each chapter of the ES. It also provides a summary of the minimum 'specified information' set out in Schedule 4, Paragraph 1 of the Town & Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017.

2.39 In accordance with the EIA Regulations, Table 1.1 sets out the Schedule 4 requirements for information to be included in ES's and where this ES addresses those requirements.

Table 1.1: **Information for Inclusion in Environmental Statements**

Schedule 4 Requirement	Where Addressed in the ES
1. A description of the development.	Chapter 3 provides a description of the proposed development
2. A description of the reasonable alternatives studied by the applicant or appellant which are relevant to the proposed development.	Chapter 5 addresses the issue of alternatives
3. A description of the relevant aspects of the current state of the environment and an outline of the likely evolution thereof.	An evaluation of the current state of the environment is provided in chapters 9, 10, 11 and 15.
4. A description of the factors likely to be significantly affected by the development.	As explained in paragraph 2.37 matters to be addressed by this ES are transportation, ecology, landscape and visual impact, ground conditions, drainage, heritage, noise and agricultural land and soil resource.
5. A description of the likely significant effects of the development on the environment.	Likely significant effects are presented in each of the topic chapters (chapters 8-15)
6. A description of the forecasting methods or evidence used to identify and assess the effects on the environment.	An indication of general difficulties in compiling the required information is set out in this chapter. Topic chapters 8-15 regarding specific aspects of the environment include topic related difficulties.
7. A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment.	Mitigation measures are presented in each of the topic chapters (chapters 8-15).
8. A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and / or disasters which are relevant to the project concerned.	Chapters 8-15 identify the main adverse impacts of the development to risks of major accidents / and or disasters which are relevant to the project concerned.

Schedule 4 Requirement	Where Addressed in the ES
9. A non-technical summary of the information noted above.	A separate Non-Technical Summary is provided and outlines the main findings of the assessment in accessible plain English.
10. A reference list detailing the sources used for the descriptions and assessments including in the environmental statement.	A reference list is provided as footnotes or at the end of Chapters 8-15.

Methodology for Undertaking the EIA

2.40 The EIA process principally aims to:

- Describe the proposed development;
- Assess the significant effects which have been identified as arising from the construction and operation of the scheme in relation to environmental media and sensitive environmental receptors;
- Identify the measures to be incorporated into the design and management of the proposed development to minimise / mitigate any potential adverse environmental effects that have been identified; and
- Prepare an ES to present the findings of the EIA process.

2.41 Chapters 8 - 14 of the ES explore the issues held and scoped to necessitate EIA using the following consistent format:

- **Introduction:** including, where appropriate, definition of the area of study.
- **Context:** including a brief analysis of relevant government guidance, the planning policy context for the issue in question, any relevant legislation and a review of data sources.
- **Methodology**: including an assessment of the methods used to establish the baseline, a description of the methodology for undertaking the impact assessment, and a definition of how impact significance is predicted.
- **Baseline Conditions**: including a description of the existing characteristics of the site and its surroundings as relevant to the issue being considered, an analysis of any relevant designations, and a description of the baseline conditions as established above.
- **Potential Impacts**: identification and description of potential significant impacts (both adverse and beneficial) that could arise from the implementation of the proposal, in the absence of proposed mitigation.
- **Proposed Mitigation and Enhancement**: a description of any mitigation which has been designed into the proposal ('inherent mitigation') in order to reduce the potential for adverse impacts to occur, along with any additional mitigation which is proposed in order to ameliorate any significant adverse impacts identified above.
- **Residual Impacts**: an assessment of any significant impacts which are likely to remain after the implementation of any mitigation measures.
- **Conclusions**: drawing out the salient issues emerging from the chapter.

2.42 Notwithstanding the different methods used for assessing each environmental issue, in order to ensure consistency of methodology and presentation within the ES, each impact has been assigned one of the following levels of significance:

- Beneficial – positive impacts;
- Adverse – negative impacts;
- Short / medium / long-term – duration of the impact;
- Permanent – impact cannot be reversed;

- Temporary – impact can be reversed;
- Direct – effects that are a direct result of the proposed development; and
- Indirect – effects that are secondary to direct effects.

Criteria to Assess Environmental Impacts

2.43 It should be noted that for the assessment of impacts of impacts the following methodology has been adopted. The significance of the impacts are set out below:

- **Major**: Ranging from a very low impact on a feature / receptor of value in the international context to a very high impact on a feature / receptor of value in the regional context. All impacts on international sites being treated as major;
- **Moderate**: Ranging from a very low impact on a feature / receptor of value in the national context to a very high impact on a feature / receptor of a low value. Where an impact is minor / moderate, significance can be determined depending on circumstance;
- **Minor**: Ranging from a very low impact on a feature / receptor of value in the regional context to a high impact on a site / feature of low local value;
- **Negligible**: Ranging from a very low impact on a feature / receptor of high local value to a medium impact on a site / feature of low local value;
- **Cumulative Impacts**: In undertaking the EIA, consideration must be given to the cumulative impact that the proposal would have along with any other development proposal. All built operational development is assessed as part of the baseline situation therefore it is appropriate to consider committed schemes (with planning permission) within the area that may have a cumulative impact with the development proposal.

Mitigation

2.44 Mitigation is the stage of the EIA process when measures are identified to avoid, reduce or remedy impacts. This ES has considered both proposed (for example through design) and additional (by means of planning condition or obligation) mitigation measures.

2.45 The individual topic chapters describe and assess these strands of mitigation.

Cumulative Impacts

2.46 The EIA Regulations require an ES to include an assessment of cumulative effects with other development. This ES considers both the combined effects of each of the topics considered in the ES and the interaction of the proposed development with other schemes in the locality.

Difficulties Encountered

2.47 Part 1, Schedule 4 of the EIA Regulations requires the ES to include an indication of any difficulties encountered by the applicant or appellant in compiling the required information.

2.48 No significant difficulties have been encountered in conducting the EIA. Where uncertainty of impacts has been encountered or where there are limitations in terms of information availability, this is stated within the individual topic chapters. During the preparation of the ES, the applicants maintained a dialogue with the LPA and relevant consultees. This has enabled appropriate mitigation measures to be agreed and then considered in this ES.

2.49 The way in which the impacts for each topic area have been assessed, and the significance ascribed, is outlined in the methodology section for each of the separate chapters.

The Consultancy Team

2.50 The EIA has been undertaken by the following team of consultants, as engaged by PMG Development Ltd. The process has been overseen and co-ordinated by Geraint John Planning in conjunction with Phillipa Cole (Planning Consultant) who have been responsible for the overall preparation of the Environmental Statement. The scheme has been designed by Powell Dobson Architects. A number of Consultancies have been involved with the preparation of the ES:

- Geraint John Planning: overall co-ordination of the ES; introductory chapters (chapters 1-7) and Conclusion (chapters 17);
- Corun: Transportation (chapter 8);
- The Environmental Dimension Partnership: Ecology (chapter 9)
- WYG: Landscape and Visual Impact (chapter 10);
- Integral Geotechnique: Ground Conditions (chapter 11);
- Shear Design: Drainage (chapter 12);
- Red River Archaeology: Heritage (chapter 13);
- Hunter Acoustics – Noise (chapter 14);
- Land Research Associates - Agricultural Land and Soil Resource (chapter 15);
- All Consultants: Cumulative Impact (chapter 16);

Methodology for Undertaking the EIA

2.51 Paragraph 17 (4) of the EIA Regulations states the following:

"(4) An environmental statement must—

(a) be prepared by persons who in the opinion of the relevant planning authority or the Welsh Ministers, as appropriate, have sufficient expertise to ensure the completeness and quality of the statement;

(b) contain a statement by or on behalf of the applicant or appellant describing the expertise of the person who prepared the environmental statement;"

Competent Persons

2.52 The Environmental Statement has been prepared by Geraint John, who holds the position of Owner and Director of Geraint John Planning. He has over 20 years town planning experience, having held the position of Director for the last 15 years in various organisations. He has a degree in City and Regional Planning from Cardiff University and is an accredited member of the Royal Town Planning Institute.

2.53 Other Geraint John Planning Ltd staff who have assisted in the preparation of this Environmental Statement are:

- Zoe John – Principal Planner;
- Katherine Dowdall – Senior Planner; and
- Nicholas Whittington – Planner.

2.54 GJP have been responsible for the formulation of a number of Environmental Statements, including the following examples:

- Land to the West of Llangyfelach Road - Outline planning application for a residential led mixed use development of up to 1950 no. dwellings, primary school, community facilities and public open space;
- Mumbles Pier – Outline application for comprehensive redevelopment comprising C1 hotel / visitor accommodation; C3 residential; D2 entertainment and commercial leisure facilities; A1 retail; A3 food and drink floor space; B1 office and alteration and refurbishment works to existing pavilion structure;

2.55 Other examples are available on request.

2.56 In addition, a number of technical specialists have been appointed in relation to the preparation of Chapters 7 to 15. The experience and qualifications of these technical specialists is outlined below:

Chapter 8 – Transportation

2.57 Joseph Cassinelli at Corun has a BA (Hons) Geography and MSc Transport and Planning and is a Chartered Member of the Institute of Logistics and Transport. He has over 16 years' experience in the Transport Planning industry which includes assessing and mitigating the impacts of development proposals.

Chapter 9 – Ecology

2.58 Emily Williams, a competent Principal Ecologist from EDP, is a full member of the Chartered Institute of Ecology and Environmental Management (CIEEM). Emily has over 11 years-experience as an ecologist, 9 of which have been as a consultant within the private sector. Emily possesses extensive survey experience within a wide range of habitats across both terrestrial and freshwater environments, and has experience in undertaking surveys for a range of protected species to inform planning applications for development (including EIA), land management/remediation schemes and habitat creation, restoration and enhancement in both England and Wales. This is in addition to the design and implementation of mitigation strategies for ecological receptors to be delivered within and alongside development proposals.

Chapter 10 – Landscape and Visual Impact

2.59 This chapter has been prepared by Marcus Pinker who has seven years' experience in preparing landscape and visual assessments has a BSc (Hons) in Mapping Science, an MA in Landscape Architecture with distinction, and he is a Chartered Landscape Architect. Professional oversight has been provided by Lee Morris, Direction and national lead for landscape architecture at WYG. Lee has 23 years' experience in preparing landscape and visual impact assessments for development projects throughout the UK. He has led the preparation of LVIA for residential projects from inception, through the EIA process, at planning appeal and hearings, and through to implementation on site. Lee is a Chartered Landscape Architect (CMLI) and Practitioner of the Institute of Environmental Management and Assessment (PIEMA).

Chapter 11 – Ground Conditions

2.60 Intégral Géotechnique are an independent firm of geotechnical and geoenvironmental engineers with over 30 years of experience of a number of brownfield and greenfield developments for a mixture of residential and commercial end uses. Intégral Géotechnique

has experience in assessment of contaminated land, detailed human health and controlled waters risk assessment, design and validation of remedial mitigation measures, and brownfield land redevelopment.

Chapter 12 – Drainage

2.61 Simon Mason (I.Eng, A.M.I Struct.E), of Shear Design wrote the Drainage Chapter of the ES and is also having key input for the Sustainable Drainage Approval Body Application for this proposal. Simon has extensive experience in infrastructure design for highways and drainage with an emphasis on sustainable urban drainage solutions. He has been involved in a number of high-profile projects including the Millennium Stadium, Cardiff and the development of the Ashlands, Portishead Marina and other phases of the St Ederyn's Village, Cardiff.

Chapter 13 – Heritage

2.62 The Heritage Chapter was written on behalf of Red River Archaeology by Rachel Morgan BSc, PG Cert, MA, ACIfA, a member of the Chartered Institute for Archaeologists and the Institute for Historic Building Conservation. The work was undertaken to a Written Scheme of Investigation approved by the Glamorgan Gwent Archaeological Trust as advisors to Cardiff Council Planning Authority and conforms to the Standards and Guidance set out by the Chartered Institute for Archaeologists

Chapter 14 – Noise

2.63 David Hunter holds a Master of Science (MSc) Degree in Sound and Vibration Studies from Southampton University, as well as a Bachelor of Science (BSc) degree in Mechanical Engineering from Nottingham University.

2.64 David has worked in the acoustic consultancy field for 30 years, providing advice on noise and vibration issues in the built environment for commercial and industrial clients across the UK. He is a corporate member of the Institute of Acoustics (MIOA), and is Chairman of the Welsh Branch of the Institute of Acoustics (a post he has held for the past 3 years).

Chapter 15 – Agricultural Land and Soil Resource

2.65 Laura Thomas holds a Masters degree in Soils and Sustainability and has been working for LRA for five years. During this time she has gained extensive experience in assessing the environmental impact of development and infrastructure projects on soil functions, best and most versatile agricultural land and agricultural businesses. All work produced is cross-checked before submission to clients by Dr Michael Palmer (Professional Member of the British Society of Soil Science, over 15 years consultancy experience).

Summary

2.66 The above paragraphs have outlined the relevant experience and professional qualifications of those involved in the preparation of the environmental statement to support the outline planning application. As such, it is concluded that the Environmental Statement has been prepared by persons who have sufficient expertise to ensure the completeness and quality of the statement and the requirements of Paragraph 17 (4) of the EIA regulations have been met.

Associated Reports

2.67 A number of documents, drawings and plans have been prepared to accompany the planning application and inform the EIA. Key elements of this material are incorporated within the Appendices of this ES and reference is made within the relevant ES chapter where applicable.

Access to Information

2.68 The full range of documents submitted in support of the application, including the Environmental Statement can be inspected at the offices of Cardiff City Council, address:

Cardiff City Council
County Hall
Atlantic Wharf
Butetown
CF10 4UW

2.69 Printed copies or electronic CD copies of the ES and Technical Appendices can be purchased from the Application agent:

Geraint John Planning
Office 16, House 1, 2nd floor
The Maltings
East Tyndall Street
Cardiff
CF24 5EA
02920 105360 / geraint@gjplanning.co.uk

2.70 The cost of a printed copy will be provided upon request. Electronic copies on CD of the full Environmental Statement and the Non-Technical Summary can be provided at a cost of £30 per copy including postage. Printed copies of the Non-Technical Summary will be provided free of charge upon request.

CHAPTER 2
Site and Surroundings

Introduction

2.1 This ES chapter provides a description of the site in terms of its extent, location, current land use, and the surrounding area and land use.

Site Description

Location

2.2 The site is located within Old St Mellons, Cardiff, to the south of the M4 Motorway (Junction 30) and to the east of Pontprennau Link Road (A4232). A location plan is provided in Appendix 1.1.

2.3 The site is located approximately 5.0 miles to the north west of Cardiff City Centre.

Size & Extent

2.4 The site area extends to an area approximately 4.69 hectares (11.6 acres). The boundary of the development site is edged red on the location plan attached within **Figure 1.1**.

2.5 The site is bound to the north by a private access lane off Bridge Road which links to an estate of residential dwellings on the north-eastern corner of the Application Site. St Julian's House (also of residential use) bounds the site on the north-western corner. The southern boundary of the site comprises a large new community development known as St Ederyn's Village, consisting of multiple recently constructed dwellings as part of the approval of Land east of Church Road and north and south of Bridge Road (Ref. 13/00578/DCO). Bridge Road aligns the western boundary of the site, which runs north-west to south-east, bisecting the aforementioned development and the scheme proposed. To the east lies some low-grade agricultural land, also forming part of Cardiff LDP Strategic Site G.

2.6 The curtilage of the site consists of various planting and hedgerows which linkto adjacent highways and neighbouring parcels of land. The site measures approximately 0.26km at its widest point and 0.2 km in height.

Current Use

2.7 At present the application site comprises agricultural land surrounded by hedgerow which most recently gained consent for the construction and use of polytunnels for agricultural purposes (please refer to Table 2.1 below). Based on aerial photographs, it does not appear that the polytunnels are currently on site.

Surrounding Area

2.8 The site benefits from several local amenities and facilities in close proximity, namely schools and colleges such as Pontprennau Primary School, Glan-Yr-Afon Primary School, St Cadoc's RC Primary School and St Jon's College. Furthermore, a reserved matters application (ref.19/03097/MJR) which includes the construction of a new school one the southern edge of the development to the south of this application site is currently with Cardiff Council for their determination.

2.9 Other facilities and amenities located around, and accessible to and from, the site area include:

- Cardiff Gate Retail Park (including ASDA Pentwyn Superstore & Pharmacy) (0.8km);
- Cardiff Gate Business Park (0.9km);
- Pontprenanu Primary School (1.3km);
- Pontprennau Pharmacy (1.3km); and
- St Ederyn's Church (1km).

2.10 It should also be noted that the site will be serviced by the St Ederyn's Village development which, when completed, will provide (as outlined by the Masterplan and Design and Access Statement of Phase 1: ref.14/02556/MJR):

- A village centre comprising retail and community uses;
- A new primary school;
- A village green including a children's play area;
- Various sites of public open space and green space, namely a riverside park straddling the eastern boundary of the village;
- Allotments on the southern edge of the village.

2.11 The site benefits from good access to several bus stops. The X59 Service runs from St Ederyn's Village to Cardiff City Centre via Cardiff East Park & Ride. This route incorporates numerous local facilities. Scope for an extension to the bus-based rapid transit corridor is laid out as part of Strategic Site G and this route runs through the application site. The site is particularly well connected at all significant access points to public transport. A core cycle route is also proposed along Bridge Road which would serve end-occupiers of this development.

2.12 Further discussion of the sustainability credentials of the site and access to public transport is provided in Chapter 7 of this Statement.

2.13 Surrounding uses beyond the immediate boundaries are primarily residential. In any case, the northern boundary Land adj. St Julian's House forms Phase 6 of the St Ederyns Village (19/00235/MJR), albeit construction has not commenced here.

Planning History

2.14 A planning history search has been undertaken via the Council's on-line planning service and is shown below on Table 2.1. In summary, there is only one previous planning application for the site that is of relevance. The details of this are provided in the table below.

Table 2.1 Relevant Planning History - Land adj. St Julians House, Bridge Road

Site	Reference	Description	Determination Date and Decision
St Julians House, Bridge Road	13/00328/DCO	Erection of Polytunnels	Granted 09/05/2013

2.15 However, there are several other relevant planning applications located in the surrounding area which have also been detailed in Table 2.2. This online search has identified that surrounding sites have been subject to various outline and reserved matters planning applications which are generating a comprehensive new settlement which are due to encompass both this application site and the wider area defined as Cardiff Council LDP Site 'G'.

Table 2.2 Relevant Planning History - Strategic Site G: Land East of Pontprennau Link Road

Reference	Description	Determination Date and Decision
Highfields		
10/01681/DCO	Outline consent for construction of up to 150 dwellings, the laying out of open space, new means of vehicular access and associated infrastructure	Permission Refused 16/09/2011 Appeal allowed 29/04/2013
16/01325/MJR	Reserved matters pursuant to 10/01681/DCO	Permission Granted 09/12/2016
18/00397/MJR	Full consent for 6 dwellings	Permission Granted 14/09/2018
St Ederyns Village		
13/00578/DCO	New community comprising 1020 new homes, village centre (comprising retail, employment and community uses), Play areas and allotments; 2 form entry primary school, Riverside Park including extension and improvements to the Rhymney Trail. All with associated landscaping, land re-profiling, access (vehicular, cycle and pedestrian) and highway works.	Permission Granted 01/08/2014
14/02556/MJR	Phase 1 reserved matters for 452 dwellings, village centre (comprising retail and commercial uses), play area, community orchard, phase 1 of Riverside Park and public open space. All with associated landscaping, land re-profiling, access and highway works	Permission Granted 15/05/2015
17/00488/MJR	Phase 2 reserved matters comprising 130 dwellings with associated landscaping, land reprofiling, access and highway works	Permission Granted 09/06/2017
19/01733/MJR	Partial Phase 2 comprising of 57 dwellings with associated landscaping, land reprofiling, access and highway works (A section of 17/00488 has been superseded by this approval)	Permission Granted 01/08/2019
17/01787/MJR	Phase 3 Reserved matters for residential development of 244 dwellings with associated land re profiling, access and highway works. (A section of 14/02556/MJR has been superseded by this approval)	Permission Granted 29/12/2017
19/03097/MJR	Reserved matters for primary school, one form and nursery provision, playing fields and multi-use games area and community facility with associated landscaping, land re-profiling, access and highway works.	Registered

19/03238/MJR	Phase 5 Reserved matters for development of 127 dwellings with associated re- profiling, access and highway works.	Permission Granted 21/05/2020
19/00235/MJR	Phase 6 Reserved Matters for residential development of 145 dwellings with associated land re profiling, access and highway works.	Permission Granted 19/09/2019
Bridgegate Investments Ltd		
18/01654/MNR	Construction of 4 x 4-bedroom detached dwelling houses with integral double garages and private amenity space.	Permission Granted 20/02/2020

2.16 Full consideration has been given to the developments outlined within **Table 2.2** within the planning application. The assessment of the cumulative impact of the development is assessed in further detail for the purposes of the EIA in chapter 16.

CHAPTER 3
Description of the Scheme

Introduction

3.1 This chapter of the ES describes the proposed development, including the quantum and distribution of the development proposed (outlining parameters used in the assessment process); the nature of the proposals themselves; and the nature of the planning application.

3.2 References are made within this chapter to the application plans, and to the other documents that accompany the planning application.

The Planning Application

3.3 The application seeks outline permission with all matters reserved, other than access relating to the development of a parcel of the Strategic Site G 'Land East of Pontprennau Link Road' as identified in the Cardiff LDP.

3.4 The description of development applied for as part of this application is therefore as follows:

'Outline Planning Application (With All Matters Reserved Apart From Access) for up to 160 units with associated infrastructure, landscaping and access. All matters except for access are reserved for future consideration'.

3.5 The development incorporates the following elements:

- Circa 160 new homes
- Pedestrian and cycle links from Bridge Road, the existing development to the north and to the bus stop to the north east;
- Site access from new proposed road to the east and linking to new development to the south;
- The provision of green infrastructure including an element of open space.

Assessment Parameters

3.6 Whilst a Concept Masterplan, attached in **Figure 3.1**, has been developed for the outline planning application, the EIA where appropriate, has assessed a series of parameters. Assessment of parameters enables a reasonable 'worst case scenario' to be evaluated in each discipline, rather than purely providing illustrative material which shows only one solution.

3.7 At this stage the Concept Masterplan is regarded as the most likely way in which the proposed development will proceed within the assessed parameters. The following description of the

composition of the whole scheme, and its component elements, provides the 'parameters' of the proposed development upon which the assessment has been carried out.

3.8 The Parameters Plans included within the Design and Access Statement (Powell Dobson) provides details of these parameters, whilst the descriptions below provide additional details where appropriate.

Key Elements of the Scheme

3.9 This section outlines the various options which have been considered during the evolution of the proposals for the site. The sequence of alternatives relates to the broad thought-process which has been followed to date.

3.10 In addition to the parameters information outlined above, the following application drawings are submitted in support of the application:

- Site Location Plan – Dwg Ref. 19123(05)100;
- Masterplan – Dwg Ref. 19123(05)101;
- Framework Plan – Dwg Ref. 19123(05)102;
- Land Use - Dwg Ref. 19123(05)103;
- Movement - Dwg Ref. 19123(05)104
- Green Infrastructure - Dwg Ref. 19123(05)105;
- Scale and Massing - Dwg Ref. 19123(05)106; and
- Character Areas - Dwg Ref. 19123(05)107.

3.11 The Design and Access Statement, submitted with the planning application, will contain illustrative material and drawings which will support the Masterplan and provide additional scope and detail to the proposed development.

Residential development

3.12 The proposed development consists of 160 dwellings. The dwellings would predominantly be between 2 and 4 bedrooms in size and would extend to 2 - 3 storey in height with focal buildings at key points within the site.

Highway / pedestrian access

3.13 The proposals include the provision of a spine road and green way connecting the site to the new road infrastructure to the east and south of the site.

3.14 Pedestrian and cycle access and connectivity through the site is of paramount importance in order to ensure sustainable transport modes are available and that the site connects seamlessly to the surrounding developments (built and under construction).

Green Infrastructure

3.15 The proposed development will provide a green spine corridor that will link existing and proposed hedgerows through the site and provide further trees and planting. Informal landscaping along with ecology areas are proposed along the eastern and south-western boundaries.

3.16 A clear conceptual approach for the potential development of this site has been developed.

3.17 The proposed design has sought to respond sensitively and appropriately to the site location, in terms of its scale and mass in conjunction with the adjacent development site which comprises the majority of the Strategic Site G allocation. The importance of the site, forming part of a Strategic Site within the Cardiff LDP, has demanded a quality of design, construction and materials to ensure that the development can fulfil its potential as a key housing site within Cardiff.

3.18 The layout of the site has been set in consideration of the constraints and opportunities available to the site, including environmental and visual sensitivities of the site. The proposals have also sought to ensure that sustainable and pedestrian friendly access routes and areas of active public realm are created through the provision of high quality green spaces.

3.19 The Constraints and Opportunities plan included within the Design and Access Statement has been developed into a Masterplan (**Figure 3.1**) which highlights the key existing issues that have been considered as well as the opportunities available on the site.

CHAPTER 4
Policy Context

Introduction

4.1 This chapter sets out an overview of the relevant planning policy framework for the site and surrounding area, having regard to the development proposed. It identifies the relevant planning policy context from the national to the local level, including National Planning Policy, Technical Advice Notes and the adopted Local Development Plan.

4.2 In order to avoid duplication, specific commentary / evaluation of planning policy is set out within the context section of each individual chapter where appropriate. Additionally, the Planning Statement which accompanies this ES also assesses the proposed development against the Planning Policy Framework in detail.

Planning Policy Context

4.3 The principal planning policy context for the scheme (from the national through to the local level) comprises the following documents:

National

- Wales Spatial Plan (2004 & 2008 update);
- Planning Policy Wales (Edition 10, December 2018);
- National Development Framework (due to be published in 2021);
- Technical Advice Note (TAN) 2: Planning and Affordable Housing (2006);
- Technical Advice Note (TAN) 5: Nature and Conservation Planning;
- Technical Advice Note (TAN) 11: Noise (1997);
- Technical Advice Note (TAN) 12: Design (2016);
- Technical Advice Note (TAN) 15: Development and Flood Risk (2004);
- Technical Advice Note (TAN) 16: Sport, Recreation and Open Space (2009); and
- Technical Advice Note (TAN) 18: Transport (2007).

Local

- Cardiff Local Development Plan 2006 – 2026 (January 2016);
- Residential Design Guide (June 2013);
- Green Infrastructure SPG (November 2017);
- Residential Design Guide (January 2017);
- Managing Transportation Impacts (Incorporating Parking Standards) (July 2018); and
- Planning Obligations (March 2009).

4.4 The relevance of each of the tiers of policy and specific guidance relative to the development is set out in brief in the remainder of this chapter.

4.5 The relevant National Planning Policy Guidance comprises Planning Policy Wales (PPW), which is supported by a range of Technical Advice Notes (TANs). These documents should be read in conjunction with the Wales Spatial Plan, which reflects the planning policies set out within PPW. The relevance of each of the tiers of policy and specific guidance relative to the development is set out in brief in the remainder of this chapter.

Planning Policy Wales (10th Edition, December 2018)

4.6 The tenth edition of PPW was published in December 2018 and sets out the land use policies of the Welsh Government (WG). The key objective of PPW is to ensure that the planning system contributes towards the delivery of sustainable development and should "improve the social, economic, environmental and cultural well-being of Wales, as required by the Planning (Wales) Act 2015, the Well-being of Future Generations (Wales) Act 2015" (PPW Para 1.2). The planning system is fundamental for achieving sustainable development and places alongside legislation which sets out a 'presumption in favour of sustainable development' in accordance with the development plan unless material considerations indicate otherwise.

4.7 Moreover, the Well-being of Future Generations Act places a duty on public bodies to carry out sustainable development and requires the delivery of 7 well-being goals which should be met in order to shape development in Wales (PPW Fig 2).

4.8 The document identifies a number of key planning principles (PPW Fig.3) which include:

- The enablement of development which contributes to long-term economic well-being, making the best use of existing infrastructure and services;
- Promoting resource-efficient development which is resilient to climate change and acts to decarbonise society;
- Facilitating accessible and healthy environments which are inclusive to all members of society for living, working, travel and leisure;
- Creating well-designed places and cohesive rural and urban communities, sustained through an appropriate balance of uses and densities and;
- Maximising environmental protection and limiting the environmental impact of development by respecting environmental limits and operating in an integrated way so that resources and/or assets are not irreversibly damaged or depleted.

4.9 A summary of the ways in which the proposals address issues such as these is provided within the chapters which address the specific issues listed where relevant. However, a detailed planning policy appraisal is included within other supporting documents and primarily within the Planning Statement which accompanies this ES.

4.10 One of the key aims of PPW is to promote sustainable placemaking outcomes through the planning process. PPW sets out a number of broad objectives in order to deliver the sustainable development agenda of WG. These are set out at Figure 4 (Page 20) of PPW and include the following:

- Creating and sustaining communities;
- Making the best use of resources;
- Maximising environmental protection and limiting environmental impact;
- Growing the Welsh economy in a sustainable manner; and
- Facilitating Accessible and Healthy Environments.

4.11 Furthermore, PPW seeks to promote placemaking through good design (Chapter 3). High quality design is defined by PPW as an integral element of creating sustainable places where people want to live, work and socialise. Good design goes beyond the aesthetic quality of

developments and encompasses positive social, economic, environmental and cultural aspects of a development (PPW Paragraph 3.3).

4.12 PPW Figure 7 sets out 5 key elements which underpin good design in the planning process:

- **Access and inclusivity** – Placing people at the heart of the design process by acknowledging that singular or one-dimensional design processes cannot accommodate all users. Design measures and features should act to enable easy access to services by walking, cycling and public transport;
- **Environmental Sustainability** – Developments should seek to maximise energy efficiency and the efficient use of other resources (including land). Planning outcomes should maximise sustainable movement, minimise the use of non-renewable resources and encourage decarbonisation;
- **Character** – The specific identity and character of an area should be central to the design and layout of a development. The decisions made which formulate the design of a project should have a clear rationale and be based on the nature site itself, a strong visions for the proposed development and performance requirements;
- **Community Safety** – Developments should account for crime prevention and take deliberate steps to produce safe environments that do not compromise on design quality, and;
- **Movement** – Good design should deliberately avoid the creation of developments which are reliant on private car-based journeys. Existing infrastructure should be utilised and maximised wherever possible and new infrastructure should be integrated within the development layout and beyond its boundaries.

4.13 The Welsh Government's objectives in relation to transport and housing are set out in Chapter 4 of PPW which encompasses Active and Social Places.

4.14 The objectives laid out in PPW Paragraph 4.1 include the enablement of more sustainable transport choices - particularly reducing the need to travel, especially by the private car, by locating development where there is good access to public transport, walking and cycling; locating development near other related uses to encourage multi-purpose trips and reduce the length of journeys; and improving accessibility by walking, cycling and public transport. Developments should facilitate shorter journeys within and beyond a development site to be easily made by walking or cycling.

4.15 Meanwhile, paragraph 4.2 of PPW sets out broad policies on housing. This confirms WG's vision for housing for all in Wales; providing the opportunity to live in a variety of housing types which cater for a range of identified housing needs and contribute to the development of sustainable and cohesive communities.

4.16 Paragraph 4.2.17 of PPW states that the use of underutilized land for housing developments can assist with regeneration and at the same time relieve pressure for development on greenfield sites.

National Development Framework (due to be published 2021)

4.17 The role of the NDF will be to identify where nationally significant developments should take place in Wales including key areas of growth. As outlined in PPW, the Framework will be used alongside Planning Policy Wales and Local and Regional Strategies Plans and Evidence (PPW Fig. 1).

4.18 Engagement and consultation of the NDF has already taken place with a range of Stakeholders. The Minister for Housing and Local Government published an update in July 2020 which set out that the consultation of the draft NDF is due to take place with the Senedd to scrutinise

proposed changes in September 2020. The publication of the NDF to follow early in 2021. An updated timetable for the delivery of the NDF is also due to be published.

4.19 Once adopted, this Framework should also be taken into account for any future development in Wales.

Technical Advice Note (TAN) 2: Planning and Affordable Housing (2006)

4.20 TAN 2 defines affordable housing and provides guidance to Local Authorities on how to determine affordability. The guidance also advises of the Local Authority's responsibility to monitor housing provision levels and to ensure sustainable communities with a range of housing type provision, including for those on limited incomes.

Technical Advice Note (TAN) 5: Nature Conservation and Planning (2009)

4.21 TAN 5 outlines the development control issues for Special Protection Areas (SPAs), Special Areas of Conservation (SACs), and Sites of Special Scientific Interest (SSSIs). This document provides background information and guidance on nature conservation outside statutorily designated sites and protection of species.

Technical Advice Note (TAN) 11: Noise (1997)

4.22 TAN 11 advises that development should not cause an unacceptable degree of (increase in) disturbance.

Technical Advice Note (TAN) 12: Design (2016)

4.23 TAN 12 sets out detailed guidance as to how good quality design can be facilitated in new development. The objectives of good design will need to be reflected within the development scheme.

4.24 The TAN advises that a holistic approach to design should be followed, and that all those involved in the design process should focus from the outset on meeting the objectives of good design rather than a total reliance on prescriptive standards. The design response will need to ensure that these objectives are achieved, whilst also responding to local context.

Technical Advice Note (TAN) 15: Development and Flood Risk (2004)

4.25 TAN 15 provides advice on matters including the use of development advice maps to determine flood risk issues, how to assess the flooding consequences of proposed development and action that can be taken through development plans and development control to mitigate flood risk when planning for new development.

Technical Advice Note (TAN) 16: Sport, Recreation and Open Space

4.26 TAN 16 provides guidance relating to the required levels of open space provision, including provision of play facilities for children and the long term upkeep and management of such facilities and the relationship between such facilities and neighbouring residential properties.

Technical Advice Note (TAN) 18: Transport (2007)

4.27 TAN 18 identifies that the integration of land use planning and development of transport infrastructure has a key role to play in addressing the environmental aspects of sustainable development, and in particular climate change. Integration can help achieve sustainable development policy objectives by:

- Ensuring new development is located where there is, or will be, good access by public transport, walking and cycling thereby minimising the need for travel and fostering social inclusion;
- Managing parking provision;
- Ensuring that new development and major alterations to existing developments include appropriate provision for pedestrians, cycling, public transport and traffic management and parking / servicing;
- Encourage the location of development near other related uses to encourage multipurpose trips;
- Promoting cycling and walking;
- Supporting the provision of high quality, inclusive public transport; and
- Encouraging good quality design of streets that provide a safe public realm and a distinct sense of place.

Cardiff City Council Local Development Plan

4.28 CCC adopted the Local Development Plan (LDP) in January 2016. The LDP outlines the broad approach the Council will take to ensure sustainable development between 2006 and 2026.

4.29 The LDP states that there is a need to provide in the region of 41,415 new dwellings and over 40,000 new jobs over the plan period 2006-26. These will primarily be delivered through a 'strategic site' approach - whereby several locations (such as the site subject of these representations) have been defined for strategic scale development (intended to accommodate significant numbers of new housing supported by complementary services and facilities).

4.30 In regards to the supply of housing land across the Cardiff City Council's Authoritative Area over the plan period, it is noted that the Plan will distribute approximately 1,300 new dwellings within Strategic Site G, within which this site is located. The distribution of this growth, primarily delivered through Strategic Sites, has been underpinned by a series of background assessments, topic papers and other supporting evidence.

4.31 Accordingly, in light of assessment work and other supporting documents underpinning the LDP, the document identifies Land East of Pontprennau Link Road (which encapsulates this site) as a Strategic Site - Strategic Site G. The LDP identifies that this strategic site is capable of delivering a large amount of new housing accompanied by supporting services and facilities. As a result, the broad principle of development in this location has been established on the basis of the initial background assessment work and supporting evidence work carried out in the formulation of CCC's 2006-2026 LDP. Further comprehensive technical work which forms this ES acts to further justify the basis upon which this site is proposed to be developed.

4.32 The broad principles of development within the Strategic Site are set out in the LDP, as follows:

'Land is allocated East of Pontprennau Link Road, as defined on the Proposals Map, for a housing-based scheme of a minimum of 1,300 homes with associated community uses together with essential, enabling and necessary supporting infrastructure which will be delivered in a phased manner with specific details formally tied into planning consents including:

Essential/ Enabling Infrastructure

- *Transport & Highways:*
    - *Provision of new bus-based Rapid Transit Corridors through the site including links to the Local Centre and provision of Bus Gates at St Mellons Road at the north western edge of the site and Bridge Road to the south east of the site;*

- *Off-site infrastructure including bus priority measures to develop bus-based Rapid Transit Corridors integrating with the site, the Eastern Bus Corridors and other routes within the North Eastern/Eastern Rapid Transit Corridor including services linked to Strategic Site F, facilitating transfer/ improving interchange facilities to Rhymney Line rail services at Llanishen Station and Thornhill Station, and, employment facilities at St Mellons Business Park and Strategic Site H;*

- *Off-site enhancements including bus priority measures to the Eastern Bus Corridor;*

  - *Extend bus networks and increase the frequency and reliability of services to serve the site with public transport options for a wide range of journeys including a combination of limited stop and local bus services taking account of links with Strategic Site F;*
  - *Provide a bus-only route along Bridge Road*

- *Walking and cycling:*

  - *On and off-site measures to provide a network of high quality, safe, attractive and convenient routes within the site and linking to key local services, facilities and destinations including employment in Pontprennau, Pentwyn and Cardiff Gate Business Park;*
  - *Improve walking/cycling access at junction of Church Road/ A4232/Heol Pontprennau;*
  - *Provide a safe, attractive and convenient link from the site to the Rhymney Trail;*
  - *Enhance subway under A48, south of St Edeyrn's Church;*
  - *Provide cycle/pedestrian link between the subway under the A48 and Mill Lane, Llanrumney;*
  - *Upgrade Rhymney Trail to provide shared pedestrian/cycle route between subway under A48, south of St Edeyrn's Church and the subway west of Pentwyn interchange*

Necessary Infrastructure

- *1 centrally located Local Centre linked to rapid transit infrastructure and school facilities including Primary Care facility (Branch Surgery linked to Strategic Site F), multifunctional community facility, and financial contribution to upgrading of Pentwyn and Pontprennau Leisure Centres;*
- *Education-1 new Primary School located in or adjacent to the local Centre and financial contribution to provision of Secondary School at Strategic Site F;*
- *Minimum of 7.9ha Open Space including 3.9ha of formal recreation, 2 playgrounds, 1 teen facility, and 1x 26 plot allotment site.*

Development shall be undertaken in a comprehensive manner and accord with the following key masterplanning requirements (as depicted, where appropriate, on the Schematic Framework):

- *Provide a range of densities with high density (minimum of 45-50+ dwellings per hectare) alongside rapid transit corridor towards centre of site, medium density (35-45+ dwellings per hectare) towards the north and lower densities alongside the riverside park;*
- *Initial phases in the south, middle phases towards the centre and later phases to the north;*

- *Local Centre to accommodate a range of services including convenience goods floorspace and other retail of a scale and nature which accords with Plan retail policies;*
- *Integrate cluster of low density buildings at St Julian's Manor/ House;*
- *Effectively respond to landscape and biodiversity assets by:*

    - *Linking retained habitats through the provision of a series of open space corridors providing ecological connectivity, sustainable access routes and opportunities for sustainable drainage including:*

        - *Creating a riverside park incorporating the Rhymney Trail and other Public Rights of Way on an extensive area of land to the east of the site with links running west into the site;*
        - *Retaining the green buffer along the A4232 (primarily as an ecological resource and landscape role);*
        - *Links from riverside park to countryside to north and Rhymney Valley to south west; Linking corridors where possible between the above to provide a good network.*

    - *Ensuring that there is no detriment to the maintenance of the favourable conservation status of Dormouse on the site including provision of suitable compensatory planting to supplement existing retained habitats including compensatory planting on the southern and eastern site boundaries;*
    - *Providing suitable buffers to retained habitats, particularly the hedgerows within the site;*

- *Effectively respond to heritage assets by:*

    - *Assessing and effectively addressing potential impacts on known assets including Listed Buildings within and near to the site;*
    - *Preserving the village character around Llanedeyrn village and effectively integrate existing buildings into layout including protecting view of St Edeyrn's Church from the A48;*
    - *Assessing and addressing potential impacts on the Listed Buildings of Unicorn Public House, Church of St Edeyrn, Bridge House Farm, St Julian's Manor House and associated curtilage structures;*

- *Protect water quality of River Rhymney and Nant Mwlan;*
- *Address issues with Japanese Knotweed along the River Rhymney;*
- *No development to take place in C2 flood zone forming part of River Rhymney valley.'*

4.33 An assessment of the policy is provided within the Planning Statement.

4.34 The LDP sets out a number of Key Policies which provide an overarching framework for the plan. The provisions of the policies that relate to the site are summarised in the Table 4.1 below:

Table 4.1: Key Policies Overview

Policy	Title	Summary
KP1	Level of Growth	Emphasises that the Plan's settlement boundaries are a key mechanism for helping to manage future growth by defining the area within which development would normally be permitted, subject to material planning considerations.
KP2	Strategic Sites	Defines a range of sites capable of delivering 500 homes or more in tandem with significant employment/mixed uses which constitute appropriate parcels of land in sustainable locations to satisfy an identified need.

Policy	Title	Summary
KP2 (G)	East of Pontprennau Link Road	Defines a site allocation for a housing-led development of minimum 1300 homes and associated community uses with essential enabling services/supporting infrastructure.
KP4	Masterplanning Approach	Outlines general appropriate master planning principles to create holistic, comprehensive and acceptable proposals on development sites.
KP5	Good Quality and Sustainable Design	Requires all development to be of high-quality, sustainable design which sustains or positively contributes to the creation of sustainable communities, places and spaces.
KP6	New Infrastructure	New development will make appropriate provision for, or contribute towards, all essential and enabling infrastructure required as a result of the development in accordance with PPG. This infrastructure shall be delivered in a timely manner to meet the needs of existing and planned communities.
KP7	Planning Obligations	Lays out the framework through which a number of planning obligations and charges may be sought to mitigate the direct impacts of a development.
KP8	Sustainable Transport	Ensures that new development in Cardiff will positively enable sustainable transport and reduce a reliance upon journeys by private car.
KP13	Responding to evidenced social needs	Requires new development to align with CCC's aims of creating sustainable neighbourhoods. Tackle derivation and improve overall quality of life through a range of measures.
KP14	Healthy living	Developments will be supported which provide for active travel, accessible and useable green spaces and allotments.
KP15	Climate Change	Development proposals should account for: the reduction of carbon emissions and should promote energy efficiency, reduce the risk of flooding and be adaptive.
KP16	Green Infrastructure	Proposed development should demonstrate how green infrastructure has been considered and integrated into the proposals.
H3	Affordable Housing	Sets out affordable housing requirements on residential sites.
EN3	Landscape Protection	Development will not be permitted where it would cause unacceptable harm to the character and quality of the landscape and setting of the city
EN7	Priority Habitats and Species	Development proposals that would have a significant adverse effect on protected habitats or species will only be permitted where they meet the tests in the policy.
EN8	Trees, Woodlands and Hedgerows	Development will not be permitted where it would cause unacceptable harm.
EN13	Air, Noise, Light Pollution and Land Contamination	Development will not be permitted where it causes or results in unacceptable harm to health, local amenity, the character or quality of the countryside, or interests or nature conservation, landscape or built heritage importance because of air, noise, light pollution or the presence of unacceptable levels of land contamination.
T1	Walking and Cycling	Developments should actively encourage walking and cycling to reduce a reliance on private car journeys.
T2	Strategic Rapid Transit and Bus Corridors	Provides a framework for delivering strong transit corridors to serve the main LDP Strategic Sites.
T5	Managing Transport Impacts	Safe provision for various forms of transport will be required in conjunction with new development.
T6	Impact on Transport Networks and Services	Development will not be permitted which would cause unacceptable harm to the safe and efficient operation of the highway, public transport and other movement networks including pedestrian and cycle routes, public rights of way and bridle routes.
C3	Community Safety/Creating Safe Environments	New development should act to create a safe and secure environment which minimises the opportunity for crime.
C5	Provision for Open Space, outdoor Recreation, Children's Play and Sport	An appropriate provision of public open space, outdoor recreation and play areas will be sought in conjunction with new residential development.

4.35 It is considered, as outlined in the LDP, that the site presents a development opportunity that can and does provide for the development proposed and is wholly in line with the policy provisions and aspirations of the Plan (as outlined above).

Conclusion

4.36 This chapter has provided a broad overview of the planning policy context for the application site and the proposals. National and regional planning policy supports the efficient use of land and development within sustainable locations.

4.37 The application site is therefore located within existing settlement limits, and falls within the boundaries of an allocated Strategic Site. The principle of development at the site is therefore established, and furthermore, is supported by the adopted LDP.

CHAPTER 5
Need and Alternatives

Introduction

5.1 The EIA Regulations state that if alternatives have been considered by a developer, then a description of these should be included in the ES. Regulation 2 indicates that an ES should include the information set out in Schedule 4, which in respect of alternatives considered, requires:

> *'...a description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects…'*

5.2 Only where alternative approaches to development have been considered does paragraph 2 of Schedule 4 of the EIA Regulations require the developer to outline the main alternatives and the reasons for the scheme choice within an ES.

5.3 Notwithstanding which, it is recognised that the nature of certain developments and their location may make the consideration of alternative sites a material consideration and as such the ES must record this consideration of alternative sites.

5.4 It should be noted that the emerging Local Development Plan for Cardiff City Council designates the site as a residential led strategic development site (Strategic Site G). Considerable site selection, evaluation, and assessment of other alternative locations and candidate sites has been undertaken as part of this process.

5.5 The outcome of this process is that the site has been identified for development alongside other considerable land release, and as a preferable and acceptable site for development. To an extent the exercise of appraising need and alternatives is addressed by this forward planning process.

5.6 Notwithstanding this, this is repeated in this ES, as is an account of the alternative configuration that the scheme proposals might take. The iterative design and masterplanning process embarked upon addresses this.

5.7 As such, and on this basis, this section outlines the alternatives considered in terms of the following scenarios:

1. No-development alternative (Do-nothing approach);
2. Alternative scale, nature and design options.

The 'Do Nothing' Approach

5.8 The 'do nothing' approach is an alternative to the proposed development scheme, whereby the site remains as existing (i.e. the proposals are not implemented).

5.9 The proposed site is (as outlined above) allocated for strategic development in the Cardiff LDP. As such, to 'do nothing' would likely undermine the Plan's strategy, as it would create an imbalance between the supply of houses and jobs. As such, non-development of the site would necessitate considerable land release elsewhere on environmentally more sensitive sites. If the baseline situation continued on the site, then the housing need in Cardiff would also continue and the opportunity to deliver new homes on the site would be lost.

5.10 Accordingly, this alternative is not considered desirable for a number of reasons:

- The site is allocated for development and proposed to be located within the settlement boundary for the purposes of the LDP;
- It would not meet the need for residential development in this location;
- It would limit the ability for Cardiff to meet their housing land supply. It would necessitate land release elsewhere; and
- It would not result in the delivery of potential socio-economic benefits of regeneration to existing and future populations on a local and regional scale (i.e. economic growth and employment opportunities).

5.11 Positive impacts of the 'no development' alternative are:

- No disruption to existing local residents from construction works; and
- No additional traffic generation (over and above the existing uses/activities).

5.12 It is considered that the negative outcomes of the 'no development' alternative outweigh the positive impacts which may arise if there is no development.

Alternative Nature, Scale and Design Options

5.13 This section outlines the various options which have been considered during the evolution of the proposals for the site. The sequence of alternatives relates to the broad thought-process which has been followed to date.

5.14 In terms of the LDP allocation, the total allocation for Strategic Site G is for circa. 1,300 new homes during the plan period, and supporting services and facilities. The proposed site forms the final portion of Strategic Site G, with the other parts of the allocation having now been built out. The southern boundary of the site comprises a large new community development known as St Ederyn's Village, which forms part of the approval at Land east of Church Road and north and south of Bridge Road (Ref. 13/00578/DCO), which includes 1,020 residential units.

5.15 The masterplanning (uses and distribution) of the site has been influenced by the adopted Cardiff LDP masterplanning principles, planning policy and concept plans. Policy KP4 'Masterplanning Approach' provides guidance on general masterplanning principles, strategic schematic frameworks and site specific frameworks. Moreover, Policy KP2 of the LDP provides site specific masterplanning guidelines for the Strategic Site G which the site falls within. This includes development density and the integration of the development with its surroundings.

5.16 Moreover, the proposed development has also been the subject of consultation and debate during the pre-application process. Full details of this are provided in Chapter 6 of the ES. As

such, early iterations of the masterplan for the development considered the nature, scale and design of the proposed development within the site boundaries are contained within **Appendix 5.1** which provide the progression of the Masterplan and how the submitted scheme has been developed.

5.17 The project team have liaised with Cardiff City Council, Community Councillors, statutory consultees, and have embarked upon the formal Pre-application Consultation process to obtain comments from local residents.

5.18 Where possible, guidance contained in the Council's LDP has influenced the proposed scale, nature and design of the project. The Council's early assessment, supplemented by the developers detailed assessment of the site and its context as part of this ES, have been key factors in the evolution of the masterplan.

5.19 Based on the Council's guidance and other factors, including more detailed site assessment work, the following design considerations have been taken in account in the evolution of the Masterplan:

- Continuity of pedestrian and cycle routes with those existing and proposed in surrounding development and features;
- Creation of focal points within the development;
- Design led by the tree assessment and the protection of all Grade B trees;
- The protection where possible of hedgerows and appropriate mitigation where this is not possible e.g. access;
- The development of character areas of differing scale and density;
- Introduction of trees along the main spine road;
- Access for all vehicles including for waste collection; and
- Avoiding the creation of cross-road junctions with development to the east.

5.20 Full detail on the evolution of the design of the scheme is provided within the Design and Access Statement (DAS) which has been submitted in support of the planning application.

Conclusion

5.21 This chapter has outlined that there is a demonstrable need for the redevelopment of the Land adjacent to St Julian's House site for housing.

5.22 Subject to the development proposals being assessed for its specific technical acceptability, it is evident that the negative outcomes of the 'no development' alternative outweigh the positive impacts which may arise if there is no development.

5.23 As discussed in further detail in the submitted DAS, the proposed development scheme has evolved over a period of time – resulting in a design solution which has been found to be acceptable in terms of its environmental impact and commercial viability and deliverability.

CHAPTER 6
Scoping and Consultation

Introduction

6.1 Consultation has taken place at various levels with Planning Officers' and the relevant departments of the LPA to influence the form and content of the proposals, to determine the scope of assessment required, and to provide greater detail on particular issues considered by the statement.

6.2 Accordingly, this chapter assesses the consultation that has been carried out and the responses that have been received, in particular from CCSC.

6.3 An account of the screening and scoping of the site and proposals for EIA is included within Chapter 1 and therefore it is not necessary to repeat this here. Instead, this chapter references the dialogue undertaken since the inception of this scheme in order to evaluate the site and the likely impacts of the proposals.

6.4 In addition to dialogue with Council Officers, considerable dialogue has also been undertaken with several statutory and other bodies. This statement has had regard for the opinions received and concentrates on the main issues to emerge from this dialogue.

Pre-application Dialogue

6.5 In order to gain feedback on the proposals, the project team has undertaken dialogue with Cardiff City Council. A pre-application submission was submitted on 6th May 2020 and registered on 11th May 2020 under ref. PA/20/00042/MFR. A pre-application meeting was held remotely on the 8th July 2020.

6.6 Consultation responses were received from the following consultees as part of the pre-application dialogue which helped to inform the final layout and scheme:

- Cardiff City Council Development Management and Planning;
- Cardiff City Council Placemaking & Design;
- Cardiff City Council Ecology & Trees;
- Cardiff City Council Highways; and
- Cardiff City Council Housing Development & Enabling (Affordable Housing/Mix).

6.7 Pre-application discussions relating to Urban Design/Layout, Sustainable Drainage Systems, Affordable Housing Mix and tenure, Highways, Ecology and Developer Contributions took place between May – August 2020. These discussions involved the adaptation of certain aspects of the development in line with advice, comments and concerns raised by each consultee involved in the pre-application process.

6.8 Further detail of these discussions and the dates involved can be found in the Planning Statement which supports this application.

Pre-application Consultation Requirement

6.9 Following the change in Welsh Legislation, from 1st August 2016 all applications categorised as 'major development' must undertake pre-application consultation. Given the scale and composition of the proposals, there is a requirement to undertake this process.

6.10 The consultation exercise must be for a minimum of 28-days. Once the consultation exercise is undertaken and completed (involving notifying interested parties, advertising the proposals, and making the documentation available for inspection etc), the responses must be documented in a pre-application consultation (PAC) report. The responses to this consultation process may lead to changes to the proposal – which need to be referenced within, and reported on, in the report.

6.11 Having undertaken the consultation, the following comments were received:

- [To be achieved upon completion of PAC process]

Conclusion

6.12 The consultation undertaken has informed the proposals and the scope of the EIA and helped produce an informed scheme.

6.13 As discussed in further detail in the DAS and Planning Statement, the proposed development scheme has evolved over a period time with substantial input from technical consultees and others. The scheme has therefore been developed over a period of time to enable a design which has been found to be acceptable in terms of its environment impact as well as the commercial viability and deliverability.

CHAPTER 7
Socio-Economic Impacts and Community Effect

Introduction

Preface

7.1 This chapter addresses the potential socio-economic impacts and community effect of the proposed development at Land adjacent to St Julian's House, Bridge Road, Old St Mellons, Cardiff (hereafter referred to as 'the site').

7.2 The purpose of the assessment to identify possible impacts of the proposals on the economy and the wider community. This chapter includes a summary of the relevant policy and background information relating to socio-economics as well as providing a baseline assessment for the site. An assessment of the site and the impacts is undertaken against the relevant objectives of the Cardiff LDP.

7.3 Although no consultation has been undertaken regarding the proposed study area for this chapter, given that the site falls within the same strategic development area, the information collated for this chapter is based on the study area included within the Environmental Statement for the adjacent site at Land East of Church Road and North and South of Bridge Road (LPA Ref. 13/00578/DCO). Therefore, an assessment and evaluation of the social and economic characterises of the electoral areas of Pontprennau and Old St Mellons (in which the site is located), along with Trowbridge and St Mellons and Llanrumney and Cyncoed.

7.4 The site, its surroundings, and the proposals are described in detail in Chapters 2 and 3 of this Statement. The impacts and effects are therefore assessed in relation to this information also contained within these chapters.

Legislative and Planning Policy Context

7.5 The following national planning policy is considered of relevance to the impacts relating to the proposed development.

National Planning Policy

7.6 Planning Policy Wales (PPW[1]) states that, in relation to the importance of assessing community effects, Para 3.22 states *"Planning authorities should develop and maintain places that support healthy, active lifestyles across all age and socio-economic groups, recognising that investment in walking and cycling infrastructure can be an effective preventative measure which reduces financial pressures on public services in the longer term…".*

Local Planning Policy - Cardiff Local Development Plan

7.7 The Cardiff Council Local Development Plan (LDP) was adopted on 28th January 2016. It is the most up to date Development Plan covering the authority's administrative area, and is used in the determination of planning applications.

[1] Welsh Assembly Government, Planning Policy Wales, 10th Edition, December 2018

7.8 The LDP sets out a range of policies and proposals relating to future development, and deals with the use and conservation of land and buildings within Cardiff up to 2026.

7.9 The LDP sets out a vision for the next 10 years at para. 3.2, that *"By 2020...Cardiff will be a world class European capital city with an exceptional quality of life and at the heart of a thriving city-region".* In order to achieve this vision for Cardiff, seven strategic outcomes are set out within the LDP which are as follows:

- *"People in Cardiff are healthy;*
- *People in Cardiff have a clean, attractive and sustainable environment;*
- *People in Cardiff are safe and feel safe;*
- *Cardiff has a thriving and prosperous economy;*
- *People in Cardiff achieve their full potential;*
- *Cardiff is a great place to live work and play; and*
- *Cardiff is a fair, just and inclusive society."*

7.10 The aim of the LDP objectives is to respond to the evidenced economic and social need in order to help deliver appropriate development and improving the long term economic, social and environmental wellbeing of Cardiff as a whole. The objectives are set out under four main headings:

1. *"To respond to evidenced economic needs and provide the necessary infrastructure to deliver development;*
2. *To respond to evidenced social needs;*
3. *To deliver economic and social needs in a co-ordinated way that respects and enhances Cardiff's environment; and*
4. *To create sustainable neighbourhoods that form part of a sustainable city."*

7.11 These objectives will be assessed in more detail below.

Local Housing Market Assessment (Update 2013)

7.12 The Local Housing Market Assessment (LHMA) is a tool used to examine the local housing market, in order to identifying both the level of housing need and the nature and location of housing demand, in line with the requirements set out in TAN 2 'Planning and Affordable Housing' (June 2006).

7.13 Given that the information contained within the Assessment contains the most recent figures, this will be reflected in the baseline information prepared below.

Baseline Description

Baseline Profile

7.14 The following baseline information has been collated in order to assess the highlight the profile of the socio-economic position of the study area:

- Population;
- Employment;
- Economic activity;
- Unemployment; and
- Welsh index of multiple deprivation.

7.15 All reference data relates to the 2011 census results, unless otherwise stated.

Population

7.16 In order to assess the baseline population, Pontprennau, Cyncoed, Llanrumney and Trowbridge electoral wards have been considered as part of the study area.

7.17 The total population for the study area is 48,122. This comprises 14% of the total population. 52% of the population is female, compared to 51% within Cardiff.

7.18 Table 7.1 demonstrates the age distribution for the population within the study area, illustrating that the average age of the population within Pontprennau and Trowbridge electoral wards is significantly younger than those of Cyncoed and Llanrumney. It is also relevant in terms of short to medium term housing supply that the percentage of residents aged 19 and under is greater in Pontprennau (26.7% of total), Trowbridge (31%.3%) and Llanrumney (27.3%) than Cardiff as a whole.

Table 7.1: Population Data of Study Area

Age Range	Pontprennau / Old St Mellons	Trowbridge	Cyncoed	Llanrumney	Cardiff
0 – 4	8.1	9.7	4.2	7.0	6.5
5 – 9	6.4	7.2	5.2	6.4	5.2
10 - 15	6.3	7.0	6.2	6.7	5.4
16 – 19	5.9	7.4	9.4	7.2	7.5
20 – 24	5.7	6.8	6.6	6.3	11.2
25 - 29	8.5	8.4	4.1	6.8	8.8
30 - 44	26.4	21.7	14.7	18.0	20.2
45 - 59	20.0	18.2	21.0	20.7	17.3
60 – 64	4.5	3.9	6.5	4.7	4.8
65 – 74	5.0	5.6	10.3	6.7	6.6
75 – 84	2.3	3.1	7.9	7.0	4.6
85 – 89	0.5	0.8	2.5	2.0	1.4
90 +	0.2	0.4	1.2	0.7	0.6
Mean age	34	32	44	38	37

7.19 The age profile shows that the study area has a higher percentage of children in these wards and therefore there is a higher percentage of families located in the study area than in Cardiff as a whole. The data also shows that there are generally less people of student age within the study area compared to Cardiff as a whole. This suggests that the population in the study area is stable and are more likely to remain in these wards.

Economic Activity

7.20 The 2011 census data shows that the employed economically-active population of Llanrumney, Trowbridge and Cyncoed is broadly in line with the Cardiff proportion of 56.8%. The percentage of economically active persons in employment within Pontprennau & Old St. Mellons is 73.4%. The Cardiff Local Housing Market Assessment (LHMA Update 2013) highlighted that a greater proportion of the population are working age than is found nationally due to a smaller than average proportion of people of pensionable age in Cardiff.

7.21 The proximity of residential areas to business and retail employment is likely to be a significant feature in this trend with Cardiff Gate Business and Retail Parks along with Pentwyn Road

Industrial and Retail areas falling within the study area. Moreover, the Spire Hospital located in Pentwyn also provides significant employment. This appears to demonstrate a possible link between the employment rate and the proximity of job opportunities in the service and retail sectors associated with developments nearby at Cardiff Gate Business and Retail Parks and Pentwyn Road Industrial and Retail area.

Unemployment

7.22 The Cardiff LHMA (Update 2013) highlighted that unemployment in Cardiff is 4.4%, higher than the national average but having decreased over the last 12 months. Within the study area, 4.7% of people are unemployed which is therefore higher than the city average.

7.23 There is a significant variance between the unemployment rates for the Llanrumney (6.4%) and Trowbridge (6.5%) wards and those in Cyncoed (2.6%) and Pontprennau & Old St. Mellons (3.4%). The census also identifies a major variation in youth (16-24 age group) unemployment in Llanrumney/Trowbridge (9.5%) compared to Pontprennau/Cyncoed (4.5%) and Cardiff (5.5%). Similar comparative proportions are evident with regards to the long-term unemployed/never worked: Llanrumney/Trowbridge (4.0%) compared to Pontprennau/Cyncoed (1.3%) and Cardiff (2.5%).

Welsh Index of Multiple Deprivation (WIMD)

7.24 The Welsh Index of Multiple Deprivation (WIMD) is the official measure of relative deprivation for small areas in Wales. It is a National Statistic produced by statisticians at the Welsh Government.

7.25 WIMD is constructed from a weighted sum of the deprivation score for each domain. The weights reflect the importance of the domain as an aspect of deprivation, and the quality of the indicators available for that domain. The most recent update to WIMD took place in 2019 and so those figures will be referenced. The domain and weights for 2019 data are as follows:

- Income – 22%
- Employment – 22%
- Health – 15%
- Education – 14%
- Access to services – 10%
- Housing – 7%
- Community safety – 5%
- Physical environment – 5%

7.26 The following data has been sourced from WIMD regarding these domains and is contained within the following tables and figures.

Table 7.2: Income and Employment

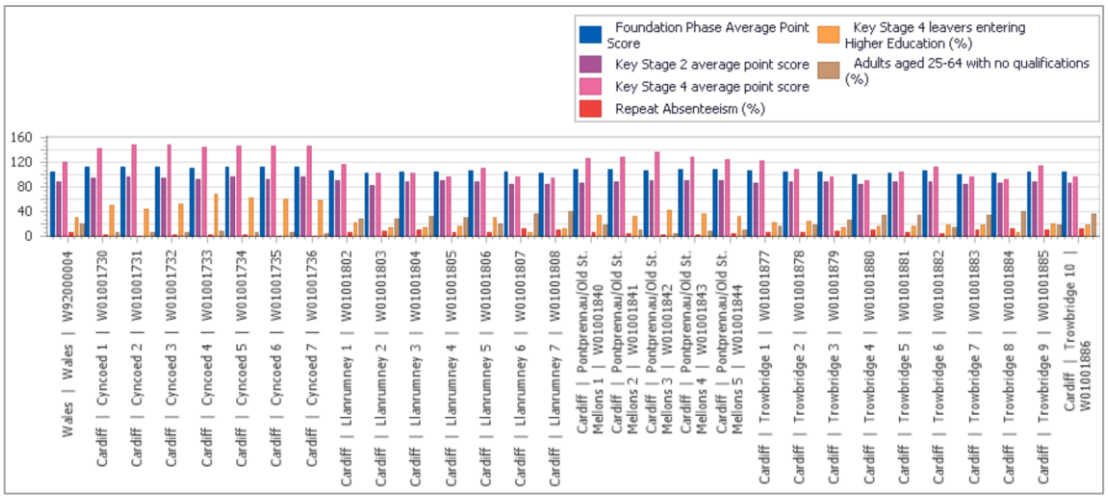
Area	People in income deprivation (%)	Working-age people in employment deprivation (%)
Cyncoed 1	4	2
Cyncoed 2	7	4
Cyncoed 3	5	4
Cyncoed 4	4	3
Cyncoed 5	4	3
Cyncoed 6	6	3
Cyncoed 7	4	3
Llanrumney 1	19	13

Llanrumney 2	25	15
Llanrumney 3	25	12
Llanrumney 4	24	12
Llanrumney 5	13	9
Llanrumney 6	39	18
Llanrumney 7	37	18
Pontprennau / OSM 1	13	9
Pontprennau / OSM 2	9	5
Pontprennau / OSM 3	7	3
Pontprennau / OSM 4	4	3
Pontprennau / OSM 5	10	5
Trowbridge 1	10	6
Trowbridge 2	17	9
Trowbridge 3	31	17
Trowbridge 4	40	19
Trowbridge 5	34	19
Trowbridge 6	12	6
Trowbridge 7	33	20
Trowbridge 8	49	23
Trowbridge 9	26	12
Trowbridge 10	34	20

7.27 In terms of the average figure for Wales, 16% of people have income deprivation. The average income figures show Trowbridge (28.6%) and Llanrumney (26%) have much higher averages compared to Ponptrennau / Old St Mellons (8.6%) and Cyncoed (4.9%) which have much lower averages than the Wales.

7.28 In relation to working age people in employment deprivation, the Wales average is 10%. The average income figures show Trowbridge (15%) and Llanrumney (13.9%) have higher averages compared to Ponptrennau / Old St Mellons (5%) and Cyncoed (3.1%) which have much lower averages than the Wales.

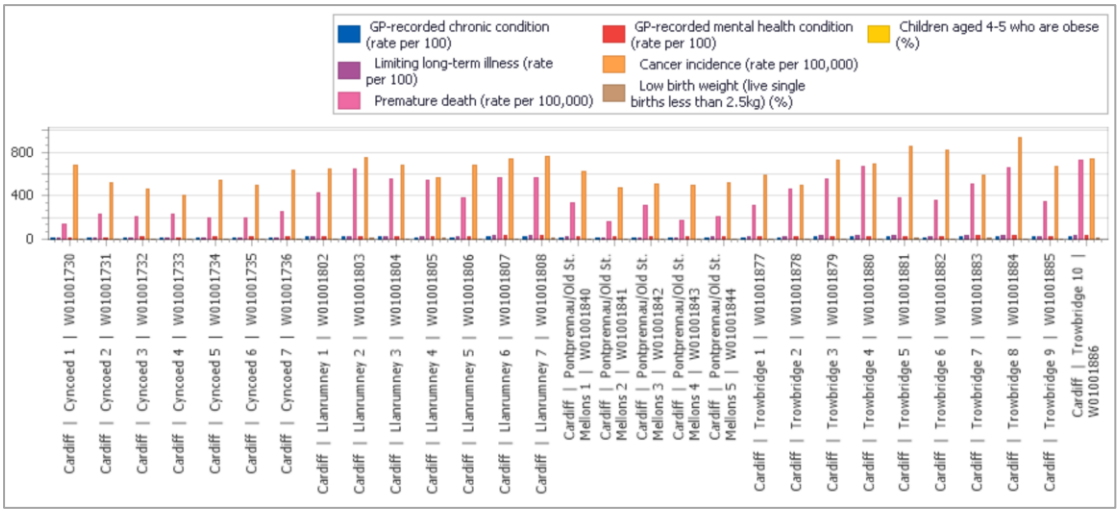
Figure 7.2: Education



Source: statswaless.gov.uk

7.29 Figure 7.2 shows education deprivation for Wales and the study area. The amount of adults aged 25-64 with no qualifications is generally lower in Pontprennau / Old St Mellons and Cyncoed than the Welsh average, however, generally higher in Trowbridge and Llanrumney. Likewise, the amount of key stage 4 leavers going onto higher education is higher than the Welsh average in Pontprennau / Old St Mellons and Cyncoed than Trowbridge and Llanrumney.

Figure 7.3: Health



Source: statswaless.gov.uk

7.30 In relation to health, again similar trends emerge from the data indicating that in general terms, Pontprennau / Old St Mellons and Cyncoed are better than the average figures for Wales whereas Trowbridge and Llanrumney are higher than average.

Interim Summary

7.31 The data collated from WIMD shows that Cardiff has always been associated with a good quality of life and therefore low levels of deprivation. The results from the WIMD show a significant range in overall deprivation for the study area with 2 of the areas being above average in all respects and with the other two areas being lower than average.

Impact Assessment

7.32 The following section considers the overall impact of the development on the economy and local community, assessing any possible adverse effects that could arise from the proposals.

7.33 The proposed development has the potential to provide a range of benefits to the local economy and social benefits to the community. These benefits include, but are not limited to:

- 160 new dwellings which will include a range of sizes) in order to meet the demand for housing (both within Cardiff and the local area) including a provision of affordable housing;
- Moreover, the proposed development will act as a 'completion' of the Strategic Site G and will therefore satisfy the LDP Policy KP2 (G);
- Connectivity is proposed through the site which will develop communities and sustainability;
- The creation of approx. 496 direct and indirect jobs through the construction of the site and future management including approx. 5 apprenticeships, graduates and trainees;
- Heads of terms to be agreed in relation to education and open space;
- £1.9 million in tax revenue from the site including over £180,000 in council tax;
- Further support to the economy through increased spending from new residents and workers.

7.34 In considering socio-economic outcomes as a direct result of the development proposed, the effects of the scheme have been weighed against the visions and objectives of the Cardiff City Council LDP 2006-2026.

7.35 The 4 objectives are laid out below:

Objective 1: To respond to evidenced economic needs and provide the necessary infrastructure to deliver development

KEY: Positive Impact: ✓ Negative Impact: × Neutral Impact: •

Aim	Impact	Comment
a. To effectively respond to Cardiff's role as capital city for Wales, seat of the National Government and centre of the city-region in terms of providing a range and choice of economic opportunities that will drive the prosperity of the region.	✓	The development proposed contributes to the appropriate supply of housing in the City – assisting with its expansion and prosperity.
b. To maximise the economic potential of the city centre of Cardiff as a major financial and service sector opportunity that builds upon its position next to a transport hub of national and regional significance and is readily accessible from all areas within the city and well connected to other UK cities.	•	The development proposed will not direct impacts upon the City Centre, however it will contribute an inward flow of City Centre users and stimulate economic activity.
c. To maintain and enhance the vitality, attractiveness and viability of the city centre as a major retail and cultural destination and as a place to work, visit and live.	•	The development proposed will not direct impacts upon the City Centre, however it will contribute an inward flow of City Centre users and stimulate economic activity.
d. To continue the successful regeneration of the Cardiff Bay area, maximising opportunities for quality commercial buildings and further development, particularly water and river frontage developments that can provide attractive and distinctive environments.	•	No direct impact.
e. To promote clusters of specialist sectors and research & development expertise including the following key sectors: • ICT; • Energy and environment; • Advanced materials and manufacturing; • Creative industries; • Life sciences; and • Financial and professional services.	•	No direct impact.
f. To ensure a range and choice of employment land and business premises at sustainable locations across the city is provided to assist economic competitiveness, encourage entrepreneurship, promote the growth of indigenous businesses of all types and size and attract inward investment.	•	No direct impact.
g. To assist the promotion of Cardiff as a major tourist destination including the provision of the development of a variety of high quality tourist facilities and visitor accommodation.	•	No direct impact.

h. To create a physical and economic environment that develops, attracts and retains skilled workers, businesses and entrepreneurs to Cardiff together with maximising links with Universities and supporting indigenous skills and enterprises.	✓	The development proposed comprises a high-quality living-environment that will both attract and retain skilled workers.
i. To quantify critical strategic infrastructure required to realise development aspirations and set out clear mechanisms for delivery including sustainable transport solutions for strategic sites.	✓	The development proposed has been deliberately sited and designed as to acknowledge key existing and proposed infrastructure strategies. The Masterplan and Chapter 8 of this ES (Transportation) detail the infrastructure requirements, access provisions, and other mechanisms to deliver a sustainable development in transport terms.
j. To establish Cardiff as a sustainable travel city by reducing the need to travel, increasing the use of sustainable travel modes and networks (particularly walking and cycling), decreasing private car use and improving the city's key transport hub based at the adjacent central bus and train stations.	✓	The development proposed is sustainable located, close to key local facilities and amenities. Further, the scheme has been designed to take advantage of existing and proposed sustainable transit opportunities. The Masterplan and Chapter 8 of this ES (Transportation) detail the infrastructure requirements, access provisions, and other mechanisms to deliver a sustainable development in transport terms.
k. To protect existing mineral resources and ensure an adequate supply of limestone aggregates in the north west of the city for the construction industry and to promote their efficient and appropriate usage, including the use of recycled aggregates where possible.	●	No impact.
l. To support sustainable collection and recycling methods for Municipal Waste by maintaining and improving an integrated network of facilities in Cardiff.	●	No direct impact.
m. To lead and participate in securing regional facilities for the sustainable treatment and disposal of Municipal Waste in accordance with the Regional Waste Plan and in a manner that follows the waste hierarchy which seeks to maximise the reduction of waste in the first place and thereafter reusing, recovering and recycling options before the disposal of waste material is considered.	●	No direct impact.
n. To facilitate an integrated network of commercial and industrial sustainable waste management facilities consistent with the needs of the South East Wales area and in a manner that follows the waste hierarchy which seeks to maximise the reduction of waste in the first place and thereafter reusing, recovering and recycling	●	No direct impact.

options before the disposal of waste material is considered.		

Objective 2: To respond to evidenced social needs:

Aim	Impact	Comment
a. To provide new homes required to support the economic progression of the city and to respond to population change, continued in-migration and evidenced demand for affordable and family housing so that social needs can be addressed.	✓	The development proposed contributes to the appropriate and varied supply of housing in the City – assisting with its expansion and prosperity.
b. To provide a range and choice of new homes of different tenure, type and location that meets specific needs such as the provision of affordable housing, family accommodation, housing for the elderly, the disabled and students and pitches for the gypsy and traveller community.	✓	The development will contribute to the provision of much-needed affordable housing in the City. It will however not provide pitches for the gypsy and travelling community or purpose built student accommodation.
c. To maximise the use of the existing building stock through refurbishment, retro-fitting and empty homes initiatives.	●	Not applicable.
d. To bring about changes to Cardiff's environment and neighbourhoods that help to tackle health inequalities, promote good health and enable healthier lifestyles to be led by the city's population in line with Cardiff's status as a World Health Organisation, 'Healthy City'.	✓	The masterplan and design of the development within the wider context of the St Ederyn's Village site – by way of open space and pedestrian and cycle connectivity which will have a direct positive impact on achieving this objective.
e. To bring about changes to Cardiff's environment that create a safer city and reduce the likelihood, fear and consequences of crime.	✓	Appropriate and reasonable measures will be taken on the site to ensure the realisation of this objective through / at the detailed design stage.
f. To create an environment that is made more accessible to all groups in society so that the employment opportunities, facilities and services of the city can be more readily used and enjoyed by all.	✓	The proposal is sustainably located, close to existing facilities and services and takes into account the Well-being of Future Generations Act.
g. To maximise the multi-functional role played by Cardiff's parks, open spaces and allotments together with improving their accessibility for the whole community.	✓	The site provides accessibility to open space within the site and to the facilities provided as part of the wider St Ederyn's Village scheme.
h. To recognise, support and enhance the key role played by existing District, Local and Neighbourhood Centres as accessible local hubs providing community services, local shops, healthy food choices, businesses, employment and access to public transport.	●	This ES and DAS sets out how existing neighbourhoods have been considered in terms of proposed and existing provision of services and amenities.
i. To support the regeneration of local neighbourhoods including reducing inequalities, particularly areas experiencing high levels of	✓	The proposals will support the lower local areas of deprivation (as identified in this chapter of the ES) through the creation of direct and

deprivation, areas vulnerable to decline and areas with opportunities for change.		indirect jobs, providing housing and affordable housing and through increased spending through new residents and workers. Contributions will also be made via s.106 agreement to community facilities.
j. To ensure that the necessary education and training facilities are provided and are accessible to all: to build strong futures for children, provide a diverse range of learning opportunities for all and assist economic progress through the development of required skills.	✓	Associated phases of the St Ederyn's Village development have made provision for new education and community facilities which make a significant contribution to achieving this aim. Contributions will also be made via s.106 agreement.
k. To develop new cultural, leisure and sporting facilities to meet needs and enhance Cardiff's role as a premier cultural and sporting destination.	●	No direct impact.
l. To ensure that the necessary community and cultural facilities (community centres, shops with healthy food choices, youth facilities, child care, faith buildings, health centres, etc.) are provided that are accessible to all, especially in areas that are deprived.	✓	The site will support the associated phases of the St Ederyn's Village development which have made provision for community facilities which make a significant contribution to achieving this aim.
m. To address rising unemployment and provide accessible local job opportunities, particularly in areas of greatest need.	✓	The construction process will create jobs and training for workers and the stimulation of the local and wider economy as a result of this new development proposal will act to realise this objective.
n. To promote social inclusion, equality of opportunity and access for all.	✓	The development has been designed to be inclusive and accessible to all.

Objective 3: To deliver economic and social needs in a co-ordinated way that respects Cardiff's environment and responds to the challenges of climate change:

Aim	**Impact**	**Comment**
a. To mitigate the effects of climate change through reducing energy demand and increasing the supply of renewable energy.	●	Not applicable.
b. To ensure that Cardiff adapts to the full anticipated impacts of climate change and that new development and infrastructure is designed to be resilient to possible consequences.	✓	The development site has been allocated by the Cardiff LDP as an appropriate residential-led site. It is sustainably located, close to existing and new local facilities as well as existing and new transit routes providing sustainable transport within Cardiff and the wider Capital Region.

c. To protect, manage and enhance Cardiff's natural environmental assets, including: • The parks, open spaces and allotments in the city that are highly valued by local communities and an important component of Cardiff's quality of life; • The parks, open spaces and allotments in the city that are highly valued by local communities and an important component of Cardiff's quality of life; • The strategically important river valleys of the Ely, Taff, Nant Fawr and Rhymney that link the city to the countryside and provide a valuable recreational, biodiversity and amenity resource; • Cardiff's countryside, particularly its areas of high landscape value and the coast that provide an important setting to the urban area, provide an agricultural resource and opportunity for recreation; • The city's biodiversity, its internationally, nationally and locally designated sites, wildlife habitats and features that contain important species and networks that link together areas of value; • Natural resources including geodiversity, the best soils, water and air quality including, the reduction of pollution; and • The role that vegetation plays in combating climate change by providing shading, cooling and carbon sinks.	✓	The site has been identified by the Cardiff LDP as an appropriate residential-led development site. The detailed design stage will ensure that all aims and objectives are met.
d. To conserve and enhance Cardiff's built and historic assets that define distinctive character and reflect its past development including: • The city's 27 Conservation Areas; • Its Listed Buildings and Ancient Monuments; • Registered Historic Landscapes and areas of archaeological importance; and • Other valued public places and spaces, including parks and amenity spaces, that provide local distinctiveness.	●	No direct impact. Chapter 13 (Heritage) of the ES confirms the there are low on heritage assets around the site.
e. In identifying new sites to meet economic/social needs, to follow a sequence of firstly maximising the contribution of brownfield sites, then identifying greenfield sites that are considered to represent the most appropriate and sustainable locations to accommodate new development.	✓	The development site has been identified and allocated by the Cardiff LDP as an appropriate residential-led site.
f. To have full regard to flood risk when considering the acceptability of development proposals and considering mitigation and adaptation measures.	✓	No negative impact is identified here. Chapter 12 (Drainage) of this ES outlines the justification for this.

g. To maximise opportunities to create a cleaner and more attractive environment that enhances the quality of life and helps Cardiff to become a world-class European capital city.	✓	The site benefits from a Green Infrastructure strategy and the inclusion of open space and trees to help meet this aim.

Objective 4: To create sustainable neighbourhoods that form part of a sustainable city:

Aim	Impact	Comment
a. To ensure that all new development areas (whether greenfield or brownfield) create sustainable neighbourhoods that follow the following principles: • Minimise energy demand and maximise renewable solutions - to deliver more energy-efficient neighbourhoods that utilise existing best practice and embrace new renewable technologies and concepts; • Minimise car travel, maximise sustainable transport use and decrease air pollution by creating accessible, permeable and legible places, preventing predominantly car-based developments and focusing new development in accessible locations which are linked to the strategic cycle network and can be served mainly by effective networks of sustainable transport - walking and cycling and fast and frequent public transport around and beyond the city; • Maximise recycling - to optimise the overall value of waste as a resource, to effectively plan for how new developments can sort and store waste for collection for onward productive use and minimise material needing treatment and final landfill; • Minimise water usage and maximise sustainable drainage - to carefully manage the consumption and drainage of water to avoid unnecessary wastage and minimise rapid run-off. To seek opportunities to maximise the positive amenity and biodiversity benefits that sustainable drainage solutions can offer; • Maximise the early provision of a full range of social facilities and community infrastructure - to provide the full range of necessary facilities that are accessible to all members of society and can be reached within a 15 minute walk. To include the range of social, health, leisure, education necessary for the scale of development	✓	The components of this Environmental Statement outline the compliance of the proposed development with this objective and all of the principles identified. Chapter 8 of the ES (Transportation) provides further details on sustainable transport measures. The DAS contains information regarding the Green Infrastructure strategy for the site as well as the open space provision.

proposed and also taking into account other needs within the wider locality; • Maximise the additional benefits that new communities can bring to adjoining or surrounding existing communities and minimise any potential negative impacts - to carefully identify positive contributions that can be made and involve local communities in this process; • Maximise the diversity of land uses within new development areas – to create more balanced communities offering non-car based options to fully participate in community life. To ensure a range and choice of housing tenures together with local employment opportunities and the full range of community infrastructure; • Maximise the contribution of networks of multi-functional and connected open spaces to strategically design networks of open space that are rich in biodiversity and provide safe routes between key locations to encourage healthier lifestyles through promoting walking and cycling. To further encourage healthy lifestyles by providing allotments together with the wider promotion of healthy eating; • Maximise the principles of good design - to create places that look good, are of an appropriate and efficient density, fully respect their local context and are successfully integrated with adjoining areas. To design buildings that are resilient and can easily adapt to changing future needs. To design clean and attractive areas where people feel safe and have a sense of ownership; and • Maximise community involvement in the planning, design and future management/maintenance of new neighbourhoods. To use the master planning process to establish robust design principles but to also recognise the need to allow some flexibility and managed capacity for change, particularly in larger development areas.		
b. To take opportunities to apply the above principles to existing neighbourhoods in order to create a more sustainable city.	✓	The development of this site as proposed will create a sustainable neighbourhood, contributing to this objective.

Predicted Impacts

7.36 The Impact Assessment laid out above clearly identifies that the proposed development will positively contribute to both economic and social objectives (1 & 2) of the Cardiff Local Development Plan (2006-2026). Measured against these objectives, the predicted impacts of the development proposed in this planning application will be positive.

7.37 Objectives 3 and 4 of the Cardiff LDP 2006-2026 focus on ensuring that proposed development complies with an identified need to be environmentally sustainable. Each of the objectives and their associated aims are comprehensively studied within the relevant chapters of this Environmental Statement and the Design & Access Statement submitted with the application. The merits of this proposed development and justification for specific elements of the scheme are therefore clearly defined.

7.38 The conclusion is reached that there will be a neutral impact resulting from the development of the site on the existing environment (Objective 3), and a positive impact (output) via the creation of a sustainable neighbourhood at this location (Objective 4).

Mitigation

7.39 In order to reduce the potential for adverse impacts to occur, measures have been included within the proposal to ensure that there are no significant impacts, along with any additional mitigation which is proposed in order to ameliorate any significant adverse impacts regarding the technical nature of the site.

7.40 The baseline information which is included within this chapter confirms that the site falls within 4 wards. The data collated to form the baseline description shows that Cardiff is associated with a good quality of life and therefore low levels of deprivation. The site will help to support Cardiff's aims and objectives accordingly.

7.41 The impacts on the economic and social elements of the local area have been considered and there are no apparent negative impacts. It is considered that the 'completion' of the strategic site, additional housing and the creation of jobs and spending will provide a direct, medium - long term beneficial impacts.

7.42 The focus on recruitment for the delivery of the scheme as well as providing a number of graduate / training opportunities will assist in in addition, the scheme will provide further support to the economy through increased spending from new residents and workers.

Any Cumulative Impacts

7.43 In undertaking the EIA, consideration must be given to the cumulative impact that the proposal would have along with any other development proposal.

7.44 The key scheme to consider in relation to the development of this site is Land East of Church Road and North and South of Bridge Road (LPA Ref. 13/00578/DCO) which forms the majority of the allocated Strategic Site 'G'.

7.45 Given the quantum of development proposed on the site, and the impacts which have been identified and addressed in Chapters 8 – 15, it is considered that the site will not have any cumulative impacts on the wider Strategic Site and will support the facilities and services which are to be provided as part of the scheme.

Residual Impacts

7.46 In assessing any possible residual impacts of the development, an assessment of any significant impacts which are likely to remain after the implementation of any mitigation measures should be explored.

7.47 It is not considered that there are any significant residual impacts which will remain after the mitigation measures have been put in place as any impacts have been sufficiently addressed.

Conclusion

7.48 In order to assess the socio-economic impacts of the development, the baseline description of the site have been outlined and studied. In addition, the aims and objectives identified in Cardiff's LDP have also been explored to demonstrate the impacts of the proposed scheme.

7.49 Overall, the proposed development offers direct and indirect benefits in both social and economic terms. These opportunities will arise during the construction period and continue in the long-term occupation of the site.

7.50 Further mitigation measures proposed to address technical impacts of the scheme will also provide further improvements and enhancements to the site and surrounds in respect of transportation, ecology, landscape and visual impact and noise. Full details of these are contained within the relevant ES Chapters.

CHAPTER 8
Transportation

Introduction

Preface

8.1 This chapter addresses the potential transportation impacts of the proposed development of circa 160 residential units at Land Adjacent to St Julian's House, Old St Mellons, Cardiff (hereafter referred to as 'the site') on the local area.

8.2 It is supported by, and is intended to be read in conjunction with, the Transport Assessment (TA) provided within **Appendix 8.1**.

8.3 The chapter aims to follow the advice contained within the IEMA Guidelines for the Environmental Assessment of Road Traffic.

8.4 The Chapter covers the following items:

- assessment methodology;
- legislative and policy context;
- existing baseline conditions;
- potential impact during construction and operational phases;
- mitigation;
- cumulative impact of the wider area proposals; and
- residual impacts.

8.5 The site is located within the Council's allocated LDP Strategic Site G. As a result of on-going and future reserved matters planning applications and existing planning obligations, the area's transportation infrastructure has and is expected to experience significant change over the coming years in order to influence the proportion of sustainable travel trips to a desirable level. This chapter seeks to assess the most current highway proposals for the area, but acknowledges that further changes may come forward to alter the local network in future development phases.

8.6 The study is based on a development of up to 160 residential units. Whilst it is acknowledged that this figure may alter as the site layout develops, it is highly unlikely to be exceeded by an extent that constitutes a material change and, as such, represents a sufficiently robust value for assessment purposes.

Legislative and Planning Policy Context

8.7 With regard to the transportation implications of the proposed development, this assessment examines the development proposal in the context of relevant planning policy guidance at national, regional and local level. The following documents have been reviewed:

- Planning Policy Wales Edition 10 (December 2018);
- Technical Advice Note (Wales) (2007) 18 – Transport;
- Cardiff LDP 2006-2026 (Adopted January 2016);
- Cardiff Local Transport Plan 2015 – 2020;
- Cardiff Council Supplementary Planning Guidance 'Managing Transport Impacts (incorporating Parking Standards' (July 2018).

8.8 Consideration is also given to the following legislation, which has an emphasis on sustainable transport provision:

- Active Travel (Wales) Act 2013;
- Well-being of Future Generations (Wales) Act 2015.

8.9 The overarching desire at all tiers of planning policy guidance is to influence a modal shift from single occupancy car travel towards more sustainable modes such as walking, cycling, and public transport.

8.10 In order to achieve this, it is recognised that development should be located such that the need to travel is reduced, especially by private car, by locating development where there is good access to high quality public transport, walking and cycling provision.

Planning Policy Wales (December 2018)

8.11 Planning Policy Wales (PPW) identifies five ways of working to enhance proposals and ideas and to maximise their contribution to the well-being goals. It is stated that:

> *'Good design is about avoiding the creation of car-based developments. It contributes to minimising the need to travel and reliance on the car, whilst maximising opportunities for people to make sustainable and healthy travel choices for their daily journeys. Achieving these objectives requires the selection of sites which can be made easily accessible by sustainable modes as well as incorporating appropriate, safe and sustainable links (including active travel networks) within and between developments using legal agreements where appropriate.*
>
> *Existing infrastructure must be utilised and maximised, wherever possible. Where new infrastructure is necessary to mitigate transport impacts of a development and to maximise accessibility by sustainable non-car modes, it should be integrated within the development layout and beyond the boundary, as appropriate. This could include works to connect cycle routes within a site to a wider strategic cycling network or provision of bus priority measures on highway corridors serving a new development.'*

8.12 For placemaking in rural areas, PPW states that:

'For most rural areas the opportunities for reducing car use and increasing walking, cycling and use of public transport are more limited than in urban areas. In rural areas most new development should be located in settlements which have relatively good accessibility by non-car modes when compared to the rural area as a whole. Development in these areas should embrace the national sustainable placemaking outcomes and, where possible, offer good active travel connections to the centres of settlements to reduce the need to travel by car for local journeys.'

8.13 Planning Policy Wales confirms that transport plays a key role in promoting a healthier Wales, a more equal Wales, cohesive communities and a globally responsible Wales.

8.14 PPW identifies the following active and social trend issues which it aims to address:

- *'assisting in the delivery of cohesive communities which will meet the needs and are accessible to all members of society, including older people;*
- *tackling inequalities between communities, delivering services and jobs closer to where people live and acknowledging the importance of inclusive communities and the wider environment for good health and well-being;*
- *improve sustainable access to services, cultural opportunities and recreation facilities to support people to adopt healthy, culturally fulfilled lifestyles which will assist in improving health and wellbeing;*
- *reducing reliance on travel by private car, and the adverse impacts of motorised transport on the environment and people's health, by prioritising and increasing active travel and public transport;*
- *ensure our transportation infrastructure is adaptable to future advances in innovation such as the mainstreaming of electric vehicles or possible advent of autonomous or driverless vehicles in the next ten to 15 years'.*

8.15 PPW identifies the following active and social linkages issues which it aims to address:

- *'enable sustainable access to housing, employment, shopping, education, health, community, leisure and sports facilities and green infrastructure, maximising opportunities for community development and social welfare;*
- *develop sustainable transportation infrastructure to keep Wales moving and connect people with jobs, housing and leisure. Ensure that the chosen locations and resulting design of new developments reduces reliance on the private car for daily travel, supports sustainable modes of travel and assists in improving the environment, public health and community life;*
- *require developments to encourage modal shift and be easily accessible by walking, cycling and public transport, by virtue of their location, design and provision of on and off site sustainable transport infrastructure'.*

8.16 PPW identifies that:

'The planning system should enable people to access jobs and services through shorter, more efficient and sustainable journeys, by walking, cycling and public transport. By

influencing the location, scale, density, mix of uses and design of new development, the planning system can improve choice in transport and secure accessibility in a way which supports sustainable development, increases physical activity, improves health and helps to tackle the causes of climate change and airborne pollution by:

- *Enabling More Sustainable Travel Choices – measures to increase walking, cycling and public transport, reduce dependency on the car for daily travel;*
- *Network Management – measures to make best use of the available capacity, supported by targeted new infrastructure; and*
- *Demand Management – the application of strategies and policies to reduce travel demand, specifically that of single-occupancy private vehicles.'*

8.17 Under the sustainable transport category, PPW identifies that:

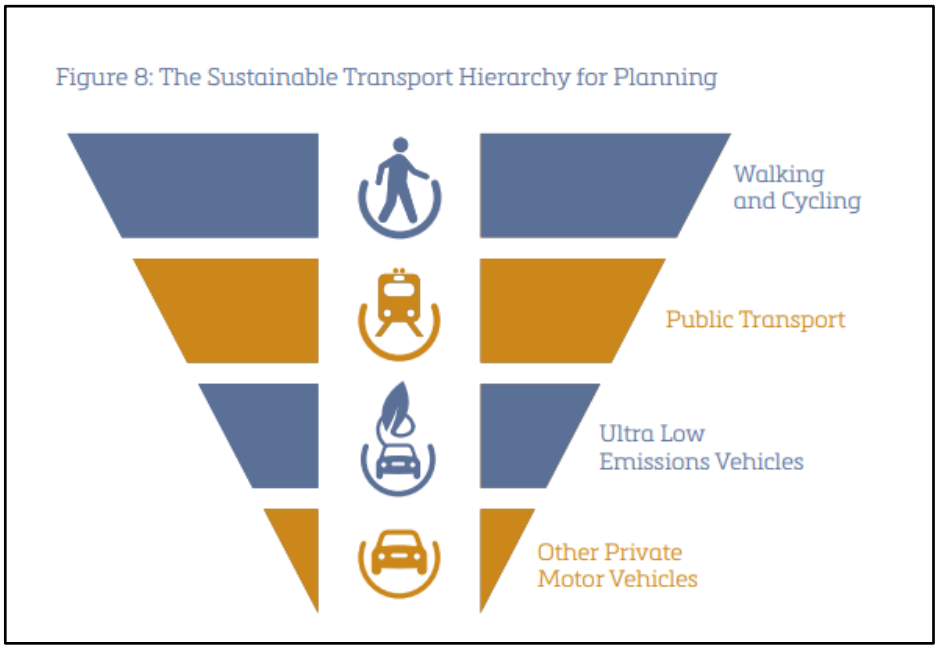
'The Welsh Government is committed to reducing reliance on the private car and supporting a modal shift to walking, cycling and public transport. Delivering this objective will make an important contribution to decarbonisation, improving air quality, increasing physical activity, improving the health of the nation and realising the goals of the Well-being of Future Generations Act.

The planning system has a key role to play in reducing the need to travel and supporting sustainable transport, by facilitating developments which:

- *are sited in the right locations, where they can be easily accessed by sustainable modes of travel and without the need for a car;*
- *are designed in a way which integrates them with existing land uses and neighbourhoods; and*
- *make it possible for all short journeys within and beyond the development to be easily made by walking and cycling.*

Development proposals must seek to maximise accessibility by walking, cycling and public transport, by prioritising the provision of appropriate on-site infrastructure and, where necessary, mitigating transport impacts through the provision of off-site measures, such as the development of active travel routes, bus priority infrastructure and financial support for public transport services.

It is Welsh Government policy to require the use of a sustainable transport hierarchy in relation to new development, which prioritises walking, cycling and public transport ahead of the private motor vehicles. The transport hierarchy recognises that Ultra Low Emission Vehicles also have an important role to play in the decarbonisation of transport, particularly in rural areas with limited public transport services.



The sustainable transport hierarchy should be used to reduce the need to travel, prevent car-dependent developments in unsustainable locations, and support the delivery of schemes located, designed and supported by infrastructure which prioritises access and movement by active and sustainable transport.

The sustainable transport hierarchy must be a key principle in the preparation of development plans, including site allocations, and when considering and determining planning applications.

Different approaches to sustainable transport will be required in different parts of Wales, particularly in rural areas, and new development will need to reflect local circumstances.'

8.18 With regards to car parking, PPW confirms the widely accepted notion that:

> *'Car parking provision is a major influence on how people choose to travel and the pattern of development. Where and how cars are parked can in turn be a major factor in the quality of a place.'*

8.19 It continues that:

> *'A design-led approach to the provision of car parking should be taken, which ensures an appropriate level of car parking is integrated in a way which does not dominate the development. Parking provision should be informed by the local context, including public transport accessibility, urban design principles and the objective of reducing reliance on the private car and supporting a modal shift to walking, cycling and public transport. Planning authorities must support schemes which keep parking levels down, especially off-street parking, when well designed. The needs of disabled people must be recognised and adequate parking provided for them.*

Planning authorities must require good standards of car parking design, which do not allow vehicles to dominate the street or inconvenience people walking and cycling. Car parking should be overlooked by surrounding properties, to provide natural surveillance.

…. Parking standards should be applied flexibly and allow for the provision of lower levels of parking and the creation of high quality places.'

Technical Advice Note (Wales) (2007) 18 – Transport

8.20 Technical Advice Note 18 (TAN 18) promotes the overall integration of transport in the following ways:

- *Integration of transport and land use planning;*
- *Integration between different types of transport; and*
- *Integration of transport policy with policies for the environment, education, social justice, health, economic development and wealth creation.*

8.21 The integration of land use planning and the development of transport has a key role to play in the promotion of sustainable development. TAN 18 identifies the following ways in which integration can help achieve sustainable environmental outcomes:

- *promoting resource and travel efficient settlement patterns;*
- *ensuring new development is located where there is, or will be, good access by public transport, walking and cycling thereby minimising the need for travel and fostering social inclusion;*
- *managing parking provision;*
- *ensuring that new development and major alterations to existing developments include appropriate provision for pedestrians (including those with special access and mobility requirements), cycling, public transport, and traffic management and parking/servicing;*
- *encouraging the location of development near other related uses to encourage multi-purpose trips;*
- *promoting cycling and walking;*
- *supporting the provision of high quality, inclusive public transport;*
- *supporting provision of a reliable and efficient freight network;*
- *promoting the location of warehousing and manufacturing developments to facilitate the use of rail and sea transport for freight;*
- *encouraging good quality design of streets that provide a safe public realm and a distinct sense of place; and*
- *ensuring that transport infrastructure or service improvements necessary to serve new development allow existing transport networks to continue to perform their identified functions.*

Cardiff LDP (Adopted January 2016)

8.22 Key policies applicable to this report are as follows:

KP8: SUSTAINABLE TRANSPORT

Development in Cardiff will be integrated with transport infrastructure and services in order to:

i. Achieve the target of a 50:50 modal split between journeys by car and journeys by walking, cycling and public transport.

ii. Reduce travel demand and dependence on the car;

iii. Enable and maximise use of sustainable and active modes of transport;

v. Integrate travel modes;

v. Provide for people with particular access and mobility requirements;

vi. Improve safety for all travellers;

vii. Maintain and improve the efficiency and reliability of the transport network;

viii. Support the movement of freight by rail or water; and

ix. Manage freight movements by road and minimise their impacts.

T1: WALKING AND CYCLING

To enable people to access employment, essential services and community facilities by walking and cycling the Council will support developments which incorporate:

i. High quality, sustainable design which makes a positive contribution to the distinctiveness of communities and places;

ii. Permeable and legible networks of safe, convenient and attractive walking and cycling routes;

iii. Connections and extensions to the Cardiff Strategic Cycle Network and routes forming part of the Cardiff Walkable Neighbourhoods Plan;

iv. Measures to minimise vehicle speed and give priority to pedestrians and cyclists;

v. Safe, convenient and attractive walking and cycling connections to existing developments, neighbourhoods, jobs and services;

vi. Infrastructure designed in accordance with standards of good practice including the Council's Cycling Design Guide;

vii. Supporting facilities including, signing, secure cycle parking and, where necessary, shower and changing facilities; and

viii. The provision of Car-Free Zones.

T5: MANAGING TRANSPORT IMPACTS

Where necessary, safe and convenient provision will be sought in conjunction with development for:

i. Pedestrians, including people with prams and/or young children;

ii. Disabled people with mobility impairments and particular access needs;

iii. Cyclists;

iv. Powered two-wheelers;

v. Public transport;

vi. Vehicular access and traffic management within the site and its vicinity;

vii. Car parking and servicing;

viii. Coach parking; and

ix. Horse-riders.

T6: IMPACT ON TRANSPORT NETWORKS AND SERVICES Development will not be permitted which would cause unacceptable harm to the safe and efficient operation of the highway, public transport and other movement networks including pedestrian and cycle routes, public rights of way and bridle routes.

Conclusion

8.23 The site is well located to encourage sustainable modes of travel due to its integration with surrounding infrastructure and close proximity to trip attractors.

8.24 The site is concluded to be fully compliant with transport planning policy at a local and national level.

Methodology

Consultation

8.25 The scope of the technical chapters to be included in the current ES was agreed by Cardiff Council in June 2020. An account of the Screening and Scoping process undertaken is set out in Chapter 6 of this Statement.

8.26 The study area has been derived through pre-application discussions with Cardiff Council and largely replicates the wider strategic development site (planning ref 13/00578/DCO).

Information Sources

8.27 The following information sources have contributed towards the assessment:

- Site visits;
- Cardiff Council website (GIS mapping system);

- Cardiff Council publications ' Strategic Site G – Development Activity Monitoring (Spring 2020);
- ProMap (Ordnance Survey mapping for junction capacity assessment parameter measurements);
- Sustrans (cycle route mapping);
- Cardiff Bus (route and timetable information);
- Traveline Cymru (route and timetable information);
- DfT (classified link count data and TEMPro datasets);
- Cardiff Council Traffic Data Centre (manual classified traffic turning counts);
- CrashMap (personal injury accident data); and
- Supporting documentation associated with Strategic Site G planning consent reference 13/00578/DCO and subsequent reserved matters applications.

Published Guidance

8.28 The following published guidance has been referred to in the production of this assessment:

- Technical Advice Note (Wales) (2007) 18 - Transport;
- Design Manual for Roads and Bridges (DMRB);
- Institute of Environmental Management and Assessment Guidelines for Environmental Impact Assessment (2004);
- Guidelines for the Environmental Assessment of Road Traffic (1993);
- Manual for Streets (2007);
- Manual for Streets 2 (2010);
- Design Guidance: Active Travel (Wales) Act 2013 (December 2014);
- DfT Inclusive Mobility (2005);
- Institution of Highways and Transportation 'Providing for Journey's on Foot' (2000);
- Institution of Highways and Transportation (IHT) document 'Planning for Public Transport in Development' (1999).

Assessment Scenarios

8.29 The assessment will focus on an assumed opening year of 2021 and a future assessment year of 2026 both with and without development generate traffic. Both assessments assume that the full quantum of development has been constructed and occupied.

8.30 All base traffic levels make suitable allowances for background traffic growth using TEMPRO as well as major local committed developments which, in this case, comprises LDP Strategic Site G.

8.31 Further detail is provided in the Transport Assessment provided herein as **Appendix 8.1** and in **Appendix 8.2 / 8.3** where additional AADT and AAWT link flow data is provided.

Significance criteria

8.32 The IEMA Guidelines identify the following areas of relevance to this chapter which should be assessed for significant development impact on highway network users and will be considered in this assessment where applicable:

- Severance;
- Driver delay;
- Pedestrian delay;
- Pedestrian and cycle amenity;
- Fear and intimidation;
- Accidents and safety.

8.33 Please note that noise and air quality impacts of development traffic have been assessed separately in other chapters of this document.

8.34 The IEMA Guidelines suggest the following thresholds for the assessment of development traffic impact on a highway link:

- Rule 1 - Include highway links where traffic flows will increase by more than 30% (or the number of heavy goods vehicles will increase by more than 30%); and
- Rule 2 - Include any other specifically sensitive areas where total traffic flows will increase by 10% or more.

8.35 It is generally noted that accuracies greater than 10% are not achievable and that day to day traffic variations can be + or -10%. It is subsequently suggested that projected changes in traffic of less than 10% create no discernible environmental impact.

8.36 **Table 8.1** summarises the definitions of receptor sensitivity. Links in this assessment deemed to be of a high sensitivity will be reviewed against Rule 2 of the IEMA Guidelines; otherwise, Rule 1 will be applied.

Table 8.1: Receptor sensitivity

Receptor Sensitivity	Receptor
High	Most sensitive receptors, such as schools, playgrounds, accident clusters, roads lacking footways.
Medium	Receptors with moderate sensitivity, such as congested junctions or links, GP surgeries, hospitals, shopping areas with roadside frontage, pedestrian desire lines with narrow footways, recreational facilities.

Low	Receptors with some sensitivity to traffic flow such as places of worship, public open spaces, tourist attractions and residential areas with adequate footway provision.
Negligible	Receptors with low sensitivity to traffic flows and those sufficiently distant from affected roads and junctions.

8.37 Based on the receptor descriptions, it is considered that all links in the study area are of low-medium sensitivity.

8.38 Further information on the assessment criteria is provided below.

Severance

8.39 The IEMA Guidelines describe severance as the perceived division that can occur within a community when it becomes separated by a major traffic artery. The term is used to describe a complex series of factors that separate people from places and other people. Severance may result from the difficulty of crossing a heavily trafficked road or a physical barrier created by the road itself. It can also relate to quite minor traffic flows if they impede pedestrian access to essential facilities. Severance effects could equally be applied to residents, motorists or pedestrians.

8.40 The IEMA Guidelines suggest that 30%, 60% and 90% changes in traffic levels should be considered as "slight", "moderate" and "substantial" impacts respectively. For the purposes of this assessment, this has been adapted for the magnitude categories shown in **Table 8.2**.

Table 8.2: Severance Magnitude of Impact Criteria

Magnitude	AADT Traffic Flow Increase
High	>90%
Medium	60-90%
Low	30-60%
Negligible	<30%

Driver Delay

8.41 This represents the extent of vehicular delay as a result of journey diversion or congestion.

8.42 Within a highway network, junctions represent the main 'bottlenecks'. Therefore, the extent of driver delay will be assessed using industry-standard junction capacity analysis tools as described in the Transport Assessment (**Appendix 8.1**).

8.43 The output from the ARCADY program used for the capacity analysis provides a number of measurements to provide information of a junction's operation. These relate to the 'Ratio of Flow to Capacity' (RFC), maximum queue length in PCUs, and delay per vehicle. The main indication of the performance of a junction is given by the RFC for each arm of the junction. The peak capacity is realised when the demand flow at the entry is great enough to cause a continuous queue of vehicles to wait in the approach. This is reached when the RFC attains a

value of 1. An RFC value of 0.85 is normally accepted as being within capacity as this reduces the risk of delays due to traffic count inaccuracies and analytical and modelling assumptions.

8.44 The magnitude of impact will be categorised using professional judgement as High, Medium, Low and Negligible.

Pedestrian Delay

8.45 The IEMA Guidelines state that changes in the volume, composition or speed of traffic may affect the ability of people to cross roads. In general, increases in traffic levels are likely to lead to greater increases in delay. Delays will also depend upon the general level of pedestrian activity, visibility and general physical conditions of the site.

8.46 To assess the significance of pedestrian delay, the IEMA Guidelines suggest that a 10 second delay for a link with no crossing facilities is applicable to a two-way traffic flow of 1400 vehicles per hour. An upper threshold of 40 seconds of delay for a link with no crossing facility is suggested.

8.47 The magnitude of impact will be categorised using professional judgement as High, Medium, Low and Negligible.

Pedestrian and Cycle Amenity

8.48 The IEMA guidelines broadly defined this category as the relative pleasantness of a journey and is considered to be affected by traffic flow, traffic composition and pavement width/separation from traffic.

8.49 The IEMA Guidelines suggest that a significant impact would be where traffic flows halved or doubled.

8.50 The magnitude of impact will be categorised using professional judgement as High, Medium, Low and Negligible.

Fear and Intimidation

8.51 The IEMA guidelines advise that the impact of fear and intimidation is dependent on the volume of traffic, its HGV composition, its proximity to people or the lack of protection caused by such factors as narrow pavement widths. Whilst this danger has been recognised as an important environmental impact for many years, there are no commonly agreed thresholds for estimating levels of danger, or fear and intimidation, from known traffic and physical conditions.

8.52 **Table 8.3** from the IEMA Guidelines suggest the following criteria for fear and intimidation:

Table 8.3 Example of Fear and Intimidation

Degree of Hazard	Average Traffic Flow over 18 hour day (veh/hour)	Total 18 hour heavy goods vehicle flow	Average speed over 18 hour day (mph)
Extreme	1800+	3000+	20+
Great	1200-1800	2000-3000	15-20
Moderate	600-1200	1000-2000	10-15

8.53 Using the above, the magnitude of impact will be categorised as High, Medium, Low and Negligible.

Accidents and Safety

8.54 This represents the level of highway safety, for all modes of travel.

8.55 To assess the highway safety of the proposal, a review will be carried out of local highway network safety in order to establish whether there are any current accident clusters or blackspots in the vicinity of the site that may be exacerbated by the development proposal. In this instance, a cluster is identified as a closely defined area of five or more accidents.

8.56 Please refer to the TA (**Appendix 8.1**) for further detail.

8.57 The magnitude of impact will be categorised using professional judgement as High, Medium, Low and Negligible.

8.58 When reporting the significance of transportation effects, it will be further noted whether they are considered to be beneficial, neutral, adverse or unclear and will be determined based on the matrix shown in **Table 8.4**.

Table 8.4 Significance Matrix

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

8.59 The following terminology applies:

- Negligible or minor significance – not noteworthy or material;
- Moderate significance – noteworthy, material; and
- Major significance – extremely noteworthy/material.

Limitations of the Assessment

8.60 This report has been produced during the Covid-19 pandemic which has imposed restrictions on the level of highway and transportation assessment able to be undertaken. New traffic surveys could not be collected so this assessment makes best use of available resources.

Baseline Conditions

Highway Network

8.61 Existing traffic flow data for the study area consist primarily of manual classified turning count surveys obtained from Cardiff Council. These surveys were factored to the base 2021 and 2026 years using TEMPro and TRICS, as described in the TA.

8.62 **Table 8.5** displays the naming convention used for the links that form the study area (full link diagrams provided in **Appendix 8.2 and 8.3**).

Table 8.5: Link ID Labels

Link ID	Link Name
Link ID 1	Church Road
Link ID 2	Pentwyn Link Road (South of JCN1)
Link ID 3	Heol Pontprennau
Link ID 4	Pentwyn Link Road (North of JCN1)
Link ID 5	Cardiff Gate
Link ID 6	M4 West slips
Link ID 7	M4 East slips
Link ID 8	A48 East slips
Link ID 9	A48 West slips

8.63 AADT flows were derived from the traffic flow data in the TA for all vehicles and also for those vehicles which can be classified as Heavy Duty Vehicles, as shown in **Table 8.6**.

Table 8.6: AADT Data – Base Scenarios

Link	2021		2026	
	Base Traffic (All Vehicles)	Base HDV	Base Traffic (All Vehicles)	Base HDV
1	5541	62	7490	84
2	2148	24	2902	32
3	722	8	977	11
4	2671	30	3610	40
5	777	9	1050	12
6	1242	14	1679	19
7	541	6	731	8
8	800	9	1080	12
9	952	11	1286	14

8.64 In the absence of surveyed speed data, posted speed limits along the assessed links are shown in **Table 8.7**.

Table 8.7: Posted Link Speed Limit

Link	Pre Development Speed Limit (mph)
1	30
2	40
3	30
4	40
5	30
6	70
7	50
8	50
9	50

Local Highway Safety

8.65 Within the TA, a review has been carried out on local highway network safety for the latest available 5-year period to the end of 2019 in order to establish whether there are any current accident clusters or safety concerns in the vicinity of the site that may be exacerbated by the development proposal. In this instance, a cluster is identified as a closely defined area of five or more accidents.

8.66 The overview map reveals that there have been three incidents of a 'slight' severity near the site frontage along the B4562 Bridge Road. These occurred in 2015, 2016 and 2017, one of which involved a child casualty and a young driver.

8.67 As no incidents are apparent in the statistics since February 2017, it is concluded that the on-going highway improvements associated with LDP Strategic Site G are having a positive impact on highway safety.

8.68 The TA also shows that there have been four accidents at the Heol Pontprennau/Church Road junction, three of which were of a 'slight' severity and one of a 'serious' severity involving a cyclist.

8.69 One of the 'slight' incidents occurred in 2015, with all other incidents occurring in 2017. The accidents are split between three of the four junction arms, so a cluster is not apparent.

8.70 The 'serious' incident involving a cyclist occurred in 2017 and there have been no incidents of this nature since. The significant cycle enhancements in this area, inclusive of shared off-road cycle paths and Toucan controlled crossings on the northern and southern arm (A4232), are likely to have improved cycle safety in the area.

8.71 There have been just three accidents at the A4232/A48 junction, all of which were of a 'slight' severity. Two occurred in 2015 and one in 2016.

8.72 Given the high traffic flows at this junction, the accident record is concluded to be excellent and will not be adversely affected by the minimal development impact (as discussed later in the report).

8.73 The TA identifies that there is a clear cluster of eight accidents in the vicinity of the M4 westbound off-slip and the A4232 junction exit. Of these, seven were of a 'slight' severity and one of a 'serious' severity. **Table 8.8** summarises the year of event and severity of the accident.

Table 8.8: Junction 3 Accident Summary

Year	Slight	Serious	Fatal	Total
2015	1	3	0	4
2016	2	0	0	2
2017	2	0	0	2
2018	0	0	0	0
2019	0	0	0	0

8.74 As shown in **Table 8.8**, the rate of accidents at the cluster site has shown a clear downward trend starting with four accidents in 2015, two in 2016 and 2017 and none in 2018 and 2019.

8.75 This indicates that the Council's highway safety strategy is having a positive effect at this location, potentially as a result of improved lane marking/signage, signalising the M4 westbound off-slip, or wider speed reduction measures.

Pedestrian Infrastructure

8.76 The development site integrates effectively with the Council's LDP Strategic Site G, which is being delivered in stages, and has been designed in accordance with Manual for Streets principles which affords pedestrians a high priority in the street environment.

8.77 When complete, the wider area will provide generous footways widths and suitable crossing points along key desire lines.

8.78 The topography of the surrounding area is generally flat which will encourage walking between the site and local amenities.

8.79 A variety of facilities, amenities and employment opportunities can be reached within a short walking distance of the site, as highlighted in the TA with isochrones for 400m, 800m, 1200m and 2000m, which represents 5-25 minute walking times based on an average walking speed of 4.8km/hr.

8.80 The Chartered Institution of Highways and Transportation document 'Providing for Journeys on Foot' suggest that the preferred maximum walk distance for commuting or school travel is 2km.

8.81 Whilst it is acknowledged that the A48 and Rhymney River prevent a more direct path to trip attractors in the southeast, there remain many trip attractors within easy reach of the site such as a public house, convenience stores, pharmacy, hospital, post office, as well as numerous schools and food stores.

8.82 As part of LDP Strategic Site G, a new primary school will also be provided, which will include an element of community facility provision and will be highly accessible to future site users by sustainable modes of travel and will ultimately help internalise trips and reduce car use.

8.83 Additionally, the site benefits from being in close proximity to multiple Public Right of Ways (PRoW) as highlighted in the TA, some of which are to be upgraded using S106 funds secured as part of the LDP Strategic Site G.

Cyclist Environment

8.84 LTN1/04 identifies that the mean average length for walking journeys is approximately 1 km (0.6 miles) and for cycling 4km (2.4 miles), although journeys of up to three times these distances are not uncommon for regular commuters. As such, a maximum 12km (7.4 mile) commuter distance applies.

8.85 As demonstrated in the TA, Central Cardiff, Newport and Penarth are within the maximum 12km (7.4 mile) commuter distance. Furthermore, large parts of Cardiff are within an average cycle distance of the site, and the whole of Cardiff, Penarth Caerphilly and Newport falls within the maximum cycle distance.

8.86 The TA also highlights numerous advisory cycle routes in the vicinity of the site, which link the site to the city centre.

Public Transport

8.87 In reviewing the public transport provision in the vicinity of and directly serving the area, it is evident that the site benefits from good bus provision.

8.88 Guidance relating to the accessibility of development proposals to public transport is provided in the Institution of Highways and Transportation (IHT) document 'Planning for Public Transport in Development' (March 1999). The IHT guidance recommends that

'"new developments should be located so that public transport trips involve a walking distance of less than 400m from the nearest bus stop …".

8.89 The nearest bus stop to the site is located on Heol Booths, which is located approximately 300m from the centre of the site. This stop is served by the X59 service which runs between Cardiff City Centre (Dumfries Place) and St Ederyn's Village via Pontprennau, East Park & Ride and Newport Road.

8.90 The journey time between St Ederyn's and the city centre is approximately 33 minutes.

8.91 As part of the development of LDP Strategic Site G, the wider masterplan makes provision for the express bus service (X59) to extend through the site, which will require new bus stops that will also better serve some parcels of this application site.

8.92 The nearest railway station to the proposed development is Llanishen which is approximately 4.5km to the west, accessible by bicycle in less than 20 minutes and therefore accessible as part of a multi-modal trip. Llanishen Railway Station comprises of 2 platforms and provides regular routes towards Cardiff Central, Cardiff Bay, Caerphilly and Bargoed.

Predicted Impacts

Construction effects

8.93 The impact of construction traffic will be managed via a Construction Management Plan (CMP), to be secured by a planning condition. As such, the CMP will be able to regulate construction traffic and therefore the impact on receptors (i.e. those affected by such traffic) to an acceptable level.

8.94 Furthermore, the site is located within an existing area of high development where construction traffic will continue until the completion of LDP Strategic Site G. The site is located just off the A4232 and less than 2km from the M4 trunk road, which already cater for high volumes of heavy vehicles.

8.95 It is therefore concluded that the impact of construction traffic on all receptors is negligible.

Operational effects

8.96 The estimated development traffic impact is provided in **Table 8.9**, detailing the AADT traffic increases on each link in the study area.

Table 8.9: Development Traffic AADT Impact

Link	Development Traffic	Development Traffic HGV	% Traffic Increase 2021	% HGV increase 2021	% Traffic Increase 2026	% HGV increase 2026
1	787	9	11.33%	5.75%	8.76%	4.87%
2	304	3	0.94%	0.81%	0.87%	0.75%
3	103	1	0.61%	0.47%	0.56%	0.44%
4	379	4	1.19%	1.25%	1.10%	1.15%
5	109	1	0.71%	0.44%	0.66%	0.41%
6	177	2	0.73%	1.06%	0.68%	0.97%
7	77	1	0.80%	0.60%	0.74%	0.56%
8	113	1	0.72%	0.82%	0.67%	0.75%
9	135	2	0.78%	1.66%	0.72%	1.53%

8.97 As shown in **Table 8.9**, all links are well below the 30% threshold identified in the IEMA Guidelines as triggering the need for further assessment. Nonetheless, further commentary is provided below on the various elements identified in the methodology.

Severance

8.98 The potential for severance as a result of development traffic has been considered on all links in the study area and the magnitude of change is negligible (i.e. less than 30% traffic increases).

8.99 It is therefore concluded that the significance of the development impact on severance is negligible.

Driver Delay

8.100 The capacity analysis reported in the TA shows the nearby Church Road/A4232 Roundabout junction to operate within theoretical capacity in the 2021 AM peak hour regardless of development generated traffic. The addition of development traffic results in a minimal increase in queues on the worst affected arm (Church Road) of 0.5 vehicles and an increase in delay of 2.15 seconds. All other arms are shown to experience less than one additional vehicle in a queue and less than one additional second of delay).

8.101 The junction is also shown to operate within theoretical capacity in the 2021 PM peak hour regardless of development generated traffic. The addition of development traffic results in a minimal increase in queues and delay (less than one additional vehicle and less than one additional second of delay on all arms).

8.102 The junction is shown to operate marginally above the 0.85 RFC threshold in the 2026 AM peak hour with the introduction of development generated traffic but within theoretical capacity (i.e. RFC <1).

8.103 As expected, Church Road is the most impacted arm, with average queues rising from 4.1 vehicles to 7.6 vehicles. Delay for the same arms is shown to rise from 26.88 seconds to 45.63 seconds.

8.104 With consideration of the local and national planning policy objectives to influence modal shift away from private car travel to sustainable modes of travel, these potential queue and delay increases are considered to be of low magnitude.

8.105 Furthermore, in reality, any excessive future delay at this junction will result in trip diversion, modal shift or altered travel patterns to avoid the peak period. As such, traffic growth will not be as linear at this junction as has been assumed and therefore the forecast base and total traffic scenarios are expected to have lower flows than has been assumed for the purposes of this assessment.

8.106 It is therefore concluded that the significance of the development impact on driver delay is minor-negligible.

Pedestrian Delay

8.107 Link ID 1 (Church Road) experiences the greatest impact from development traffic. However, as shown in the TA, the two-way AM peak hour flow (2021 and 2026) is well below the 1400 vehicles per hour threshold identified by the IEMA Guidelines. As such, pedestrian delay at uncontrolled crossings will be negligible.

8.108 A key pedestrian desire line is expected to be between the site and Cardiff Gate Retail Park, which requires pedestrians to cross the A4232. Whilst the A4232 experiences peak flows well in excess of 1400 vehicles per hour, the links both north (Link ID 4) and south (Link ID 2) of the Church Road Roundabout benefit from Toucan controlled crossings which will minimise pedestrian delay.

8.109 It is therefore concluded that the significance of the development impact on pedestrian delay is negligible.

Pedestrian and Cycle Amenity

8.110 It has been established that traffic flows will change by a negligible amount and well below the IEMA guidelines which specifies a significant impact as being where traffic flows halved or doubled.

8.111 Furthermore, the development proposal allows for seamless integration with the surrounding highway network, which benefits from excellent pedestrian infrastructure secured as part of LDP Strategic Site G.

8.112 As demonstrated in the site layout, pedestrians will be afforded high priority, with attractive and convenient provision throughout which will seek to achieve a natural <20mph environment through appropriate carriageway widths, alignment, corner radii and use of shared space, in accordance with Manual for Streets principles.

8.113 The layout encourages active modes of travel by allowing filtered permeability in all directions which caters for the desire lines of pedestrians, with tactile paving and dropped kerb crossings to be provided as required.

8.114 It is therefore concluded that the significance of the development impact on pedestrian and cycle amenity is negligible.

Fear and Intimidation

8.115 The AAWT flows in **Appendix 8.2** show that Church Road, where the development impact is highest, is 8149 and 10279 vehicles in the 2021 and 2026 scenarios respectively. Averaged over 18 hours, this equates to 453 and 571 vehicles per hour which is concluded to be negligible.

8.116 It should be noted that whilst some of the other links in the study network have larger 2021 and 2026 flows, the development impact is even less significant.

8.117 It is therefore concluded that the significance of the development impact on fear and intimidation is negligible.

Accidents and Safety

8.118 The accident analysis identifies that there are no accident clusters along the site frontage.

8.119 Within the wider study area, a cluster is identified at Junction 3. However, based on the low development impact at this junction, as identified in the TA, of 0.8% in 2021 and 2026 along with the clear downward trend of accidents at the cluster location (with no accidents having occurred in the most recent two year period), it is concluded that the proposed development will have a negligible impact on highway safety at this junction.

8.120 It is therefore concluded that the significance of the development impact on accidents and safety is negligible.

Mitigation

Construction Mitigation

8.121 The impact of construction traffic will be managed via a Construction Management Plan (CMP), to be secured by a planning condition. As such, the CMP will be able to regulate construction traffic and therefore the impact on receptors (i.e. those affected by such traffic) to an acceptable level.

Operational Mitigation

8.122 As part of the development proposal, the client is keen to maximise sustainable modes of travel amongst prospective residents and visitors from the outset. In order to do so, the following measures are being proposed.

Travel Plan

8.123 The applicant will commit to producing and maintaining a Travel Plan at the site, which can be secured by a planning condition and will be completed prior to occupation and is subject to agreement with the Council.

8.124 The DfT document 'Making Travel Plans Work' (2002) states that Travel Plans:

"aim to reduce traffic 'at source'. They are one of a range of tools that address transport problems from a new direction: by managing demand for road space more effectively. These strategies are essential to relieve the burden of traffic on local communities and meet national targets for cutting the carbon emissions causing climate change".

8.125 Travel Plans present the opportunity to raise awareness of the consequences of travel choices, the benefits of alternatives and the opportunity to minimise the impact of private car travel on the environment.

8.126 Smarter Choices - Changing the way we travel report (2004) states that basic Travel Plans can expect to achieve a 6-10% reduction in car use whilst Travel Plans with parking management can achieve reductions of up to 20-25%.

8.127 As part of the creation and operation of the Travel Plan, a Travel Plan Co-ordinator (TPC) will be appointed. The TPC will play the key role in promoting sustainable travel amongst all site users.

Pedestrian

8.128 The development proposal has been designed for seamless integration with the surrounding highway network, which benefits from excellent pedestrian infrastructure secured as part of LDP Strategic Site G.

8.129 Pedestrians will be afforded high priority, with attractive and convenient provision throughout which will seek to achieve a natural <20mph environment through appropriate carriageway widths, alignment, corner radii and use of shared space, in accordance with Manual for Streets principles.

8.130 The layout encourages active modes of travel in all directions with use of filtered permeability to cater for the desire lines of pedestrians, with tactile paving and dropped kerb crossings to be provided as required.

8.131 The benefits of walking will also be championed in the Travel Plan.

Cycling provision

8.132 Internally, the site will apply Manual for Streets guidance, seeking to achieve a natural <20mph environment through appropriate carriageway widths, alignment, corner radii and use of shared space.

8.133 The layout encourages active modes of travel in all directions with use of filtered permeability to cater for the desire lines of cyclists.

8.134 Cycle parking will be provided in accordance with the adopted parking standards (1 cycle space per bedroom), to be secured by an appropriately worded planning condition.

8.135 The benefits of cycling will also be championed in the Travel Plan.

Public Transport

8.136 The Travel Plan will champion the use of bus travel and offers the opportunity to provide dedicated measures to increase bus patronage (e.g. contribution towards resident bus passes).

Any Cumulative Impacts

Construction effects

8.137 The impact of construction traffic will be managed via a Construction Management Plan (CMP) which will be required to integrate with the wider Strategic Site G construction traffic. All effects are anticipated to be temporary.

Operational effects

8.138 The cumulative impacts of background traffic growth, the wider LDP Strategic Site G and indeed housing and job growth within the region has been considered as part of the 2021 and 2026 assessment scenarios.

Residual Impacts

Construction effects

8.139 The impact of construction traffic will be managed via a Construction Management Plan (CMP), and all effects are anticipated to be temporary.

8.140 As such, no residual construction impacts are expected.

Operational effects

Severance

8.141 Given the operational development impact, the residual impact after mitigation on severance will be negligible.

Driver Delay

8.142 The development will contribute to a negligible impact on driver delay on the wider highway network and a minor increase on the approach to the Church Road/A4232 roundabout junction.

8.143 However, the proposed mitigation and indeed the Council's transport strategy aims for modal shift away from non-essential car trips which will further help reduce the development impact.

8.144 The residual impact on driver delay is therefore negligible.

Pedestrian Delay

8.145 The low development traffic impact will have a negligible residual impact on pedestrian delay, especially with consideration of the Toucan controlled pedestrian crossings on the A4232 links.

Pedestrian and Cycle Amenity

8.146 The negligible traffic impact and the high priority given to pedestrians and cyclists within the proposed site layout and indeed the wider Strategic Site G masterplan leads to the conclusion that the development will have a minor beneficial residual impact on pedestrian and cycle amenity.

Fear and Intimidation

8.147 The low development traffic impact will result in a negligible residual impact on fear and intimidation.

Accidents and safety

8.148 The favourable local highway safety record and the low development traffic impact will result in a negligible residual impact on accidents and safety.

8.149 The development impacts on severance, driver delay, pedestrian delay, pedestrian/cycle amenity, fear and intimidation and accidents/safety are concluded to be negligible.

CHAPTER 9
Ecology

Introduction

Preface

9.1 This chapter addresses the potential significant effects of the proposed development at Land adjacent to St Julian's House, Bridge Road, Old St Mellons, Cardiff (hereafter referred to as 'the Site') on important ecological features, including species populations, habitats and designated site.

9.2 The chapter describes: the policy context; the assessment methodology; the ecological baseline conditions at the Site and surroundings; the likely significant environmental effects; the mitigation measures required to prevent, reduce or offset any significant negative effects; and the likely residual effects after these measures have been employed.

9.3 The chapter is based upon the findings of detailed survey work completed by The Environmental Dimension Partnership Ltd (EDP) during 2019 and 2020 (**Appendix 9.1**), alongside previous survey work completed of the wider area, which includes the Site, by Celtic Ecology in 2011, 2012 and 2013 (**Appendix 9.2**).

9.4 This chapter of the Environmental Statement (ES) has been produced by Emily Williams, a competent Principal Ecologist from EDP, who is a full member of the Chartered Institute of Ecology and Environmental Management (CIEEM). Emily has over 11 years-experience as an ecologist, 9 of which have been as a consultant within the private sector. Emily possesses extensive survey experience within a wide range of habitats across both terrestrial and freshwater environments, and has experience in undertaking surveys for a range of protected species to inform planning applications for development (including EIA), land management/remediation schemes and habitat creation, restoration and enhancement in both England and Wales. This is in addition to the design and implementation of mitigation strategies for ecological receptors to be delivered within and alongside development proposals.

9.5 This chapter has been prepared with reference to The Chartered Institute of Ecology and Environmental Management's (CIEEM) Ecological Impact Assessment Guidelines.[1]

Legislative and Planning Policy Context

9.6 The following national planning policy relating to ecological features are considered of relevance to the area surveyed and to the proposed development.

National Planning Policy

9.7 A number of over-arching policies are of relevance, not least of which are those described within Planning Policy Wales (PPW[2]) Chapter 5: Distinctive and Natural Places. PPW 10 sets out

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

[2] Welsh Assembly Government, Planning Policy Wales, 10th Edition, December 2018.

the land use planning policies of the Welsh Assembly Government. The advice contained within PPW is supplemented for some material considerations by Technical Advice Notes (TAN's).

9.8 Specifically, PPW and TAN5 (Nature Conservation and Planning) set out particular policies in relation to the protection of biodiversity, green infrastructure, and geological conservation through the planning system. Such policies include those receiving statutory protection under existing legislative provisions and also those sites, habitats and species with such protection, thereby ensuring that the potential impacts of planning decisions on biodiversity, green infrastructure and geological conservation are fully considered.

9.9 Of further pertinence, the Welsh Government is also required to ensure that its policies contribute to the conservation of the abundance and diversity of native wildlife and its habitats and minimise the adverse effects on wildlife where conflict of interest is unavoidable. In addition, the Wales Biodiversity Partnership was formed to guide and inform the biodiversity process in Wales, in fulfilment of its duty under Section 42 of the Natural Environment and Rural Committees (NERC) Act (2006) at that time. The Environment (Wales) Act has since become law in 2016, setting out a requirement for the sustainable management of natural resources necessary to build greater resilience into ecosystems, thereby providing a context for the delivery of multi-functional green infrastructure. Section 6 under Part 1 of this Act introduced an enhanced biodiversity and resilience of ecosystems duty for public authorities in the exercise of its function in relation to Wales. Additionally, Section 7 of this Act sets out a requirement for biodiversity lists of priority habitats and species of principle importance to conservation in Wales to be published and maintained, thereby replacing Section 42 of the NERC Act. Habitat Action Plans relevant to the Site include hedgrows, while Species Action Plans relevant to the Site include dormouse (*Muscardinus avellenarius*) and a number of bat species.

Local Planning Policy - Cardiff Local Development Plan

9.10 The Cardiff Council Local Development Plan (LDP) was adopted on 28th January 2016. It is the most up to date Development Plan covering the authority's administrative area and is used in the determination of planning applications.

9.11 The LDP sets out a range of policies and proposals relating to future development and deals with the use and conservation of land and buildings within Cardiff up to 2026. A number of policies within the LDP are considered of relevance to the ecological aspects of the Site and scheme.

9.12 Policies EN4, EN5, EN6, EN7, EN8 and EN11 afford protection to: designated sites; habitats and species; ecological networks and features of importance for biodiversity; priority habitats and species; trees, woodland and hedgerows; and protection of water resources respectively.

9.13 Additional information on the interpretation of planning policies concerning biodiversity and evaluation of the biological resource within Cardiff was provided by the Cardiff Biodiversity Supplementary Planning Guidance (SPG) Part 1 and 2 (2011). Following the adoption of the LDP, there was a programme of updating and revising previously approved SPGs based on those referenced through the LDP Examination process; this includes Green Infrastructure, which incorporates Ecology and Biodiversity. The Consultation Draft was adopted in November 2017 and replaces the original SPG for this topic. This has been duly reviewed to inform this assessment.

9.14 Of further pertinence in a local context, locally important sites such as Sites of Importance for Nature Conservation (SINCs) are non-statutory designations declared by Cardiff Council (CC)

under the provision of the National Parks and Access to the Countryside Act 1949. This aims to bring sites of established nature conservation value into active management for the public and to protect them from development that would adversely affect their substantive nature conservation value.

Wildlife Legislation

9.15 Animal and plant species that are considered to be threatened as a result of their rarity, vulnerability or persecution are afforded protection through both European and UK law. The Conservation of Habitats and Species Regulations 2017 protects a number of rare and vulnerable animal and plant species listed for protection in Europe, whilst the Wildlife and Countryside Act, 1981 (as amended by the Countryside and Rights of Way Act, 2000 and Natural Environment and Rural Communities Act 2006) affords protection to wild bird species requiring protection in Europe, and other rare or vulnerable native species of animals and plants, not protected under the Conservation of Habitats and Species Regulations 2017. In addition, the Animal Welfare Act 2006 further protects wild animals from unnecessary suffering when under the control of man and includes the Wild Mammals (Protection) Act 1996 which protects wild mammals from intentional cruelty and the Protection of Badgers Act 1992 which affords protection specifically to badgers.

9.16 Legislation also fully protects European Sites including Special Protection Areas (SPA), Special Areas of Conservation (SAC) and RAMSAR sites which are recommended for designation by the Joint Nature Conservation Committee (JNCC). Sites of Special Scientific Interest (SSSIs) of national importance, designated under the Wildlife and Countryside Act 1981 (as amended), are also protected from any development that may destroy or adversely affect such sites, either directly or indirectly.

9.17 'Important' hedgerows, as defined in the Regulations are protected from removal (up-rooting or otherwise destroying) by the Hedgerow Regulations 1997.

Further Guidance

9.18 The approach taken in this assessment is made with reference to the guidelines published by the Chartered Institute of Ecology and Environmental Management (CIEEM) in September 2018.[3]

Methodology

9.19 The scope of the technical chapters to be included in the current ES was agreed by Cardiff Council in June 2020. An account of the Screening and Scoping process undertaken in set out in Chapter 6 of this Statement. This Screening and Scoping process outlined the surveys undertaken at the site, the results of which have been used to inform the assessment within this chapter.

Consultation

9.20 The following statutory and non-statutory Consultees have been consulted to inform the impact assessment:

[3] CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Chartered Institute of Ecology and Environmental Management, Winchester.

- South East Wales Biodiversity Records Centre (SEWBReC); and
- Cardiff City Council Ecologist, Matt Harris.

9.21 The assessment work has been prepared with reference to these consultations.

Extent of the Study Area

9.22 The field surveys undertaken to inform the assessment covered the Site boundary and, in some instances, adjacent habitats, to provide contextual information and/or to ensure species populations were studied adequately. Where access to adjacent land was not available (due to landownership boundaries), assumptions have been made on the ecological character of the adjacent land based on other information.

9.23 An ecological desk study of the Site was undertaken during November 2019 (see **Appendix 9.1** for detailed scope and methodologies employed). A search radius of 10km from the Site boundary was employed for statutory designated sites of international value, 5km for sites of national importance, 2km for sites of local importance, 6km for Annex II bat species[4] records and 2km for other Protected/Priority[5] species records. The search areas reflect the sensitivity and value of potential ecological receptors and are considered to be sufficient to cover the potential Zone of Influence (ZoI) of the proposed development on these receptors, while providing contextual information to assist with determining and evaluating the baseline.

9.24 The extent of the impact assessment has been defined as the Zone of Influence (ZoI). The ZoI has been determined through a review of the baseline ecological conditions relative to the emerging masterplan and consideration of the proposed activities, as well as through liaison with other specialists involved in assessing the impacts of the proposed development as considered within the ES and other supporting documentation.

Collection of Baseline Information

9.25 The baseline ecology information collated by EDP during 2019 and 2020 for the Site and its surroundings is detailed within the Ecological Baseline Report as set out within **Appendix 9.1**. The Appendix details the full methodologies employed, the subsequent findings and the implications for the proposed development. A summary of the relevant baseline investigations of the site undertaken/proposed for completion during 2020 are provided below:

- A desk study in 2019 involving the request for biodiversity information from South East Wales Biodiversity Records Centre (SEWBReC) for designated sites of nature conservation value, and for records of protected and/or notable species in addition to a search of the Government's MAGIC website for additional designations;
- An Extended Phase 1 Survey completed on 13 January and 05 February 2020;
- An assessment of the hedgerow network on 13 January 2020 to determine their importance following the Wildlife and Landscape criteria provided in Part II of Schedule 1 of the Hedgerows Regulations 1997;
- A ground level visual assessment of on-site trees for bat roosting potential, completed on 13 January 2020;

[4] Bat species listed in Annex II of the EC Habitats Directive, namely Greater horseshoe, Lesser horseshoe, Barbastelle and Bechstein's bats.

[5] Species considered of key significance to sustain and improve biodiversity in Wales, as defined under Section 7 of Part 1 of the Environment (Wales) Act 2016.

- An external inspection of St Julian's House (B1) combined with an external and internal inspection of all associated outbuildings (B2-B9) for their potential to support roosting bats on 13 January 2020;

- A Habitat Suitability Index Assessment of a single pond associated with St Julian's House to assess its potential to support great crested newt (*Triturus cristatus*);

- Subsequent bat roost (dusk emergence) surveys of buildings with roosting potential undertaken during May, June and July 2020;

- Bat activity surveys comprising manual transect surveys conducted on 27 May, 22 June and 2 July 2020;

- Automated detector surveys conducted in early May, late May, June and July 2020.

- Badger walkover survey of the land ownership boundary during 2020; and

- Reptile surveys undertaken on seven occasions during July 2020 to confirm presence/likely absence of common reptiles.

9.26 This document also considers additional baseline ecology information previously compiled by Celtic Ecology in 2013, further details of which are provided with **Appendix 9.2**.

Evaluation Methodology

9.27 The evaluation of Important Ecological Features (IEFs) has been made with reference to the guidelines published by the Chartered Institute of Ecology and Environmental Management (CIEEM) in September 2018. The guidelines propose an approach to valuing ecological features that involve professional judgement based on available guidance and information, together with advice from experts who know the locality of the project and/or the distribution and status of the species or features that are being considered.

9.28 In addition, the following best practice guidance in relation to survey techniques and mitigation measures have been taken into account:

- Handbook for Phase 1 habitat survey: A Technique for Environmental Audit[6];

- Bat Surveys for Professional Ecologists: Good Practice Guidelines, 3rd Edition[7];

- Surveying Badgers[8];

- National Badger Survey: The history, distribution, status and habitat requirements of the Badger in Britain;

- Evaluating the suitability of habitat for the Great Crested Newt (*Triturus cristatus*)[9]; and

[6] Joint Nature Conservation Committee (2010). *Handbook for Phase 1 habitat survey: A Technique for Environmental Audit.* JNCC, Peterborough.
[7] Collins, J. (ed.) (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn.*). The Bat Conservation Trust, London
[8] Harris S, Cresswell P and Jefferies D (1989). *Surveying Badgers*. Mammal Society.
[9] Amphibian and Reptile Groups of the United Kingdom (2010). *ARG UK Advice Note 5: Great Crested Newt Habitat Suitability Index*.

- Reptile survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation[10].

Geographical Context

9.29 The Guidelines recommend that the value or potential value of an ecological resource or feature be determined within a defined geographical context and recommends that the following frame of reference be used:

- International and European;
- National (Wales);
- Regional (South East Wales);
- County (Cardiff); and
- Local (Local).

Valuing Designated Sites

9.30 Within the UK, certain valued habitats have been assigned a level of nature conservation value through designation; and the Guidelines referred to above recommend that the reasons for this designation need to be taken into account in the assessment. Such designations include:

- Internationally important sites such as Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and RAMSAR sites;
- Nationally important sites such as Sites of Special Scientific Interest (SSSIs), National Nature Reserves (NNRs) and Local Nature Reserves (LNRs); and
- Regional/County/District important sites, referred to within CCC as SINCs.

9.31 Where a feature has value at more than one designation level, its overriding value is that of the highest level.

Valuing Habitats

9.32 The Guidelines recommend that the value of areas of habitat and plant communities should be measured against published selection criteria where available, such as those listed on Annex 1 of the Habitats Directive, or those listed as habitats of principal importance under Section 7 of the Environment (Wales) Act. Where areas of a habitat or plant communities do not meet the necessary criteria for designation at a specific level, the Guidelines recommend that the ecologist may consider the local context if appropriate. Additionally, consideration should also be given to the potential value of those habitats, particularly where habitats are in a degraded or unfavourable condition at the time of the assessment.

Valuing Species

9.33 The Guidelines require consideration of all protected species as 'important' features where there is the potential for a breach in legislation. Additionally, species should be assessed according to their biodiversity value, measured against published selection criteria where available (such

[10] Froglife (1999). *Froglife Advice Sheet 10: reptile survey.* Froglife, London.

as those listed on Annex 1 of the Habitats Directive and those listed as habitats of principal importance under Section 7 of the Environment (Wales) Act. In assigning value to a species, it is necessary to consider its distribution and status, including a consideration of trends based on available historical records, as well as their legal protection. The valuation of populations should make use of any relevant published evaluation criteria available at the time of assessment.

Characterising Potential Impacts

9.34 The Guidelines state that the assessment of impacts should be undertaken in relation to the baseline conditions within the ZoI that are expected to occur if the development were not to take place. Having identified the activities likely to cause significant impacts, it is then necessary to describe the resultant changes and to assess the impact on valued ecological features.

9.35 The Guidelines recommend that the process of identifying impacts should make explicit reference to aspects of ecological structure and function on which the feature depends. Impacts must be assessed in the context of the baseline conditions within the Zone of Influence during the lifetime of the proposed residential development.

9.36 When describing changes/activities and impacts on ecosystem structure and function, reference should be made to the following parameters:

- Positive or negative;
- Extent;
- Magnitude;
- Duration;
- Timing;
- Frequency; and
- Reversibility.

9.37 In order to characterise the likely change and impact, it is necessary to take into account all the above parameters.

Significance Criteria

9.38 Legislation and policy guidance often require significant negative or positive impacts to be distinguished from others, although there is little guidance on how this distinction should be made. The Guidance defines an ecologically significant impact as an "effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general".

9.39 Once a potential significant impact was identified as likely to affect the integrity/favourable conservation status of a potential IEF, the value of the receptor was then used to help determine the geographical scale at which the impact is significant. If an impact is not found to be significant at the level at which the resource or feature has been valued, it may still be significant at a more local level. An impact that is of significance below a local level, or is deemed not to be significant, will be scoped out of the impact assessment.

9.40 Although certain species and habitats may not constitute IEFs based upon their nature conservation value they may still warrant consideration during the design and mitigation of the Proposed Development on the basis of their legal protection, their implications for policies and plans, or other issues such as animal welfare issues.

9.41 The significance of the potential impacts upon IEFs has been assessed both before and after consideration of the additional mitigation measures. The latter represents the assessment of the residual impacts of the proposals.

Assumptions and Limitations

9.42 No further assumptions or limitations have been identified beyond those detailed within **Appendix 9.1** in relation to this technical assessment.

Baseline Conditions

Existing Conditions

9.43 This section sets out the baseline context of the proposed development and should be read in conjunction with **Appendix 9.1** and **Appendix 9.2**, where full methodologies and results of the ecological investigations are set out.

Context

9.44 The Site is centred at Ordnance Survey Grid Reference (OSGR) ST 22119 82779 within the Local Planning Authority (LPA) of Cardiff City Council (CCC). The Site measures circa 4.69 hectares (ha) and comprises an improved grassland field subject to grazing enclosed by hedgerows and mature trees. The field is subdivided into several paddocks by post and rail fences (field sections **F1-F8**). St Julian's House and associated outbuildings are located within the north-west corner of the Site, with a further two detached residential buildings located offsite to their immediate west.

9.45 In relation to land immediately surrounding the Site to the north, east and south, outline planning consent (reference 13/00578/DCO) was granted on 01 August 2014 for the development of a new community known as St. Edeyrn's Village, for which up to 1020 new homes are proposed. Newly constructed residential development is mostly complete to the south of the Site, with land to the immediate east currently under construction. Bridge Road otherwise defines the western boundary of the Site whilst the northern boundary is delineated by an unnamed, single track lane, beyond which further residential development associated with St Edyrn's Village is proposed.

9.46 More generally the Site is located circa 240m south of the M4 motorway whilst Pentwyn Road and commercial development is located 80m west. The Site is located at the northern outskirts of Cardiff within the settlement of Pontrennau. As such, land to the south is heavily urbanised whilst open countryside lies to the north beyond the M4 corridor. The Rhymney River flows north to south within 200m of the eastern boundary of the Site.

Designated Sites

Statutory Designations

9.47 No part of the Site is covered by any statutory designations. However, there are a number of such designations within the Site's potential ZoI, as summarised in **Table 9.1**. Distribution maps received as part of the desk study are included in **Appendix 9.1**.

Table 9.1: Summary of Statutory Designations within the Site's Potential Zone of Influence

Designation	Distance from site (km)	Interest Feature(s)
International Designations (10km)		
Severn Estuary RAMSAR	4.9km south	The Severn Estuary regularly supports over 20,000 wintering waterfowl. Internationally important populations of five species of waterfowl are regularly supported including European white-fronted goose (*Anser albifrons albifrons*), shelduck (*Tadorna tadorna*), gadwall (*Anas strepera*), dunlin (*Calidris alpina*) and redshank (*Tringa totanus*). In addition, the islands of Flat Holm and Steep Holm support a nationally important breeding population of lesser black-backed gulls (*Larus fuscus*).
Severn Estuary SAC	4.9km south	The Severn Estuary is important for its unique tidal range and diverse assemblage of habitats supported including Atlantic salt meadows, intertidal mudflats and sandflats, reefs and subtidal sandbanks. The estuary also supports uncommon species such as twaite shad (*Alosa fallax*), river lamprey (*Lampetra fluviatilis*) and sea lamprey (*Petromyzon marinus*).
Severn Estuary SPA	4.9km south	The Severn Estuary is an important site for migratory birds with an internationally important population of Bewick's swan (*Cygnus columbianus bewickii*) being supported. The estuary is also important for migratory fish with species such as the rare and endangered allis shad (*Alosa alosa*), salmon (*Salmo solar*), sea trout (*Salmo trutta*), sea lamprey (*Petromyzon marinus*), river lamprey (*Lampetra fluviatilis*), twaite shad (*Allosa fallax*) and eel (*Anguilla anguilla*), all recorded to be using the estuary.
Severn Estuary SSSI	4.9km south	The Severn Estuary is unique for its large tidal range and intertidal zone of mudflats, sand banks, rocky platforms and saltmarsh. Together these habitats support abundant estuarine fauna including internationally important populations of waterfowl; invertebrate populations of considerable interest; and large populations of migratory fish such as the nationally rare and endangered Allis Shad.

Designation	Distance from site (km)	Interest Feature(s)
Cardiff Beech Woods SAC	7.1km west (closest section)	An area of semi-natural broadleaved woodland dominated by beech (*Fagus sylvatica*). This SAC comprises one of the largest concentrations of *Asperulo-Fagetum* beech forests in Wales. Notable ground flora includes ramsons (*Allium ursinum*), sanicle (*Sanicula europaea*), bird's-nest orchid (*Neottia nidus-avis*) and yellow bird's-nest (*Hypopitys monotropa*).
River Usk / Afon Wysg SAC	9.6km east	The River Usk supports a variety of aquatic plant communities as well as being an important habitat for several uncommon species such as sea lamprey, river lamprey, brook lamprey (*Lampetra planeri*), twaite shad, allis shad, Atlantic salmon (*Salmo salar*), bullhead (*Cottus gobio*) and otter.
National Designations (5km)		
Gwent Levels – Rumney and Peterstone SSSI	2.6km south-east	An extensive area of reclaimed wetland important for its diverse plant and invertebrate communities, with many nationally rare and notable species supported.
Argloddiau Cronfeyedd dwr Llanisien a Llys-faen/Llanishen and Lisvane Reservoir Embankments SSSI	2.9km west	The embankments of Lisvane reservoir are of particular interest for their diverse assemblage of grassland fungi. Species of importance include the crazed cap (*Dermoloma cuneifolium*), smoky spindles (*Clavaria fumosa*), earth tongue (*Geoglossum fallax*) and more than 25 species of waxcaps (*Hygrocybe spp.*)
Lisvane Reservoir SSSI	2.9km west	A stream-fed reservoir of particular importance for overwintering birds including mallard (*Anas platyrhyncos*), teal (*Anas crecca*), tufted duck (*Aythya fuligula*), pochard (*Aythya ferrina*) and coot (*Fulica atra*). The reservoir is also used by occasional divers and grebes and many passage migrants.
Ruperra Castle and Woodlands SSSI	3.5km north	The site is of special interest for its greater horseshoe bat (*Rhinolophus ferrumequinum*) nursery roost. Also, Coed Craig Ruperra woodland within the site, is well used by greater horseshoe bats for foraging and commuting to more distant feeding and roosting areas. Dormouse and great crested newt are also supported by the site.
Rhymney River Section SSSI	3.7km south	Designated for its geological interest.
Gwent Levels – St Brides SSSI	3.8km east	The Gwent Levels is an extensive area of reclaimed wetland important for its diverse plant and invertebrate communities, with many nationally rare and notable species supported. The reens in the St Brides area support several notable plant species including thread-leaved water-crowfoot (*Ranunculus trichophyllus*) and small pondweed (*Potamogeton berchtoldii*). Additionally, St Brides is

Designation	Distance from site (km)	Interest Feature(s)
		the only area on the Gwent Levels where the rare fly (*Stenomicra cogani*) has been recorded.
Rumney Quarry SSSI	3.8km south	Designated for its geological interest.
Plas Machen Wood SSSI	4.5km north-east	An area of coppiced alder (*Alnus glutinosa*) woodland supporting a diverse ground flora including plants which are of rare or local distribution in the County.
Penylan Quarry SSSI	4.5km south-west	Designated for its geological interest.
Cefn Onn SSSI	4.9km north-west	Of special interest for its species-rich calcareous grassland and for its important population of the uncommon and declining frog orchid (*Coeloglossum viride*).

Non-statutory Designations

9.48 Within Cardiff, non-statutory designations for nature conservation are known as SINCs. No part of the site is covered by any non-statutory designations. However, there are fifteen SINCs within the Site's potential Zone of Influence as described in **Table 9.2** below and illustrated in **Appendix 9.1**. This includes St Julian's Forge Fields SINC located circa 10m west of the Site.

Table 9.2: Summary of Non-statutory Designations within the Site's Potential Zone of Influence

Designation	Distance from site	Interest Feature(s)
St Julians Forge Fields SINC	10m west	Two lowland semi-improved grassland fields bound to its east by Bridge Road (B4662) and the Pentwyn Link Road (A4232) to its west. Situated to the west of the Site but separated from it by Bridge Road. Supports several species that are indicators of good grassland condition are supported by the SINC.
River Rhymney SINC	180m east	The River Rhymney represents a significant linear wildlife corridor supporting several protected and notable species of bats, fish, plants, invertebrates and other mammals.
Nant Mwlan Wood SINC	800m north-east	An area of lowland mixed deciduous woodland important for its population of dormouse. The SINC is bound to the south by the M4 motorway and by arable fields to the north, west and east.
Pontprennau Wood SINC	840m south-west	An alder (*Alnus glutinosa*)/birch (*Betula* sp.) woodland supporting a diverse range of ancient semi-natural woodland species. The Nant Pontprennau which passes through the site also supports several marshy plant species.
Druidstone Road SINC	890m east	A collection of ungrazed semi-improved grassland fields, supporting a moderate diversity of plant species. The SINC is bordered by dense scrub and woodland.
Malthouse Wood SINC	1km north-west	Two small blocks of woodland which support a diverse range of species indicative of ancient semi-natural woodland. Two ponds are present in the northernmost woodland block which support common frog (*Rana temporaria*) and toad (*Bufo bufo*).

Designation	Distance from site	Interest Feature(s)
Cefn Mably Woods SINC	1.1km north	Cefn Mably Woods comprises coniferous plantation woodland with some areas of broadleaved plantation, remnant ancient woodland and areas of scrub and rides. The SINC supports high plant diversity and considered to be important for invertebrates and birds.
Nant Fawr SINC	1.1km north-east	A collection of old woodlands connected by wooded stream corridors which support a diverse ground flora. The SINC also supports protected and notable fauna such as dormouse and white-clawed crayfish (*Austropotamobius pallipes*).
Lower Rookery Wood SINC	1.4km south	A small woodland bounded by amenity grassland and residential development which supports some ancient semi-natural ground flora, including an extensive cover of bluebells (*Hyacinthoides non-scripta*).
Nant Glandulais SINC	1.6km north-west	A tributary supporting diverse bankside vegetation with species such as Monk's-hood (*Aconitum napellus*) present. Eel (*Anguilla anguilla*) and trout have also been recorded within the stream.
Nant-y-Draenog SINC	1.6km north-west	A tributary supporting good aquatic, emergent and bankside vegetation.
Coed-y-Llan SINC	1.6km north-west	A small woodland block bounded by agricultural land and highways planting. The primary reason for the designation of this SINC is the presence of dormouse.
Tyla Farm Wood SINC	1.7km east	An area of ancient semi-natural woodland with associated streams. Otter records exist within the site and the woodland itself is considered to provide optimal dormouse habitat.
Cath Cobb Wood SINC	1.9km south-east	Cath Cobb Wood comprises secondary oak (*Quercus* sp.)/ash (*Fraxinus excelsior*) woodland with many ancient semi-natural woodland indicator species present within the ground flora. A pond is present within the SINC which adds botanical and amphibian interest.
Fishpond Wood SINC	1.9km south	A small woodland bounded by amenity grassland and residential development which supports some ancient semi-natural ground flora.

Habitats

9.49 A full description of the habitats within the Site together with associated plans illustrating the locations of these features assessed, is set out within **Appendix 9.1**. In summary, the habitats identified on and immediately adjacent to the Site include:

- Buildings and Hardstanding/Bare Ground;
- Amenity Grassland;
- Improved Grassland;
- Scattered Scrub;

- Scattered Bracken;
- Native Hedgerows; and
- Standing Water.

Buildings and Hardstanding/Bare Ground

9.50 Several buildings and associated hardstanding/bare ground are associated with the north-west corner of the Site. These include a residential farmhouse **B1** (St Julian's House) and several outbuildings used for storage or as horse stables (**B2-B8**).

9.51 Buildings and hardstanding are considered to be of **negligible** importance per se, although the former have potential to support protected species, namely roosting bats and nesting birds.

Amenity Grassland

9.52 A residential garden comprising amenity grassland (**F1**) is present adjacent to the eastern elevation of St. Julian`s House (**B1**). Amenity grassland is contiguous with improved grassland associated with adjacent fields and as such is represented by a similar grassland sward. Given its small extent and poor botanical diversity with a sward subject to frequent mowing this habitat is considered to be of **negligible** ecological importance.

Improved Grassland

9.53 The Site comprises a single field subdivided into several field sections (**F2-F8**), dominated by an improved grassland sward and subject to varying degrees of grazing by livestock. Each field is delineated by post and wire fencing. Fields **F2**, **F4**, **F5** and **F6** were all subject to sheep grazing at the time of the Extended Phase 1 Habitat survey, with sward height typically measuring circa 5cm. A grassland sward is characterised by Yorkshire fog (*Holcus lanatus*), rough meadow-grass (*Poa trivialis*), perennial rye-grass (*Lolium perenne*), cock's-foot (*Dactylis glomerata*) and creeping bent (*Agrostis stolonifera*). Forb diversity is relatively low with creeping buttercup (*Ranunculus repens*) and white clover (*Trifolium repens*) occurring frequently within the sward and common mouse-ear (*Cerastium fontanum*), ribwort plantain (*Plantago lanceolata),* common sorrel (*Rumex acetosa*), daisy (*Bellis perennis*), common cat's-ear (*Hypochaeris radicata*) and dandelion (*Taraxacum officinale agg.*) all occurring occasionally. Towards the north and north eastern corner of the Application Site, sward height was noticeably taller with grazing activity less evident. Scattered bracken (*Pteridium aquilinum*) was abundant here, with broad-leaved dock (*Rumex obtusifolius*), cleaver (*Galium aparine*), lesser celandine (*Ficaria verna*), common ragwort (*Jacobaea vulgaris*), common nettle (*Urticia dioecia*) and barren strawberry (*Potentilla sterilis*) also present.

9.54 Field sections **F7** and **F8** were subject to grazing by horses at the time of the Extended Phase 1 Habitat survey. Fields **F7** and **F8** are similar in character to fields **F2-F6**, with a short sward height and similar species composition.

9.55 Given improved grassland represents a large, continuous area of habitat contiguous with come, albeit limited potential to support protected and notable species this habitat is considered to be of **Site** level importance.

Scattered Scrub

9.56 Small patches of scattered scrub are present within the north west corner of field F8, largely dominated by bramble (*Rubus fructinosus* agg.). Given its limited extent and poor species diversity, scattered scrub is considered to be of **negligible** importance.

Scattered Bracken

9.57 A band of scattered bracken measuring approximately 2m wide is present alongside hedgerow **H4** for approximately ¾ of its length with a further patch extending along approximately half the length of hedgerow **H3**. Given its limited extent and poor species diversity, scattered scrub is considered to be of **negligible** importance.

Native Hedgerows

9.58 The vast majority of hedgerows are outgrown and leggy, becoming defunct in places. Post and wire fencing align each hedgerow, protecting further damage from livestock. Of the hedgerows surveyed, none were assessed to qualify as 'important' under the Wildlife and Landscape Criteria of the Hedgerow Regulations 1997; however, hedgerows **H1** and **H3** are considered to be species rich, supporting on average five or more native woody species.

- Hedgerow H1 runs delineates the southern boundary of the Site and measures approximately 7m high and 3m wide. The hedgerow is unmanaged and, as such, is tall and outgrown. The hedgerow is predominantly defunct, particularly at its western extent. The ground flora community supported by the hedgerow is relatively species-poor with bramble (*Rubus fruticosus* agg.) climbing up through the hedgerow. Cleavers (*Galium aparine*), bramble, bracken (*Pteridium aquilinum*) and ivy (*Hedera helix*) are frequent; lesser celandine (*Ficaria verna*) and common nettle (*Urtica dioica*) occur occasionally and foxglove (*Digitalis purpurea*) rarely. Conversely, the woody component of the hedgerow is species-rich with an average of six species recorded including hawthorn (*Crataegus monogyna*), hazel (*Corylus avellana*), elder (*Sambucus nigra*), dog-rose (*Rosa canina)*, blackthorn (*Prunus spinosa*) and holly (*Ilex aquifolium*);

- Hedgerow H2 delineates the south-east boundary of the Site and appears unmanaged, with dimensions of approximately 8m high and 3m wide. The hedgerow is rather tall and leggy with gaps beginning to form throughout. The woody component of the hedgerow is relatively species-poor as is the ground flora, with cleavers, bramble, bracken and ivy occurring frequently, lesser celandine occasionally and red campion (*Silene dioica*) and foxglove rarely. The woody component of the hedgerow includes hawthorn, holly and hazel;

- Hedgerow H3 delineates the eastern boundary of the Site and measures approximately 8m high and 3m wide. The hedgerow does not appear to be subject to regular management and as such is outgrown and leggy. Additionally, gaps are beginning to form throughout the length of the hedgerow particularly at its southern end where the hedgerow is starting to become defunct. The woody component of the hedgerow is species-rich with an average of five species recorded. Species recorded throughout the entire length of the hedgerow include hazel, hawthorn, blackthorn, holly, dog-rose, wych elm (*Ulmus glabra*) and elder;

- Hedgerow H4 delineates the northern boundary of the Site and is parallel to an unnamed road and a further hedgerow to its north. Hedgerow H4 is approximately 7m high and 2m wide. At its western end, the woody component of this hedgerow is dominated by semi-mature sycamore (*Acer pseudoplatanus*) standards. Other species recorded within this hedge include field-maple (*Acer campestre*), holly, hazel, hawthorn, oak (*Quercus robur*) and blackthorn. The ground flora supported by the hedgerow is relatively sparse, although

notable species such as lord's-and-ladies (*Arum maculatum*), barren strawberry (*Potentilla sterilis*), hart's-tongue fern (*Asplenium scolopendrium*), primrose (*Primula vulgaris*) and dog's mercury (*Mercurialis perennis*) were recorded; and

- Hedgerow H5 delineates the south-west boundary of the Site, parallel with the B4562 road. The hedgerow measures approximately 7m high and 2.5m wide, with a post and wire fence running along the eastern aspect of the hedge. The hedgerow is tall and leggy throughout its length with outgrowth prevalent. The woody component of the hedgerow supports hazel, holly, wych elm, hawthorn, field maple and ash (*Fraxinus excelsior*).

9.59 A habitat of Principal Importance, native hedgerows are considered to be of **Local** level importance.

Standing Water

9.60 A small garden pond situated amongst a garden patio is present on the property of St Julian's House. The pond is lined with plastic sheeting and measures approximately 3m (L) x 2m (W). No macrophytes were recorded in association with the pond at the time of survey with fish populations recorded to be present. Although ponds are typically considered Priority habitats, given the artificial construction of the pond with absence of aquatic vegetation, this habitat is considered to be of **Site** level importance only.

Habitat IEFs

9.61 Those habitats considered to be Important Ecological Features (IEFs) and valued at or above Local level requiring consideration within this detailed assessment are summarised within **Table 9.3.**

Table 9.2: Habitats of local value or higher within or in close proximity to the Site

IEF	Level of Importance	Distance from Site
Cardiff Beech Woods SAC	International/European	7.1km (west)
Severn Estuary Ramsar/SPA/SAC, SSSI	International/European	4.9km (south)
Ruperra Castle and Woodlands SSSI	National	3.5km (north)
St Julian's Forge Fields SINC	County	10m (west)
River Rhymney SINC	County	180m (east)
Native Hedgerows	Local	Defining the boundaries of the Site

9.62 The valued habitats noted above, together with other habitats within the Site of low or negligible intrinsic value, have also been found in some instances to support, or have the potential to support, protected or notable species. This is discussed further within the 'Species' sub-sections below.

Protected and Priority Species

9.63 As set out previously, information on protected and/or notable species within or near to the site were collected through a desk study and a range of field surveys. The findings of these investigations are set out in full in **Appendix 9.1** and are summarised below.

Breeding Birds

9.64 A relatively small number of records of bird species within 2km of the Site were returned by SEWBReC during the desk study. Records of Schedule 1 species within 2km of the Site include barn owl (*Tyto alba*), fieldfare (*Turdus pilaris*), kingfisher (*Alcedo atthis*), hobby (*Falco subbuteo*), goshawk (*Accipiter gentilis*) and redwing (*Turdus iliacus*). Records of red listed species[11] include starling (*Sturnus vulgaris*) and lapwing (Van*ellus vanellus*). Amber listed species include house sparrow (*Passer domesticus*), song thrush (*Turdus philomelos*), skylark (*Alauda arvensis*) and red kite (*Milvus milvus*).

9.65 Breeding bird surveys of the wider consented development were initially undertaken by Ecology Cymru on behalf of Celtic Ecology on three occasions during 2012. Although scrub and trees were considered suitable nesting habitat, improved grassland which dominated the survey areas was considered unsuitable for ground nesting birds due to disturbance associated with grazing activities. Overall, a breeding bird assemblage was considered to be of medium-local importance, dominated by relatively common species typical of the range and extent of habitats available.

9.66 With respect to the Site, hedgerow boundaries do provide suitable cover and a foraging resource to a common and generalist assemblage of breeding birds only. Although improved grassland provides a foraging resource, grazing activity is likely to deter notable assemblages of ground nesting birds. More suitable breeding habitat including woodland and riverine habitats is also present within the wider landscape. The Site is therefore considered to be of **Site** Level importance with respect to its potential to support common and widespread bird species.

Bats

9.67 SEWBReC returned multiple records of roosting bats within 2km of the Site, the most pertinent of which includes a noctule bat (*Nytalus noctula*) roost and a common pipistrelle bat (*Pipistrellus pipistrellus*) roost 1.2 km east of the Site.

9.68 With respect to Annex II species several records of roosts for great horseshoe (*Rhinolophus ferrumequinum*) and lesser horseshoe (*Rhinolophus hipposideros*) bats were returned. These include confirmation of a greater horseshoe day roost located approximately 2.9km west and hibernation roosts for both species 4.6km north of the Site.

9.69 Multiple records of foraging/commuting bats were also recorded within 2km of the Site (the closest within 300m) including: common pipistrelle; soprano pipistrelle (*Pipistrellus pygmaeus*); Nathusius' pipistrelle (*Pipistrellus nathusii*); serotine (*Eptesicus serotinus*); noctule; and greater horseshoe bats.

9.70 Bat activity surveys comprising manual transect surveys of the wider consented development were undertaken by Celtic Ecology on three occasions between August 2011 and October 2012. Bat activity was relatively low across the survey area although greater activity dominated by soprano pipistrelle, common pipistrelle and Daubenton's (*Myotis daubentonii*) bats were recorded in association with the River Rhymney whilst common and soprano pipistrelle bats were recorded in some abundance around St Julian's Manor. Activity associated with noctule, brown long-eared (*Plecotus auritus*), *Myotis* sp. and whiskered/brandt's (*Myotis mystacinus/brandti*) bats was also recorded during survey effort. At the time of survey, it was considered that a bat roost was likely present in association with St Julian's Manor and Bridge Farm present offsite to the north east across the wider consented development area of St. Edeyrn's Village.

[11] Bladwell S, Noble DG, Taylor R, Cryer J, Galliford H, Hayhow DB, Kirby W, Smith D, Vanstone A, Wotton SR (2018) The state of birds in Wales 2018. The RSPB, BTO, NRW and WOS. RSPB Cymru, Cardiff

Investigations of Bat Roosting – Trees

9.71 The initial ground level assessments of trees within the Site undertaken by EDP in January 2020 identified three mature trees with potential to support roosting bats. **T1** is considered to have low potential to support roosting bats whilst **T2** and **T3** are considered to have moderate potential to support roosting bats. The findings of the ground level tree assessments are summarised in **Table 9.4**.

Table 9.4: Bat Roost Assessment Results - Trees

Tree ID	Species	Potential Roosting Features (PRFs) Identified/Inspected	Bat Roosting Potential
T1	Pedunculate Oak (*Quercus robur*)	Ivy covering on the trunk.	Low
T2	Field maple (*Acer campestre*)	But rot present at the base of the trunk together with a canker wound. The base of the trunk is also overgrown with bramble and therefore lowering the potential use of this feature by bats.	Moderate
T3	Holly (*Ilex aquilinum)*	Dead/decaying stem can be observed on the holly with shallow wounds. The trunk itself is in a cluttered environment, decreasing chances of being found by bats.	Moderate

Investigations of Bat Roosting – Buildings

9.72 St Julian's House is associated with the north western corner of the Site and comprises a residential farmhouse (offsite) and associated outbuildings (onsite) used for storage and as horse stables.

9.73 An external and internal visual assessment of all outbuildings (**B2-B8**) combined with an external visual assessment of the farmhouse (**B1**) was undertaken by EDP on 13 January 2020. The survey identified three buildings with low suitability to support roosting bats (**B1, B3c**, and **B5**). A further two buildings were assessed as having moderate suitability (**B3a** and **B7**) with remaining buildings considered to have negligible potential.

9.74 A description of each building and their value for roosting bats is summarised within **Table 9.5** below.

Table 9.5: Bat Roost Assessment Results - Buildings

Building ID	Description	Evidence of Bats/Potential Roost Features	Bat Roost Potential
B1	The main building consists of two floors with several single storey extensions and a conservatory along its south elevation.	The roof is generally in good condition with intact roof tiles and intact lead flashing. The soffit boxes are predominantly plastic and intact although wooden soffits were identified in association with the northern, single storey extension. Here, a rot hole in the soffit provides potential access for crevice dwelling bats. No signs of bats.	Low summer roosting bat potential and negligible hibernation potential. No evidence of roosting bats identified during external inspection in 2020. Confirmed common pipistrelle roost following dusk emergence surveys undertaken during 2020.
B2	Single storey portable cabin with flat roof.	There is potential access to the interior for roosting bats via the front door which is slightly ajar. The interior is well lit during the day with no potential roosting features. No signs of roosting bats.	Negligible summer roosting and hibernation potential.
B3a	Single storey stable with three compartments, constructed from wood with pitched, corrugated roof.	Open stable doors and vents along the ridge of the roof provide access for bats to the interior of the building. The exterior walls are cladded in timber, which appears to be intact and in good condition. Internally, MDF boarding across ceiling is pulling away from the roof providing potential roosting features for crevice dwelling bats. Very light internally. No signs of roosting bats.	Moderate summer roosting and negligible hibernation potential.

Building ID	Description	Evidence of Bats/Potential Roost Features	Bat Roost Potential
B3b	Single storey building constructed from wood with flat roof. Building is connected to building B3a and B3c. Used for storage	The bitumen roof is covered intact. Small gaps around the exterior door provides potential access for roosting bats. Internally, presence of rats confirmed. No potential roosting features. No signs of roosting bats.	Negligible summer roosting and hibernation potential.
B3c	Single storey shed used for storage with slightly pitched roof. There is a small open timber shed on its northern elevation.	This single storey shed is in good condition with external timber cladding and internal timber support trusses. The large, open door provides internal access for bats. Internally, there are gaps behind MDF boarding which covers the bottom half of external walls. A thorough inspection of these features was possible. No signs of roosting bats.	Low bat roosting and negligible hibernation potential.
B4	Corrugated metal barn approximately 8m high with corrugated metal roof. It has one compartment constructed from MDF.	Building is open on two sides and as such is exposed to prevailing weather conditions with light ingress. No potential roosting features identified. No signs of roosting bats.	Negligible summer roosting and hibernation potential.
B5	Single storey storage shed constructed from a mix of wood panelling, corrugated metal sheeting and brick with cladding.	Gaps between the flat roof and exterior walls provided access for bats internally. Internally, roosting features are limited to wood ceiling supports suitable for free hanging bats. No suitable features identified for crevice dwelling bats. Building is very light inside with rat presence which would typically deter roosting bats. No signs of roosting bats.	Low summer roosting and negligible hibernation potential.

Building ID	Description	Evidence of Bats/Potential Roost Features	Bat Roost Potential
B6	Single storey, wooden stable used to stable sheep. In current use.	Open stable doors provide access for bats internally. Inside, building is very light. Internally, there are gaps behind MDF boarding which covers the bottom half of external walls, circa 20cm deep. These were damp and exposed with no signs of roosting bats.	Negligible summer roosting and hibernation potential.
B7	Wood construct horse stable with pitched, corrugated roof. In current use.	Open stable doors provide access for bats internally. Inside, building is very light. Internally, MDF boards are largely flush to the roof and walls with no gaps with the exception of one small gap which provides potential access to an internal wall cavity. No signs of bats.	Low summer roosting and negligible hibernation potential.
B8	Wood construct horse stable with pitched, corrugated roof. In current use.	Open stable doors provide access for bats internally. Inside, building is very light. Internally, MDF boards are largely flush to the roof and walls with no gaps. No potential roosting features. No signs of bats.	Negligible summer roosting and hibernation potential.

9.75 Dusk emergence surveys of buildings **B1**, **B3** and **B5-B7** with bat roost potential have been undertaken by EDP between May and July 2020. During a dusk emergence survey of building **B1** on 01 June 2020, one bat was identified emerging from a soffit box on the south-east corner of the building. The bat did not echolocate such that the species could not be confirmed. However, based on its flight pattern and roosting feature from which it emerged; the bat was presumed to be a pipistrelle (*Pipistrellus* sp.).

9.76 A second dusk survey of **B1** was undertaken on 02 July 2020 during which two common pipistrelle bats were recorded emerging from the south-eastern corner of the building.

9.77 Based on the results, it is considered that building **B1** supports a summer day roost for low numbers of common pipistrelle bats.

Investigations of Bat Foraging/Commuting Activity

9.78 A minimum of bat species/species groups (myotid bat species were not identified to species level), were confirmed to be present foraging and/or commuting within the Site during the course of the automated detector surveys. During the automated detector surveys, the vast majority of this behaviour (average 92.18% of Anabat recordings) related to common pipistrelle bat. Soprano pipistrelle accounted for 3.82% of all anabat recordings whilst *Myotis* sp. accounted for 2.13%. Other species representing less than 1% of Anabat recordings include greater horseshoe, long-eared, noctule and *Nyctalus* sp., bat species accounting for 1.88% of all Anabat calls recorded in total during early and late May, June and July 2020.

9.79 A minimum of three species were recorded during the manual transect surveys. Overall, relatively moderate levels of bat activity were recorded, associated with the hedgerow boundaries of the Application Site. During May, the relatively higher levels of common pipistrelle foraging activity were associated with south eastern corner and north eastern corner of the Site. During June, foraging activity was predominantly associated with the south western corner of the Application Site. Here, activity was again dominated by common pipistrelle bat with occasional registrations from soprano pipistrelle. Myotid bats were recorded in association with the north eastern corner of the Site in May 2020.

9.80 The abundance and diversity of bat species recorded on Site is considered to be typical for the sub-urban edge of Cardiff, with common and widespread generalist species such as common pipistrelle bats accounting for the vast majority of foraging and commuting activity. Overall therefore, a bat assemblage utilising the Site is considered to be of **Local** Level importance.

Badger

9.81 Five records for badger were returned by SEWBReC during the desk study setts including a partially-used sett and main sett within 2km of the Site. Records for badger activity within 300m of the Site were also returned.

9.82 No evidence of badgers were recorded within the wider consented development by Celtic Ecology in 2012 however. Although several excavations were identified within the survey area, these were attributed to rabbit.

9.83 Improved grassland comprising the Site offers suitable foraging opportunities for badger, whilst hedgerow boundaries provide suitable opportunities for the excavation of badger setts, particularly the eastern hedgerows (**H2** and **H3**). No setts or evidence of badger activity were, however, recorded during the Extended Phase 1 Habitat survey nor was any additional evidence noted during subsequent site visits.

9.84 However, given their likely presence within the wider landscape, their opportunistic nature and the potential of the Site to provide suitable foraging opportunities, this species is considered to be of importance at the **Site** Level only.

Dormouse

9.85 Several records for dormouse were returned within 2km of the Site by the South East Wales Biodiversity Records Centre (SEWBReC) during an update desk study undertaken by EDP in November 2019. The closest records relate to a nibbled hazel nut recorded during 2018 on land immediately west of the Site. This is in addition to records for both nests and individuals on land associated with the wider consented development comprising St. Edeyrn's Village, with the closest record located circa 380m south of the Site.

9.86 Previous dormouse tube surveys undertaken on the Site and wider consented development area completed by Celtic Ecology during September 2011 and May 2012, recorded evidence of

dormouse within hedgerows **H1** and **H2** comprising the southern boundaries of the Site. This was in addition to evidence of dormouse offsite to the immediate north, within a hedgerow parallel to **H4**, and across suitable habitat comprising the wider consented development area of St. Edeyrn's Village. Detailed survey results and the distribution of dormouse tubes across the survey area is provided within the Ecological Impact Assessment prepared by Celtic Ecology provided at **Appendix EDP 9.2**.

9.87 In addition to the above, recent construction of the first phase of consented development across St. Edeyrn's Village south of the Site, following approval of a Reserved Matters application (planning reference: 14/02556/MJR), has been completed under Natural Resources Wales (NRW) Development Licence numbers 71403, 76768, SO87107.

Otter and Water Vole

9.88 A desk study returned two records for otter within 2km of the Site including one record in association with the River Rhymney and a mortality on the M4. No records for water vole were returned during the desk study. Historical surveys undertaken by Cresswell Associates to inform the wider consented development across St. Edeyrn's Village found evidence of otter at two locations along the River Rhymney in 2006 and one location in 2010. No evidence of otter along the banks of the River Rhymney was identified during survey effort of the wider consented development area undertaken by Celtic Ecology between August 2011 and February 2013 however.

9.89 There is no suitable habitat for either species within the Site such that they are not considered a constraint to development and thus of **negligible** importance.

Great Crested Newt

9.90 No records for great crested newt were returned by SEWBReC during the desk study. However, several records for palmate newt (*Lissotriton helveticus*), smooth newt (*Lissotriton vulgaris*), common frog (*Rana temporaria*) and common toad (*Bufo bufo*) were returned within 2km of the Site.

9.91 In addition, no waterbodies exist within 500m of the Site other than a very small garden pond present within the garden of St Julian's House (**P1**). Two ponds were previously identified to the immediate north of the Site with aerial mapping, however both ponds have since been infilled and removed.

9.92 A habitat suitability assessment confirmed **P1** to be of poor suitability to support great crested newt. Indeed, the pond is artificial in nature with concrete banks, a limited/no macrophyte community and stocked with fish.

9.93 With respect to terrestrial habitat, grazed improved grassland which dominates the Site is considered to be sub-optimal for great crested newt. Whilst hedgerow boundaries could facilitate dispersal of this species in addition to providing suitable refugia, new residential development to south and the M4 motorway to the north are considered to act as significant barriers to the dispersal of this species across the local landscape should they be present within the area. Great crested newt is thus presumed absent and considered to be of **negligible** importance and is not considered further within this report.

Common Reptiles

9.94 SEWBReC returned no records for slow-worm (*Anguis fragilis*), adder (*Vipera berus*), grass snake (*Natrix natrix*) or common lizard (*Zootoca vivipara*) within 2km of the

Site.

9.95 Managed grassland which dominates the Site is largely unsuitable for common reptile species, comprising improved grassland subject to regular grazing, although limited pockets of scattered scrub and bracken associated with the hedgerow margins potentially provide some suitable habitat for foraging and dispersal should a local population be supported. As such a precautionary reptile survey was undertaken of the Site during July 2020 by EDP, during which no reptiles were recorded.

9.96 Given the limited availability of suitable habitat coupled with the lack of sightings during the reptile survey, a significant common reptile population is unlikely to be supported. Nevertheless, given their potential presence within the locality, the Site is considered to be of **Site** Level importance to this species group.

Other Notable Species

9.97 The desk study returned no records for invertebrate species within 2km of the Site. Surveys of the wider consented development area comprising St. Edeyrn's Village undertaken by Ward Ecology on behalf of Celtic Ecology in 2012 identified a total of 155 species. Of these, five were considered notable including a beetle (*Oedalea flavipes*), three flies (*Hilara brevivittata*, *Platypalpus major* and *Empis caudatula*) and one spider (*Misumena vatia*). One species recorded during the survey was nationally scarce (*Hilaria brevivittata*). Most of the survey area was considered to be of low interest for invertebrates whist the River Rhymney was considered to be of moderate interest. Habitats present across the Site itself however comprise predominantly improved grassland exhibiting a uniform structure and subject to regular grazing by livestock such that presence of a notable invertebrate assemblage is unlikely.

9.98 The desk study also returned records for bluebell (Hyacinthoides non-scripta), a species listed on Schedule 8 of the Wildlife and Countryside Act 1981 (as amended), the closest record in association with a dry woodland 1.1km north-west of the Site. Surveys of the wider consented development area undertaken by Celtic Ecology identified Japanese knotweed (*Fallopia japonica*) along the banks of the River Rhymney to the east of the Site as well as patches of Himalayan balsam (*Impatiens glandulifera*). Both species are invasive species listed under Schedule 9 of the Wildlife and Countryside Act (1981, as amended). No notable plant species were identified for the Site itself however during survey effort completed by EDP during 2020.

9.99 A desk study returned multiple records for European hedgehog (*Erinaceus europaeus*), the closest located approximately 100m west of the Site. Habitats supported by the Site, namely hedgerow boundaries, provide some, albeit limited, cover for these species. This species is therefore not considered to be significant beyond a **Site** context.

Species IEFs

9.100 Species identified as requiring consideration within the ES due to their identification as IEFs valued at or above Local level (with the exception of breeding birds and common reptiles, which are included for consideration due to legal implications) are summarised below in **Table 9.6**.

Table 9.6: Summary of Species IEFs requiring consideration

IEF	Level of Importance	Distance from Site
Breeding Birds	Site	On-site
Bats (commuting/foraging)	Local	On-site
Bats (roosting)	Local	Off-site Adjacent (B1)
Dormouse	Local	On-site
Common reptiles	Site	On-site

Future Baseline

9.101 It is anticipated that if the proposed development did not proceed, land practices would remain the same, with the Site continued to be grazed whilst buildings would be maintained in their current state.

Predicted Impacts

9.102 The following section considers the overall effect of the development on the ecology features and ecosystems, assessing the negative effects that arise from construction and operation of the scheme and any beneficial environmental effects of inherent mitigation.

9.103 An assessment of likely significant effects of the Proposed Development on the ecological features and ecosystems identified above has been undertaken based upon the Masterplan prepared for the site (see **Appendix 9.3**), which incorporates any inherent impact avoidance, minimisation and mitigation determined throughout the iterative assessment and design process. Those potential significant effects assessed include such inherent mitigation but, initially, in the absence of any other avoidance, mitigation and compensation measures.

9.104 In accordance with guidelines published by the Chartered Institute of Ecology and Environmental Management (CIEEM) in September 2018, this assessment further considers potential future impacts to IEFs arising as a result of global trends and climate change which can include, but is not limited to, an increase in daily maximum/minimum temperatures, an increase in annual average rainfall and increase in mean sea level.

9.105 Whilst exact details of the construction methods to be used cannot be determined with absolute certainty at this time, a number of assumptions and parameters have been fixed for the purposes of this assessment and are described fully within Chapter 3 – Description of the Scheme.

9.106 The key inherent mitigation measures included within the proposed development pertinent to the ecological impact assessment include:

- Retention of the vast majority of boundary hedgerows onsite, accounting for 78.4% of the hedgerow resource, with losses primarily limited to breaks through hedgerows to accommodate access roads and footpath/cycle links connecting the Site to consented development adjacent;

- Retention of trees **T2** and **T3** with moderate bat roost potential and **T1** with low bat potential;

- Retention of building **B1** and associated common pipistrelle day roost through its exclusion from the Site boundary;

- The offsetting of the development footprint away from key habitat corridors comprising hedgerows and green lanes forming the northern, eastern and western boundaries of the Site though the provision of habitat buffers alongside single sided roads so as to minimise disturbance impacts arising from development adjacent;

- The implementation of a sensitive drainage design and siting of sustainable drainage features alongside associated areas of public open space within the north-eastern extent, and along the south-western boundary to further offset development away from sensitive habitats to be retained adjacent, thereby further minimising disturbance impacts whilst facilitating access for future maintenance; and

- The offsetting of residential curtilages away from hedgerow habitat forming the southern and south-eastern boundaries of the Site through the inclusion of additional habitat buffers, so as to ensure the avoidance of mismanagement and other disturbance impacts arising upon adjacent habitats.

9.107 Development of the Site includes two main stages: namely the construction (including demolition) phase comprising all site preparation works and construction of all buildings, associated infrastructure and landscaping; and the operational phase comprising the long-term occupation of the Site. The effects of the proposals in relation to these two stages are discussed in turn below.

During Construction

9.108 Construction is proposed to span across circa 4 years from 2021 to 2024/2025. Potential significant effects identified which could arise as a result of the construction in the absence of mitigation include the following:

- Effects of direct habitat loss due to land take upon habitats and species;

- Indirect effects to designated sites, habitats and species due to habitat degradation and damage;

- Effects of light, noise and human disturbance to habitats and species;

- Increased risk of collision to species; and

- Pollution of groundwater and surface water flows.

Statutory Designations

9.109 CC's deposit Local Development Plan and Preferred Strategy were previously subject to a Habitat Regulations Assessment (HRA) in 2012[12], which considered the likely significant effects to arise through Cardiff Council's Strategic Sites (Policy KP2:G) including the Site and wider Allocated development, on European sites within the ZoI such as the Severn Estuary Ramsar, SAC and SPA and Cardiff Beechwoods SAC.

9.110 The HRA identified several potential effects of Strategic Sites on the Severn Estuary Ramsar, SAC and SPA, and Cardiff Beechwoods SAC comprising:

[12] Cardiff Council/Enfusion (2012) Habitats Regulations Appraisal Screening Report. Background Technical Paper No. 4, October 2012.

1. Dust, noise, vibration, movement and odour associated with industrial and construction processes leading to aerial pollution;

2. Dust, noise, vibration, movement and odour associated with industrial and construction processes leading to changes in nutrient and/or organic loading;

3. Impacts on surface water run-off leading to contamination and changes in nutrient and/or organic loading;

4. Changes to local hydrology;

5. Increased traffic movements leading to aerial pollution and contamination;

6. Land take leading to loss of habitat;

7. Wastewater and sewage leading to contamination and changes in nutrient and/or organic loading;

8. Increase in population and therefore recreation levels, leading to increase in recreational pressures; and

9. Increased noise and light pollution, leading to disturbance of species.

9.111 The HRA report determined that there would be no likely significant effects on these designated sites subject to implementation of development in accordance with those policies of the Local Development Plan, in addition to effluent consent limits laid down by the Environment Agency/Natural Resources Wales and pollution contingency plans by the Cardiff Harbour Authority.

9.112 Subsequent HRAs of the deposit LDP were undertaken in June 2015[13], October 2015[14] and January 2016[15] for the new Matters Arising Changes Schedule (MAC) and the Inspector Changes arising from Hearing Sessions 20-26. None of the new MACs or Inspector Changes were judged to have the potential to affect any of the International Sites in and around Cardiff, above or beyond those potential impacts already considered in the original HRA. As such, no further assessment under the Habitat Regulations was considered necessary with respect to strategic development across the Site.

9.113 At the Site level, the Site is located circa 4.9km from the Severn Estuary SAC/SPA/Ramsar and circa 7.1km from the Cardiff Beechwoods SAC. Given the distance and spatial separation of the site from these designations, combined with the localised scale/nature of proposed development, no likely significant effects arising from disturbance, aerial pollution and habitat loss are anticipated on designated sites during the construction phase of development.

9.114 However, impacts to the Severn Estuary Ramsar/SAC/SPA/SSSI associated with a deterioration in water quality and increase in suspended solids could occur during the construction phase, as a result of the discharge of contaminated run-off and deposition of material following periods of heavy rainfall into the River Rhymney 200m east of the Site, which could be transferred further downstream to Severn Estuary. Pollution incidents could also arise as a result of leaks and spills from construction activities, resulting in the introduction of hydrocarbons and other

[13] Cardiff Council/Enfusion (2015a) Habitats Regulations Appraisal of Matters Arising Schedule, June 2015.
[14] Cardiff Council/Enfusion (2015b) Habitats Regulations Appraisal of Matters Arising Schedule, October 2015.
[15] Cardiff Council/Enfusion (2016) Habitats Regulations Appraisal of Matters Arising Schedule of Deposit Local Development Plan, January 2016.

contaminants from demolition activities, site plant or of sediment loads arising from dust deposition or spoil movement. Such impacts would give rise to negative effects on a freshwater ecosystem more generally with potential for fish kills to occur, reduced diversity of a macroinvertebrate community and changes in the composition of a plant community in addition to potential loss of breeding habitat for salmond fish populations following an increase in sediment disposition.

9.115 Whilst it is not possible to predict accurately the full ecological impact of a contamination/pollution event occurring onsite given that its scale and extent cannot be predicted, in the absence of mitigation negative effects are considered possible, though the spatial separation between the sites (circa 4.9km as the crow flies) for the Severn Estuary reduces the likelihood of this occurring. Nevertheless, any unmitigated impact could lead to **negative** impacts which are considered to be **temporary** and **reversible**, albeit the effects on a freshwater ecosystem may endure for the **short** to **medium term**. Whilst the Severn Estuary Ramsar, SAC and SPA is valued at an International/European Level, given the relatively small scale and extent of anticipated impacts, along with the spatial separation of the sites, such potential effects are considered to be significant at **Local** level only.

9.116 Several SSSIs lie within 5km of the site that have been designated on ecological grounds. One of these is the Severn Estuary SSSI, which overlaps with SAC/SPA/Ramsar designation, and this is scoped in at the National Level, in addition to International/European Level as outlined above.

9.117 Of further pertinence, Ruperra Castle and Woodlands SSSI is located 3.5km north of the Site and is of special interest for its greater horseshoe bats. The Site is dominated by sheep-grazed improved grassland of some importance to a foraging bat assemblage, including greater horseshoe bat, whilst hedgerow boundaries provide a linear feature for bats commuting across the Site between their roosts and foraging grounds. As such, potential significant impacts upon a greater horseshoe bat (a qualifying feature of the SSSI) associated with loss of supporting foraging habitat and indirect disturbance (particularly light spill) upon retained commuting habitats may arise during construction.

9.118 Manual transect and automated bat activity surveys of the Ste undertaken by EDP in 2020 have confirmed that the Site supports only low levels of foraging and commuting activity dominated by common and widespread bat species. Although greater horseshoe bat was recorded onsite during the course of automated bat activity surveys, registrations of this species accounted for less than 1% of total activity recorded with no more than nine passes recorded during any one night. Combined with the proposed retention of 78.4% of the total hedgerow resource, impacts arising upon qualifying features of Ruperra Castle Woodlands SSSI, are considered **negligible** albeit require further consideration in relation to a bat assemble more generally (see below).

9.119 With respect to other SSSI's detailed in **Table 9.1**, given their distance and spatial separation from the Site, no significant impacts are considered likely to arise. Such national designations have therefore been scoped out of this assessment accordingly.

Non-Statutory Designations

9.120 Similar to that reported above, impacts to the River Rhymney SINC, 200m east of the Site, during the construction phase could potentially arise as a result of contamination/pollution incidents. The unmitigated effects upon the SINC can be characterised as a **negative** impact, anticipated to be **temporary** and **reversible**. Whilst the River Rhymney SINC is valued at County level, given the small scale and extent of anticipated impacts, such effects are considered to be significant at the **Local** Level only.

9.121 St Julian's Forge Fields SINC recognised for species-rich semi-improved grassland communities is located circa 10m west of the Site. Although outside of the Site boundaries such that there will be no loss of habitat, there remains the potential for indirect degradation of this feature to occur during construction, given the proximity of built development. Indirect effects associated with increased levels of disturbance will likely occur during the construction phase though the use of lighting and increased levels of vehicular traffic, machinery use and plant movement. Such disturbances arising can be intermittent, frequent, and/or constant throughout the construction period. Given that the majority of the works will be undertaken during daylight hours, the usage of artificial lighting will likely be limited to the early morning and early evening hours, with greater requirements for artificial lighting during the winter months. This could potentially impact upon species associated with the SINC. The proposed development is, however, separated from the Site by Bridge Road (B4562), such that built development is offset from this feature by some degree. Disturbance impacts on St Julian's Fields SINC are thus considered to be **negative**, **temporary** and **reversible** at the **Local** Level.

Habitats

9.122 The proposed masterplan has sought to minimise impacts upon important habitat features as far as possible through confining losses primarily to the interiors of improved fields of generally low botanical interest combined with retention of the majority of the hedgerow resource (78.4%).

9.123 However, fragmentation of the southern (**H1**) and eastern (**H3**) hedgerows is proposed, with a single break proposed through each of these hedges necessary to accommodate access roads connecting the Site to consented development adjacent. This is in addition to two small breaks through hedgerow **H4** and one small break through **H5** to accommodate footpath/cycle links. Such losses equate to approximately 195m2 (31 linear metres. This is in addition to the erosion of a small area of trees and associated bramble scrub aligning the north-western boundaries of the Site (tree groups **G6**, **G7** and **G8**, as defined within the Arboricultural Baseline Note prepared for the Application Site included at **Appendix 9.4**), combined with the loss of an early mature wych elm tree (tree **T11**, **Appendix 9.4**), located within hedgerow **H5** and proposed for felling for health and safety reasons. Such losses total circa 178m2 /72 linear metres. Such breaks will reduce the habitat available to protected/priority species and potentially limit their dispersal across the wider landscape, otherwise required to maintain genetically viable populations necessary to offset the effects of climate change and maintain healthy ecosystems.

9.124 This may be further exacerbated by an increase in daily maximum/minimum temperatures and annual average rainfall, with such effects likely to influence the distribution of protected/priority species at a national level. However, given that those habitats and species within the Site are widespread and the Site is not near the edge of any of their ranges, any projected change in temperatures is not anticipated to result in any significant impacts on the distribution of IEFs.

9.125 Inherent in the design is the inclusion of habitat buffers between retained hedgerows and built development to offset the development footprint from these features whilst proposed infill planting of retained hedgerows combined with new tree and scrub planting across the Site will adequately compensate for such losses. Nevertheless, loss of habitat including hedgerows valued at the local level is characterised as a **negative**, **permanent** and **irreversible** effect. However, given the small scale and extent of the anticipated impacts, such effects are considered to be of only **Local** significance.

9.126 In addition to direct habitat loss, retained hedgerows and trees may be subject to indirect degradation impacts, such as soil compaction, damage to root protection zones and encroachment by machinery from adjacent construction works, which may in turn result in death or disease, and a decline in the regulatory ecosystem services provided by such habitats,

In the absence of mitigation, the extent and magnitude of such, medium-term, potentially frequent impacts (i.e. duration of the construction phase), is likely to be **negative**, **permanent** and **potentially irreversible**. The significance of such effects upon notable features is considered to be of **Local** significance.

9.127 Indirect effects associated with increased levels of disturbance will likely occur during the construction phase through the use of lighting and increased levels of vehicular traffic, machinery use and plant movement. Such disturbances arising can be intermittent, frequent, and/or constant throughout the construction period. Given that the majority of the works will be undertaken during daylight hours, the usage of artificial lighting will likely be limited to the early morning and early evening hours, with greater requirements for artificial lighting during the winter months. This could potentially impact upon hedgerows and those species using it (see below). Disturbance impacts on native hedgerows are considered to be **negative**, **temporary** and **reversible** at the **Site** Level. The significance of such effects upon notable features is considered to be of **Local** significance.

9.128 With respect to mature and semi-mature trees, trees**T11** will be felled (for health and safety) with the loss of associated deadwood likely to reduce the availability of suitable habitat for saproxylic ecosystems. The majority of on-site tree resource will, however, be retained and integrated into emerging landscape proposals. Nevertheless, impacts associated with loss of trees is considered to be **negative**, **permanent**, and **irreversible** at the **Site** Level.

9.129 With respect to retained tree standards, there remains the potential for physical damage and/or indirect degradation during construction due to the proximity of built development and/or proposed landscaping works. In the absence of mitigation, the extent and magnitude of such, medium-term, potentially frequent impacts (i.e. duration of the construction phase), could be permanent and potentially irreversible. The significance of such negative effects upon these retained features is considered to be of **Local** Level significance.

Species IEFs

Birds

9.130 The loss and degradation of potential bird nesting habitats during construction will primarily be restricted to small breaks in hedgerow boundaries, associated areas of scrub and outbuildings associated with St Julian's House. In respect of the magnitude of habitat loss and degradation combined with the importance of a breeding bird assemblage onsite, such impacts are considered **negative**, **permanent**, **irreversible** and of significance at the **Site** Level.

9.131 The legal protection afforded to birds and their nest (their eggs and young) is considered inherent mitigation to ensure no effects relating to direct harm/injury arise in respect of the breeding bird assemblage. Therefore, negligible impact is predicted.

9.132 In the absence of mitigation, disturbance of nesting and foraging habitat for the breeding bird assemblage through light spill, noise, visual and human disturbance during construction could potentially occur, particularly where building demolition or vegetation clearance is occurring. Nesting birds sensitive to such disturbance could abandon nests and breeding territories and become displaced from other populations. Birds will be most sensitive to noise and visual disturbance occurring in the vicinity of habitats during the breeding bird season, though will likely return to such suitable habitat upon cessation of such disturbances. In absence of mitigation, negative effects arising from visual/noise/human disturbance during the construction phase upon birds are considered **temporary**, **reversible** and of **Site** Level significance only.

Bats

9.133 With respect to buildings present within the site, dusk emergence surveys undertaken by EDP identified a summer day roost for common pipistrelle bat in building **B1**, considered to be of low conservation status.

9.134 With the exception of proposed removal of the conservatory extension, **B1** will be retained with no modifications to any potential roosting features identified, such that no direct impacts upon roosting bats associated with removal of the conservatory are anticipated.

9.135 With respect to remaining buildings onsite, although several were considered to have low-moderate potential to support roosting bats following a visual assessment undertaken by EDP in 2020, further dusk emergence surveys undertaken by EDP during 2020 found no evidence of roosting bats, such that no direct impacts associated with their loss and/or disturbance will arise.

9.136 With respect to potential tree roosts, trees **T1-T3** with low-moderate bat roost potential will be retained such that no direct impacts upon bats potentially roosting within onsite trees are anticipated.

9.137 Indirect disturbance (e.g. light spill, visual and noise) upon known roosts and potential tree roosts, as well as foraging/commuting habitat, may however arise from adjacent site works during the construction period. Such impacts can affect species through their physiology (such as through increased heart rates, metabolism and stress), and through their behaviour (such as through forced dispersal and/or displacement). Impacts could result in the abandonment of roosts. Such disturbances arising can be intermittent, frequent, and/or constant throughout the construction period. However, given that the majority of the works will be undertaken during daylight hours, the usage of artificial lighting will likely be limited to the early morning and early evening hours, with greater requirements for artificial lighting during the winter months. Overall, potentially negative effects arising from indirect disturbance upon the local bat assemblage, although minor **negative** and **temporary**, are considered to be a significant at a **Site** Level.

9.138 Manual transect and automated bat activity surveys have confirmed that Site supports low levels of foraging and commuting activity dominated by common and widespread bat species considered to be of local importance.

9.139 Habitats considered most important to a local bat assemblage, including hedgerow boundaries, will largely be retained and buffered from the development footprint with losses confined to small breaks required to accommodate access roads and pedestrian links. In contrast, improved grassland of low botanical interest is considered to be of limited importance as a foraging resource to a local bat assemblage. Such losses can, however, have a detrimental impact upon the local bat assemblage's ability to move across the landscape whist reducing the availability of foraging habitat across the Site. In the absence of mitigation, loss and of suitable habitat is considered to be of **Local** Level significance and will have a **negative**, **permanent** and **irreversible** effect on the bat assemblage.

9.140 With respect to those habitat features to be retained, degradation through damage and disturbance during the construction phase could result in the further loss of roosting and breeding sites in addition to habitat important for foraging, dispersal and migration. In the absence of mitigation, the effects of such impacts upon bats are considered to be **negative**, **permanent** and **potentially irreversible**. The significance of such effects upon these species is considered to be of **Local** Level significance.

9.141 In addition, increased amounts of traffic movements by vehicles, machinery and plant throughout the construction phase could increase the potential risk of road casualties upon the local bat assemblage, particularly when constructing access roads and removing vegetation across which species disperse and forage. However, given that such impacts will most likely be confined to daylight hours, with bats active at night, no significant negative effects are considered likely to arise.

Dormouse

9.142 With respect to hedgerows comprising suitable dormouse habitat, fragmentation of hedgerows **H1** and **H3** is proposed, with single breaks through each of these hedges necessary to accommodate access roads connecting the Site to consented development adjacent. This is in addition to small breaks within hedgerows **H4** and **H5** to accommodate footpath links. Such losses equate to approximately 195m^2.This is in addition to erosion of a small area of trees and associated bramble aligning the north western boundaries of the Site (tree groups **G6**, **G7** and **G8** as defined within **Appendix 9.4**), combined with the loss of an early mature wych elm tree (tree T11, as defined within **Appendix 9.4**), proposed for felling due to health and safety reasons (totalling an additional loss of circa 178m^2). The proposed development has, however, been designed to incorporate the hedgerow and tree network as far as possible with losses totalling circa 21.6% of the total hedgerow resource onsite. Nevertheless, losses to, and fragmentation of, the hedgerow network could affect dormouse dispersal routes, foraging habitat and breeding opportunities. Whilst new tree, shrub and hedgerow planting proposed will ensure sufficient compensation and appropriate enhancement of such resources for this species, the maturation of new planting into a usable resource will take time and will unlikely balance those negative impacts immediately arising following loss. Increased risk of collision may also arise during the construction period, resulting in direct harm to dormouse during the works. In absence of further mitigation such impacts considered **negative**, **permanent** and **irreversible** at the **Local** Level.

9.143 With respect to indirect impacts, whilst dormice can become habituated to high levels of artificial light, temporary, infrequent and/or intermittent lighting may adversely affect this species. In absence of mitigation adverse effects of lighting upon dormouse is considered **negative**, **temporary** during the construction period and **reversible** with such effects considered to be of significance at the **Site** Level only.

Common Reptiles

9.144 Development will require the loss of improved grassland habitat considered to be of limited suitability to a common reptile population. As such, such losses are considered negligible. However, this is in addition to the permanent loss of wood hedgerow habitat boundary features amounting to 373m^2, in addition to removal of associated scrub and bracken, considered of greater value to a reptile population with respect to foraging, refuge and dispersal. The reduction of available habitats with potential to support a low common reptile population is considered **negative**, **permanent** and **irreversible** and of **Site** Level significance.

9.145 With respect to those habitat features to be retained, degradation through damage and disturbance during the construction phase could result in the further loss of habitat suitable for a common reptile population. In the absence of mitigation, the effects of such impacts upon reptiles are considered to be **negative**, **permanent** and **potentially irreversible**. The significance of such effects upon these species is considered to be of **Site** Level significance only.

9.146 Increased levels of traffic movements by vehicles, machinery and plant throughout the construction phase could increase the potential risk of road casualties upon this species, particularly when constructing access roads and removing vegetation across which species disperse and forage. Such impacts resulting in harm/injury to a population (if present) are considered **negative**, **permanent** and **irreversible** at the **Site** Level.

During Operation

9.147 Potential significant effects identified which could arise as a result of the operation of the proposed development in the absence of mitigation include the following:

- Effects of light and noise/visual/human disturbance to designated sites, habitats species;
- Increased risk of collision and predation to species; and
- Alteration of surface water run-off / groundwater flow / site drainage.

Statutory Designations

9.148 The HRA undertaken by CC considered the impact of a number of vulnerabilities on the Severn Estuary, which are pertinent during the operational phase of the proposed development including, water quality and diffuse pollution and an increase in suspended solids. Although some distance from the Site, the Severn Estuary is hydrologically connected to the River Rhymney within 200m of the Site. Furthermore, future changes in precipitation and daytime temperatures may have impacts on the hydrological regime of the Site with increased risk of flood events and/or drought.

9.149 However, adverse impacts associated with site drainage, including surface water run-off and ground water contamination, are considered unlikely, subject to implementation of a sensitive drainage strategy in accordance with relevant planning policy which will further provide sufficient resilience to any likely effects of future climate change.

9.150 Specifically, LDP Policy EN10 (Water Sensitive Design) requires for development to apply water sensitive urban design solutions, including: the management of water demand and supply; wastewater and pollution; rainfall and runoff; watercourses and water resource; and flooding and water pathways. In addition, Policy EN11 (Protection of Water Resources) requires for development to not be permitted that would cause unacceptable harm to the quality or quantity of underground, surface or coastal waters. As such and in consideration of inherent mitigation comprising delivery of a sustainable drainage strategy pollution, impacts upon statutorily designated sites are considered negligible.

9.151 Meanwhile, an increase in residential dwellings could lead to an increase in disturbance through recreational pressure on the Severn Estuary as well as the Cardiff Beechwoods SAC. However, inherent within development proposals is the inclusion of areas of open public space within the Site which are designed to connect to that to be delivered across the consented development area comprising St. Edeyrn's Village surrounding the Site, such that impacts are considered negligible. In the absence of the suitable provision of alternative open green space within the development however, impacts associated with the construction of up to 160 residential dwellings are considered significant **negative**, **intermittent**, **permanent** and **irreversible** at a **Local** Level.

9.152 Similar impacts may also arise with respect to those SSSIs identified above, including the Severn Estuary SSSI. Subject to implementation of the same mitigation required in respect of international and European designated sites, however, no significant impacts upon nationally designated sites are considered likely.

Non-Statutory Designations

9.153 As outlined above, adverse impacts associated with site drainage, including surface water run-off and ground water contamination, are considered unlikely, subject to implementation of a sensitive drainage strategy in accordance with relevant planning policy and is part of the inherent detailed design. However, in the unlikely absence of any sensitive drainage strategy, pollution impacts upon non-statutory designations including Rhymney River SINC sites are considered significant negative at the **Local** Level which would be **temporary** to **permanent** (depending on nature/scale of pollutant) and potentially **irreversible**.

9.154 Similarly, an increase in residential dwellings could lead to an increase in disturbance through recreational pressure on non-statutory designations including St Julian's Meadows. In the absence of suitable provision of alternative open green space within the development, however, impacts associated with the construction of up to 160 residential dwellings, combined with provision of open space across adjacent new development, are considered significant **negative**, **intermittent**, **permanent** and **irreversible** at a **Local** Level.

9.155 It is considered that none of the other non-statutory designations would potentially be directly or indirectly impacted by the development proposals due to their spatial separation from the Site, interest features, lack of any habitat connections and/or inaccessibility to the public. These sites have been scoped out of the assessment accordingly.

Habitat IEFs

9.156 Increased recreational usage following occupation of the Site may affect sensitive /hedgerow habitats through disturbances arising from trampling, increased noise, lighting, litter and insensitive management. With such effects considered to be **negative**, **permanent**, **irreversible** and of **Local** significance. However, inherent mitigation measures seek to reduce such effects arising, primarily through the provision of habitat buffers between boundaries of adjacent hedgerows, trees and the proposed development footprint, in addition to the siting of single-sided roadways and/or areas of formal public open space adjacent to sensitive habitats to be retained as far as possible, to further offset the development footprint away from these habitats. Such habitat corridors will be subject to sensitive management over the long-term and excluded from curtilage boundaries adjacent to minimise future mismanagement.

Species IEFs

Breeding Birds

9.157 Retained habitats supporting breeding and foraging birds are potentially at risk of disturbance during the operational phase of the development, in the form of light spill and noise. Nesting birds' sensitive to such disturbance could abandon nests and breeding territories and become displaced from other populations. In the absence of mitigation, negative effects upon such species are considered **permanent**, **irreversible**, and of **Local** significance. However, such impacts are considered to be reduced given the retention and protection of ecologically valuable

habitat comprising peripheral hedgerows, whilst new planting within habitat buffers and areas of informal space will further strengthen retained nesting habitat.

9.158 Increased predation of wildlife may also arise following occupation as a result of cat ownership across the development. The unmitigated impact of increased predation upon birds can be characterised as a **negative** effect which is probable to result, with such effects expected to be **permanent** and **irreversible**. The significance of such effects upon species is therefore considered to be of **Site** Level significance.

9.159 Increased vehicular traffic arising following occupation could increase levels of road-kill upon species moving across the EIA site either during the day or at night time. The unmitigated impact of increased risk of collision to breeding birds can be characterised as a **negative** impact, with such impacts expected to be **permanent** and **irreversible**. The significance of such impacts upon species is considered to be of **Site** Level significance.

Bats

9.160 In relation to bats, an increase in disturbance arising from increased human presence, vehicular use noise and light originating from residential dwellings may affect the behaviour of species utilising those habitats on-site. The usage of artificial lighting across the site could also result in detrimental effects upon bat species due to light spill upon adjacent habitats in use as foraging and commuting corridors. Such effects could result in the abandonment of roosting sites and displacement of dispersal routes across the proposed development, and may also result in the isolation of, and reduced interactions between, populations necessary to maintain genetic diversity. The continued ecological functionality of habitat corridors on-site may therefore be reduced. In the absence of mitigation, negative effects upon bat IEFs are considered to be **negative**, **permanent**, and **irreversible**. Such effects are considered to be of **Local** Level significance.

9.161 Increased predation upon bats, particularly at roost sites, may also arise following occupation as a result of cat ownership across the development. The unmitigated impact of increased predation upon species can be characterised as a **negative** effect which is probable to result, with such effects expected to be **permanent** and **irreversible**. The significance of such effects upon species is therefore considered to be of **Site** Level significance.

9.162 Increased vehicular traffic arising following occupation could also increase levels of road-kill upon bat species moving across the Site either during the night time. The unmitigated impact of increased risk of collision to species levels of disturbance upon species can be characterised as a **negative** impact, with such impacts expected to be **permanent** and **irreversible**. The significance of such impacts upon species is considered to be of **Site** Level significance.

Dormouse

9.163 As previously discussed in relation to bats, increases in visual/noise/human disturbance could result in negative effects upon dormouse, although such impacts are considerably less given the retention of ecologically valuable hedgerow habitat and provision of new planting and habitat buffers adjacent which further offset the development footprint away from dormouse habitat. In the absence of mitigation, negative effects upon dormouse are considered **permanent**, **irreversible**, and of **Local** Level significance to dormouse.

9.164 The use of artificial lighting across the Site could also result in possible detrimental effects to dormouse, although such impacts remain relatively unstudied at present with respect to this

species. Increased vehicular traffic arising following occupation could also increase levels of road-kill upon dormouse moving across the Site either during the day or at night time. The unmitigated impact of increased lighting and risk of collision upon dormouse can be characterised as a **negative** impact, with such impacts expected to be **permanent** and **irreversible**. The significance of such impacts upon species is considered to be of **Site** Level significance.

Common Reptiles

9.165 Increases in visual/noise/human disturbance and lighting could result in negative effects upon reptiles, although such impacts are considerably reduced given the retention and enhancement of hedgerow habitat alongside provision of habitat buffers to comprise new shrub and/or grassland planting combined with areas of informal open green space located throughout the Site. In the absence of mitigation, **negative** effects upon reptiles are thus considered **negative**, **permanent**, **irreversible**, and of significance at the **Site** level.

9.166 Increased vehicular traffic arising following occupation could also increase levels of road-kill upon reptile individuals moving across the Site. The unmitigated impact of increased risk of collision to reptiles can be characterised as a negative impact, with such impacts expected to be **permanent** and **irreversible**. The significance of such impacts upon species is considered to be of significance at the **Site** Level.

Mitigation

9.167 This section sets out the principles of the avoidance, mitigation or compensation measures required to reduce any potential ecological effects to insignificant levels. Overall, many potential negative effects have been avoided or reduced through inherent mitigation incorporated into the masterplan accompanying the application, along with the spatial separation between statutory designated sites.

9.168 Not all potential negative effects can be avoided or reduced in severity through inherent mitigation alone. This section identifies any additional mitigation measures required to avoid, reduce or offset the potential for such significant negative effects. The key mechanisms described will include measures to:

1. Conform with relevant and pertinent legislative requirements, particularly those associated with legally protected species; and

2. Deliver and maximise opportunities for biodiversity enhancement and gain through the proposed development.

9.169 The key mechanisms which will be implemented are:

a) **Detailed Design Measures**: The outline planning application is being made with all matters reserved. The masterplan is therefore illustrative and allows flexibility for specific detailed design measures to be secured and included within the proposed development. Such design measures can, where necessary, be agreed with the LPA and secured through

suitably worded planning conditions and addressed at future Reserved Matters stages. The masterplan does, however, illustrate the inherent mitigation measures incorporated within the scheme, as detailed previously;

b) **Ecological Construction Method Statement (ECMS) and Detailed Landscape Scheme**: Further detailed measures will be set out with respect to the management and control of the construction phase of the development to ensure protection of IEFs, in addition to details of the planting scheme and maintenance schedule for the development. The ECMS will aim to set out in detail those measures which will require implementation with respect to the protection and enhancement of all IEFs and biodiversity in general during the demolition and construction phase of the proposed development. It is proposed that the methodologies prescribed within the ECMS will be overseen by an appointed Ecological Clerk of Works (ECoW), whose scope and remit will be set out within the ECMS and any future development licence granted by NRW in respect of dormouse. The ECMS will also identify clearly the responsibilities of key personnel including the Site manager(s) and the ECoW. The ECMS and appointment of the ECoW could be secured by way of a suitably worded planning condition; and

c) **Landscape and Ecology Management Plan (LEMP**) **and European Protected Species Mitigation Strategies (Including Derogation Licensing)** – Detailed mitigation strategies for dormouse will be prepared to inform a Development Licence application to NRW should planning consent be forthcoming and will set out the recommended compensation, mitigation and enhancement measures to be implemented as part of the proposals, to ensure no significant negative effects will arise upon the favourable conservation status of dormouse following occupation. An outline mitigation strategy in respect of for dormouse is provided at **Appendix 9.5**. This will be further supported by a LEMP which includes the post-construction management of landscape, arboricultural, and biodiversity elements in order to ensure that a holistic approach is adopted.

9.170 The proposed further mitigation measures in respect of the potentially negative effects arising during the construction and occupation of the completed development are described below.

During Construction

9.171 All necessary ecological surveys are considered current at the time of submission, however where relevant and depending on development timescales and phasing, certain detailed species surveys may require updating prior to commencement of the relevant phase of development. The findings will be used to inform the measures set out below.

9.172 Detailed measures to protect habitats and species during the construction phase will be set out within an ECMS which can be secured through an appropriately worded pre-commencement condition attached to any future planning consent and further informed by the mitigation strategy prepared for dormouse and submitted with the outline planning application (**Appendix 9.5**).

9.173 In general, the ECMS will include mechanisms to ensure the sensitive siting of work compound(s) and storage areas, including the storage of any fuel, chemicals, plant or machinery, sensitive clearance of the Site and the use of artificial lighting (including security lighting). A timetable of all key tasks to be undertaken as part of pre-construction and construction work will be provided, taking into account all species and habitat sensitivities.

Designated Sites/Habitats

9.174 To protect water quality of the River Rhymney within 200m of the Site, which in turn is hydrologically connected to the Severn Estuary Ramsar/SPA/SAC/SSSI, appropriate pollution control measures will be employed in accordance with the relevant Pollution Prevention Guidelines (PPGs) published by the Environment Agency[16], namely PPG1 'General guide to the prevention of pollution', PPG5 'Works and maintenance in or near water', PPG6 'Pollution prevention guidance for working at construction and demolition sites', and PPG21 'Pollution incident response planning', to ensure that detrimental effects on nearby watercourse as a result of surface run-off, spillage and pollution arising throughout the construction phases are avoided.

9.175 Protective fencing will be erected as recommended within *BS5837: 2012 Trees in relation to design, demolition and construction* to physically protect retained habitats on-site (namely hedgerows and associated mature trees) with establishment of Ecological Protection Zones (EPZs). Protective fencing will incorporate the full root protection area of the feature to be retained and will be protected and maintained throughout the duration of all site enabling and pre-construction activities.

9.176 No works (other than planting), including the storage of materials, plant and machinery, will be carried out within or immediately adjacent to all areas of protective fencing/areas marked for protection as described above, so as to ensure no detrimental impacts to sensitive features arising from physical damage and/or pollution. The digging of trenches and pits for new tree and scrub planting adjacent to areas of protective fencing, where this lies inside root protection areas, will be carried out by hand only, in accordance with best practice guidance as stipulated within *BS 5837:2012.*

9.177 In addition, construction will be limited to daylight hours as far as possible to mitigate effects of increased visual and noise disturbance, with the use of temporary, artificial lighting avoided during the hours between dusk and dawn, with directional and low-level lighting used away from sensitive habitat corridors to mitigate effects relating to increased use of artificial lighting.

9.178 This will be combined with the enhancement and sensitive management of those habitats to be retained, including the majority of hedgerows amounting to circa 1,353m^2 (equating to 78.4% of the total hedgerow resource onsite). This will be in addition to the provision of new tree and shrub planting within habitat buffers to the north, east and west to compensate for hedgerow loss, potentially amounting to circa 2,187m^2, combined with the provision of additional habitat buffers along the southern boundaries of the Site within which additional supplementary/reinforcement planting can be accommodated, totalling a further 649m^2.

Species IEFs

9.179 Protection of species during construction will be ensured through the provisions of the ECMS and relevant NRW development licence in respect of dormouse where required. As a general measure aimed at protecting species, 'tool box talks' will be provided by a suitably qualified ecologist and/or ECoW to the Principal Contractor appointed by the Developer, for distribution to all employees involved in any enabling works/vegetation clearance, to ensure that

[16] PPGs were withdrawn in December 2015; however, they remain the main source of information on good practice in Wales with respect to guidance on pollution prevention. A replacement guidance series, comprising Guidance for Pollution Prevention (GPPs), are currently in development.

identification and protection of the relevant species and their habitats is understood prior to commencement.

9.180 Construction activities will be limited to daylight hours as far as possible to minimise disturbance to foraging and commuting habitats (namely the hedgerow boundaries) of value to bats, birds and the use of lighting restricted. Where this is not possible (i.e. for security purposes) lighting will directional, timed and low-lux, with internal/external shields installed as necessary to ensure minimal light spillage upon retained habitats, both within and adjacent to the development edge. Timed lighting will be programmed to ensure adequate dark periods between dusk and dawn across the Site, particularly adjacent to peripheral vegetation.

9.181 Additional sensitive methodologies will be set out within the ECMS to control traffic and movement, thereby reducing the likelihood of collision impacts occurring.

9.182 In addition to the habitat protection measures described above, which will deliver much of the necessary species protection, further measures to be included in the ECMS for each species group are summarised below.

Breeding Birds

9.183 Retained bird nesting habitats will be included within Ecological Protection Zones (EPZs). This is considered necessary to ensure the avoidance of impacts upon the local breeding bird assemblage given their likely association with those habitats retained including hedgerows and trees. In particular, circa 78.4% of the total hedgerow/tree resource onsite will be retained, with losses proposed limited to the creation of breaks necessary to accommodate access roads and footpath links. This is in addition to inclusion of the following features:

- The provision of new native tree and shrub planting comprising species of local provenance to infill gaps within existing hedgerows to be retained across the Site, particularly along defunct hedgerow sections (particularly prevalent within hedgerows **H1**, **H1** and **H3**), so as enhance and strengthen existing habitat corridors across the Site;

- The provision of newly planted trees, hedgerows and shrub planting within habitat buffers proposed along the northern, eastern and western boundaries of the Site in addition to the provision of additional, medium and low level shrub and scrub planting within areas of informal open space surrounding sustainable drainage features located across the north-eastern extent and along the south-western boundary of the Site. Such planting potentially amounts to 2,187m^2 and will further broaden existing habitat corridors across the Site to the wider landscape;

- The provision of grassland planting across sustainable drainage features themselves, sensitively managed to maximise species and structural diversity;

- The inclusion of supplementary/reinforcement hedge and grassland planting within habitat buffers proposed along the southern and south eastern boundaries (amounting to 649m^2), to further strengthen this habitat corridor whilst providing access for future maintenance;

- The transplanting of suitable specimens of native, broadleaved trees and shrubs elsewhere onsite to further close up gaps, bolster the existing hedgerow resource and speed up establishment of newly created dormouse habitat, where otherwise lost to development; and

- The additional planting of street trees, formal hedgerows and shrubs within the public realm across the Site, including along the main spine road through the Site, along secondary roads and within rain gardens and smaller pockets of formal open space.

9.184 Such measures have been designed to ensure habitat corridors onsite connect to those designed across St. Edeyrn's Village surrounding the Site so as to maintain, enhance and further strengthen foraging, refuge and dispersal habitats available to a generalist bird assemblage.

9.185 Given the protection afforded to all breeding birds, their nests, eggs and young, sensitive vegetation clearance (and building demolition) required during the pre-construction and construction phases of development should be timed to avoid the main bird breeding season (i.e. March to August inclusive). Should this seasonal constraint prove impracticable, then vegetation clearance/building demolition outside of this period should only commence following the advice and under supervision of a suitably qualified ecologist. Pre-commencement checks for active nests will be required prior to any vegetation clearance occurring during the main bird breeding season, with appropriate buffers marked out around active nests or nests under construction, until all eggs have hatched, and chicks fledged. Such protection measures in relation to breeding birds should be included within the ECMS prepared for the Site.

Bats

9.186 Hedgerows and retained trees with bat roost potential will be included within EPZs throughout construction. Although it is anticipated that all suitable trees with bat potential will be retained, should any pruning/management works be required, trees will be subject to detailed aerial inspections, whereby all suitable roosting features will be checked at height for the presence of bats by a suitably qualified and NRW bat licensed ecologist, arboricultural contractor with a NRW bat survey licence, or with experience of working with bats and under the supervision of a NRW bat survey licence holder. Should a bat roost be confirmed within any trees to be impacted by the proposals, then a development licence from NRW will be required prior to works commencing, with sufficient replacement roosting habitat provided. Where no roosts are found but bat roosting potential remains, such trees should be subject to a 'soft' felling methodology by a suitably qualified arboricultural contractor with experience of working with bats, following the advice of the suitably qualified and licensed ecologist and supervised where necessary.

9.187 Given the absence of bat roosts identified within buildings **B2**-**B8** associated with the north-western corner of the Site during the 2020 surveys undertaken, no constraints associated with their demolition are anticipated such that there is no requirement to obtain a development licence from NRW prior to the proposed development of the Site. Nevertheless, a precautionary approach to demolition of buildings **B2**-**B8** is advised. Works to the roofs, soffits, bargeboards, fascias and other potential roosting features should ideally be undertaken between October to March so as to avoid the main bat roost and bird breeding seasons. Should this not be practicable, then pre-commencement checks carried out by a suitably qualified ecologist will be required immediately prior to commencement of works (see below).

9.188 Contractors carrying out the works should be warned of the possible presence of roosting bats and nesting birds and of their protected status. In the event of any bats (or occupied bird nests) are found during works, then all works should cease in the affected area until advice from a suitably qualified and licensed ecologist is sought.

9.189 Surveys undertaken by EDP during 2020 did, however, identify a common pipistrelle summer roost within building **B1**, with the identified roost supporting low numbers only and thus

considered to be of low conservation status only. **B1** will, however, be retained with the exception of a conservatory extension to be demolished. Given the location of the roost in relation to the conservatory no damage or modification to the roost is anticipated. Nevertheless, demolition should be undertaken under supervision of a NRW bat licensed ecologist and in accordance with a non-licensed method statement, with demolition of the conservatory ideally undertaken between October to March so as to avoid the main bat roost (and bird breeding) seasons.

9.190 Any lighting required during construction should be implemented in accordance with a sensitive lighting strategy to avoid/minimise light spill upon the confirmed bat roost and wildlife corridors.

9.191 With respect to a foraging/commuting bat assemblage, those habitat creation measures detailed above in relation to breeding birds will provide adequate compensation for losses arising across the Site.

Dormouse

9.192 The removal of vegetation suitable for dormouse will be undertaken in accordance with the measures detailed within an approved NRW development licence and Outline Dormouse Mitigation Strategy provided at **Appendix 9.5**. All retained vegetation will be included within Ecological Protection Zones to avoid damage during construction activities.

9.193 Prior to the commencement of dormouse habitat clearance works, 15 dormouse boxes (or as per the requirements of the NRW Development licence) will be installed to facilitate any future relocation of individuals during the works where necessary/appropriate, in addition to compensating for the loss of nesting resources whilst enabling future monitoring of the population thereafter. Dormouse boxes will be installed within suitable hedgerows, trees and shrubs to be retained along the northern, eastern and western boundaries of the Site.

9.194 Thereafter, both two stage (winter) and/or single stage (summer) clearance methodologies[17] will be implemented. Winter clearance methodologies will comprise clearance works to be undertaken over two stages, with the first stage of clearance confined to above-ground vegetation, undertaken between 1 November and 31 March inclusive (i.e. outside of the dormouse active season and main bird breeding season), and with the second stage of clearance comprising the removal of all remaining vegetation below-ground, undertaken between 01 and 31 May thereafter (i.e. following dormouse full emergence from hibernation). Single stage summer clearance can also be implemented as an alternative where required, or where necessary so as to facilitate commencement of any site enabling/pre-construction activities onsite. Single stage summer clearance works allows for the clearance of both above-ground and below-ground vegetation during the dormouse active season, albeit confined to the periods of 01-31 May or 01 September - 31 October, thereby avoiding the main dormouse breeding (considered to be between mid-June and August inclusive) and hibernation (considered to be between November and March inclusive) periods. Suitable specimens of native, broadleaved trees and shrubs otherwise proposed for loss will also be translocated to suitable receptor sites located across the Site where appropriate, to close up existing gaps within the hedgerow network and speed up establishment of newly created dormouse habitat.

9.195 In compensation for the loss of suitable dormouse habitat however, those habitat creation measures detailed above in relation to breeding birds will provide adequate compensation for

[17] Bright, P., Morris, P. & Mitchell-Jones, T (2006). *The Dormouse Conservation Handbook, 2nd Edition*. English Nature, Peterborough.

losses arising across the Site, with an overall net gain in the quantum of suitable dormouse habitat onsite achievable post-development (whereby losses amount to circa 373m^2, with circa 2,187m^2 of mitigation planting achievable as detailed at **Appendix 9.5**).

Common Reptiles

9.196 The ECMS will include measures to protect common reptiles during construction, focussing on sensitive displacement of individuals through phased vegetation clearance of all suitable habitats proposed for loss across the Site under ecological watching brief where required, with the timing of such activities ideally confined to the period late March-early October inclusive (with the month of September considered optimal), so as to avoid the reptile hibernation season.

During Operation

9.197 Detailed ecological management prescriptions for the long-term management of newly created and enhanced habitats in respect of protected species will be provided within a site-wide LEMP which will set out in detail the following additional ecological measures to compensate for proposed habitat loss across the site and further mitigate for potential operational impacts:

- The ecological management prescriptions for defined management compartments to be retained and/or created, including: trees, hedgerows, bat/bird/dormouse nest box features and with respect to their establishment and long-term management;
- The monitoring of dormouse, bird, and bat boxes/features (including trees with bat potential/supporting bat boxes and bat features incorporated into building design), in accordance with planning conditions and derogation licence(s) where appropriate;
- The management and maintenance of formal and informal footpaths, signage, dog/litter bins and other such items; and
- The monitoring of biophysical changes to habitats including management of water quality and water flow of sustainable drainage and hydrological features retained and created onsite, terrestrial succession and scrub encroachment, with identified remedial measures to address any significant issues.

9.198 Furthermore, future monitoring of the new and retained habitats within the Site will allow an opportunity for management prescriptions to be reviewed and amended to reflect any impacts as a result of climate change. This will further safeguard the habitat and species interests at the Site over the long term.

Designated Sites

9.199 In respect of statutory and non-statutory designated sites, development will be implemented in accordance with a sensitive design strategy to mitigate against negative effects arising from alterations to groundwater and surface water flow due to unforeseen pollution incidents. Subject to the above, it is considered that there will be no negative indirect effects to water quality caused by the proposed development of the Site.

9.200 In addition to the above, significant negative effects upon designated sites arising from increased levels of recreational usage following occupation of the proposed development will be mitigated in a number of ways, including:

- The provision of footpaths, cycle links and areas of formal and informal open space within the Site;

- Integration of habitat and wildlife features within areas of public open space including tree, hedgerow, shrub and grassland planting; and

- Formal landscaping and tree planting across the built development footprint.

Habitat IEFs

9.201 The proposed development layout will seek to compensate for this loss of hedgerows and associated trees and scrub across the Site through the enhancement of retained hedgerows (amounting to circa 1,353m^2, equating to 78.4% of the total hedgerow resource onsite), including the transplanting of suitable specimens of native, broadleaved trees and shrubs otherwise proposed for loss to suitable receptor sites across the Site where appropriate. New tree and shrub planting is also proposed to infill gaps within existing hedgerows to be retained across the Site, particularly along defunct hedgerow sections (particularly prevalent within hedgerows **H1**, **H1** and **H3**), so as enhance and strengthen existing habitat corridors across the Site.

9.202 The development footprint will also further be offset from retained habitats adjacent through the provision of habitat buffers proposed along retained hedgerows and vegetated boundaries onsite. Newly planted trees, hedgerows and shrub planting is proposed within those habitat buffers located along the northern, eastern and western boundaries of the Site as well as the provision of additional, medium and low level shrub and scrub planting within areas of informal open space surrounding sustainable drainage features located across the north eastern extent and along the south western boundary. Such planting potentially amounts to 2,187m^2 and will further broaden existing habitat corridors across the Site to the wider landscape.

9.203 This is in addition to the inclusion of supplementary/reinforcement hedge and grassland planting within habitat buffers proposed along the southern and south-eastern boundaries (amounting to 649m^2), to further strengthen this habitat corridor whilst providing access for future maintenance, whilst the provision of a new hedgerow along the north western boundaries of the Site, adjacent to St Julian's House, will ensure the continuation of a vegetated corridor along the full peripheries of the site, enhancing the overall green infrastructure resource. New planting and habitat corridors will be subject to sensitive management over the long term and excluded from curtilage boundaries adjacent to minimise future mismanagement.

9.204 Any future detailed design of green space onsite should also include amenity and species-rich wildflower/wetland meadow grassland across sustainable drainage features, within habitat buffers and elsewhere across the public realm to provide benefits to both public amenity and biodiversity whilst compensating for the loss of botanically-poor improved grassland habitat. Such habitats should be subject to sensitive management in the long-term to maximise the value of foraging, dispersal, breeding and hibernation resources for protected/priority species through the implementation of a sensitive hay cutting regime, so as to promote a structurally diverse and species-rich grassland sward. Such measures will benefit the local invertebrate assemblage and bat, bird and common reptile populations.

9.205 The additional planting of street trees, formal hedgerows and shrubs within the public realm onsite, including along the main spine road through the Site, along secondary roads and within

rain gardens and smaller pockets of formal open space, will further provide stepping stone habitat for flora and fauna.

9.206 In addition, a sensitive lighting strategy will be implemented to ensure no/limited light spill occurs within close vicinity of boundary hedgerows. Where lighting is required along road/pedestrian routes adjacent, lighting columns will be sited within the development footprint itself and directed away from habitat edges to minimise disturbance and light spill. Lighting should include directional, timed and/or low-lux lighting, utilising shields and/or hoods where required. Such measures could be secured via planning condition attached to any future consent.

9.207 Such proposals are considered to sufficiently compensate for habitat losses anticipated, whilst ensuring the protection and further enhancement of retained habitats adjacent through strengthening and broadening areas of existing hedgerows to maximise habitat function and connectivity across the Site and wider landscape for protected/priority species including bats, dormouse, breeding birds and common reptiles. It is further recommended for such planting to utilise a diversity of native species, preferably of local provenance, within any future planting mix, and to include species which bear fruit and are nectar and pollen rich. Species selected for planting should further be considered for their resilience to climate change.

9.208 The proposed measures described above would ensure there is an overall enhancement of biodiversity across habitats of ecological value within the Site over the long-term at a **Site** to **Local** level.

Species IEFs

9.209 Those habitat creation and enhancement measures described above in relation to designations and habitat IEFs will compensate for proposed habitat loss across the Site and, furthermore, enhance opportunities for breeding, refuge, and/or dispersal of protected/priority species to ensure the maintenance of their favourable conservation status over the long-term. The provision of suitable habitat for these species within the Site will further provide a stepping-stone for the dispersal of these species across former agricultural land of limited ecological value and, thereby increase the resilience of local populations, particularly in the advent of climate change.

9.210 In addition, the scheme will also ensure the implementation of a sensitive lighting strategy, enabling the provision of key dark corridors across the Site necessary to maintain dispersal, commuting and foraging routes across the Site to the wider landscape. Such a strategy would ensure that permanent lighting is reduced as far as possible along such key wildlife corridors to be retained, strengthened and created. Where lighting is required along road/pedestrian routes adjacent, lighting columns should be sited within the development footprint itself and directed away from habitat edges to minimise disturbance and light spill. Lighting should include directional, timed and/or low-lux lighting, utilising internal/external shields and/or hoods where required. Such measures can be secured via planning condition attached to any future consent.

9.211 Additional species-specific measures to minimise operational impacts and provide enhanced opportunities for species breeding and refuge should be included within the LEMP as detailed below.

Breeding Birds

9.212 Durable bird boxes, including a range of designs to suit different species, are recommended and should be erected on retained mature trees and buildings. With reference to consultation with CC Ecologist, Matt Harris, the following bird boxes are recommended in the first instance:

- Eight Woodstone swift nest boxes;
- Four Woodstone house martin nests; and
- Four 1SP Schwegler sparrow terraces.

9.213 It is recommended that a planting scheme for the Site include fruit bearing species that will provide a foraging resource throughout the year. This will be in addition to the sensitive management of such habitats and features in order to increase their resilience and mitigate long-term disturbance effects. Such measures will be implemented in accordance with the LEMP prepared for the Site, to be secures as a condition of planning.

Bats

9.214 Schwegler bat boxes should be installed upon suitable, mature trees retained along the peripheries of the Site and erected with a south-east/south-west facing aspect where possible and away from sources of artificial lighting so as to further mitigate for the loss of potential roosting features associated with onsite buildings whilst also further enhancing the development for roosting bats. Bat box design to be installed across the Site should include 2F for smaller bats and 2FN for larger bats (or similar).

9.215 Bat roost features (such as bat tubes/bricks and/or raised ridge/roof tiles), should also be incorporated into the exterior of buildings (such as garages) where possible.

9.216 Additional planting of native species will be incorporated into the scheme. This should include night-scented plants such as honeysuckle, as well as a mixture of flowering plants which will flower throughout the year.

Dormouse

9.217 As discussed in relation to habitats, hedgerow and tree loss is to be compensated through the retention, enhancement and further creation of existing hedgerows and wildlife corridors across the Site. More generally, and alongside the translocation of suitable specimens of native, broadleaved trees and shrubs otherwise proposed for loss, it is recommended for planting across the Site to include a range of tree and shrub species considered to provide valuable food resources during the dormouse active season, including favoured species such as oak, birch, yew, hornbeam (*Carpinus betulus*), sweet chestnut, wayfaring tree (*Viburnum lantana*), holly, guelder rose (*Viburnum opulus*), hawthorn, cherry (*Prunus avium*), hazel, apple, rowan (*Sorbus aucuparia*), ivy and honeysuckle (*Lonicera periclymenum*). Thorny and prickly shrub species should also be considered within buffers separating residential curtilages from the hedgerow network.

9.218 Fifteen dormouse nest boxes (or as per the requirements of the NRW Development Licence) will also be installed along the northern, eastern and western boundaries of the Site to further compensate for the loss of nesting resources onsite whilst enabling future population monitoring.

9.219 To further compensate for loss of suitable dormouse habitat, native tree, shrub and hedgerow planting to be implemented across the Site, in addition to retained habitats, will be subject to ongoing sensitive and appropriate management over the lifetime of the development. Sensitive management will seek to maximise the value of food, dispersal, breeding, and hibernation resources for dormouse through:

- The maintenance of dense and continuous hedgerow habitats through appropriate management measures, including coppicing and laying where appropriate, according to species, to encourage the formation of a more dense and continuous hedgerow; and
- Minimising disturbance within newly planted areas through the exclusion of such habitats from adjacent curtilages.

9.220 Further details are provided at **Appendix 9.5**.

Common Reptiles

9.221 Those habitat creation, enhancement measures described above in relation to designations and habitat IEFs will compensate for proposed habitat loss across the Site and, furthermore, enhance opportunities for common reptiles.

9.222 Additionally, logs and brash generated from clearance of trees and scrub should be retained where possible and used to create informal refugia for common reptiles, amphibians, invertebrates and other wildlife within hedgerows along the boundaries of the Site, including the provision of hibernacula within open space proposed across the north eastern corner of the Site. Deadwood should also be retained where practicable (taking into account any health and safety implications) to provide suitable habitat for invertebrates.

Any Cumulative Impacts

9.223 Cumulative effects have been considered, based upon the following schemes:

i) Highfields (planning reference: 10/01681/DCO; 16/01325/MJR; 18/00397/MJR);

ii) Land on the South Side of Bridge Road, Old St Mellons (planning reference: 18/01654/MNR);

iii) St Edeyrn's Village Land East of Church Road and North and South of, Bridge Road, Old St Mellons (planning reference 13/00578/DCO);

iv) St Edeyrn's Village Phase 1, Land East of Church Road and North and South of, Bridge Road, Old St Mellons (planning reference 14/02556/MJR);

v) St Edeyrn's Village Phase 2, Land East of Church Road and North and South of, Bridge Road, Old St Mellons (planning reference 17/00488/MJR; 19/01733/MJR);

vi) St Edeyrn's Village Phase 3, Land East of Church Road and North and South of, Bridge Road, Old St Mellons (planning reference 17/01787/MJR);

vii) St Edeyrn's Village Phase 5, Land East of Church Road and North and South of, Bridge Road, Old St Mellons (planning reference 19/03238/MJR); and

viii) St Edeyrn's Village Phase 6, Land East of Church Road and North and South of, Bridge Road, Old St Mellons (planning reference 19/03205/MJR).

9.224 Each in turn are only discussed where applicable to Important Ecological Features taken forward for detailed assessment. Pertinent schemes include development associated with that listed above.

9.225 The consented and proposed development discussed above are all allocated for strategic residential development (Policy KP2(G): East of Pontprennau Link Road) and thus are all located adjacent and/or in close proximity to one another at the northern outskirts of Cardiff, on the edge of the existing settlement of Pontprennau. Allocated development is proposed across predominantly agriculutural land comprising grazed pasture, with connectivity to the wider landscape confined by Pontprennau to the east, the M4 motorway to the north and A48 to the south.

9.226 Given their relative containment by existing development and/or limited extent of significant habitat features affected, no significant cumulative effects are considered likely to arise, as detailed further below according to the ecological baseline identified.

Designated Sites

Statutory Designations

9.227 As detailed above, a Habitat Regulations Assessment (HRA) was undertaken by CCC in 2012 to test whether the policies within the Adopted LDP, including Policy KP2 (G), would have likely significant effects on the integrity of any internationally designated sites, including the Severn Estuary Ramsar/SAC/SPA and Cardiff Beechwoods SAC, both located within the ZoI of the Site.

9.228 As outlined above, the HRA report (and subsequent Matters Arising Changing Schedules) determined that there would be no likely significant effects on the Severn Estuary and Cotswold Beechwoods subject to implementation of development in accordance with those policies of the Local Development Plan.

9.229 However at the site level, potential negative effects upon qualifying features of the Severn Estuary as a result of contaminated surface water run-off, wastewater and pollution are considered pertinent given the proximity of development to the River Rhymney which in turn is hydrological connected to the Severn Estuary. Development will, however, be implemented in accordance with a sensitive design strategy to mitigate against negative effects arising from alterations to groundwater and surface water flow due to unforeseen pollution incidents, with construction further implemented in accordance with a pollution prevention strategy such that the potential for cumulative negative impacts to arise are considered negligible.

9.230 In respect of Cotswold Beechwoods SAC, no negative effects are anticipated given the distance and spatial separation of the Site and adjacent allocated development from the SAC. Furthermore, inherent within the masterplan is the retention and enhancement of semi-natural habitats to be delivered for amenity and wildlife with pedestrian links and natural play areas. Of the development proposals considered within a cumulative assessment, although each will deliver additional residential housing, extensive areas of open space are proposed alongside

the provision of new community facilities, play areas and footpath links, providing alternative recreational facilities for new residents.

Non-Statutory Designations

9.231 The River Rhymney SINC was scoped into this EcIA as an IEF given its proximity to the Site. Although no direct impacts are anticipated, surface water ground water/ pollution impacts may arise. Such impacts are likely to be exacerbated by the proximity of adjacent development to the watercourse resulting in potential negative cumulative effects upon water quality and thus aquatic communities associated with the watercourse Development will, however, be implemented in accordance with a sensitive design strategy to mitigate against negative effects arising from alterations to groundwater and surface water flow due to unforeseen pollution incidents, with construction further implemented in accordance with a pollution prevention strategy, such that residual impacts are considered negligible.

9.232 In respect of the proximity of St Julian's Forge Fields SINC to the Site combined with a net increase in residential units, there is the potential for cumulative impacts associated with an increase in recreational pressure and subsequent damage/degradation of the SINC to arise. As discussed in relation to statutory designations, above, however, potential recreational impacts will be mitigation through the provision of footpaths, cycle links and areas of formal and informal open space within the Site with areas of green open space also proposed/delivered across adjacent development.

Habitats

9.233 Only hedgerow habitat was scoped into this assessment. Such habitats will, however, largely be retained within development proposals with minor loss equating to 78.4% of the hedgerow resource. The Site will, furthermore, incorporate a landscaping scheme comprising native, or wildlife-friendly planting. This will be combined with the maintenance and enhancement of retained habitats, in order to increase its resilience and mitigate long-term disturbance effects. In addition, a strategy will include measures to establish and maintain new habitats of long term ecological value within the development's open spaces.

9.234 With respect to development proposals considered within the cumulative assessment, these are largely characterised by habitats of limited ecological importance, dominated by agricultural land. Features of greater ecological importance are largely confined to hedgerow boundaries which facilitate dispersal of protected species across the wider landscape. Given the proximity of the Site to other developments within the immediate area, the hedgerow resource provides some level of connectivity between sites and across the landscape. Inherent within each scheme, however, is the retention/proposed retention of the onsite hedgerow resource combined with delivery of a landscape strategy intended to enhance biodiversity and local green infrastructure resource.

9.235 Development of Land on the South Side of Bridge Road, however, overlaps with St Julian's Forge Fields SINC, recognised for its MG5 grassland communities, considered to be of County importance. Such habitats are, however, not present within the Site that is the subject of this ES such that no cumulative impacts associated with loss/degradation of this SINC are anticipated. Furthermore, consented development south of Bridge Road will be implemented in accordance with a mitigation strategy aimed at bringing retained areas of grassland into positive management that would enhance its biodiversity value over the long term. Similarly, habitats of local importance or greater are associated with the proposed development footprint for St

Ederyn's Village including broadleaved woodland and marshy grassland. However, such habitats are proposed for retention and protection within a development scheme.

9.236 As such, no potential significant effects to habitats of ecological importance are considered likely, whilst there is a potential beneficial effect associated with the enhancement and long-term sensitive management of the existing hedgerow resource.

Species

9.237 The future development of the Site will result in the loss of hedgerow and associated scrub habitat confirmed to support dormouse with additional potential to support breeding birds, roosting and foraging/commuting bats and low numbers of common reptiles. With respect to the latter, surveys undertaken to inform development proposals for the Site and wider development proposals considered within this cumulative assessment, have not identified any evidence of common reptiles such that they are presumed absent or present in such low numbers as to be undetectable. As such, the potential for cumulative impacts to occur upon this group are considered negligible. Nevertheless, their presence has been presumed with development delivered in accordance with a with a mitigation strategy to prevent harm/injury to a population whilst development proposals seek to retain and enhance the majority of suitable habitat within the Site.

9.238 Dormouse presence has, however, been confirmed across all land parcels comprising allocated development such that, in the absence of mitigation, development would result in a cumulative negative impact upon the dormouse population at a local level. However, inherent within development proposals is the retention of the majority of the hedgerow resource with maintenance of habitat connectivity between the Site and adjacent retained habitats to maintain the dispersal of this species and other wildlife across the wider landscape. Development aimed at ensuring the favourable conservation status of dormouse in the long term, combined with the implementation of a landscape scheme which seeks to compensate for habitat loss through new planting and enhancement of the retained hedgerow resource, will ensure cumulative impacts arising remain negligible.

9.239 In respect of bats, a common pipistrelle summer day roost has been identified in associated with St. Julian's House. The house and resident bat roost will, however, be retained such that no direct impacts are anticipated. Similarly, no impacts upon the common pipistrelle bat roost identified within St Julian's Manor located offsite to the east, associated with the wider development comprising St Ederyn's Village, will also be retained. In relation to the local foraging/commuting bat assemblage utilising the Site, there is potential for impacts to arise upon greater horseshoe bat, however bat activity surveys of the Site and adjacent developments have recorded this species infrequently.

9.240 As such, whilst there is potential for a negative cumulative impact to arise upon the local bat population associated with the loss of foraging habitat and disturbance, inherent within development proposals is the retention of suitable habitat features (i.e. the hedgerow resource), combined with opportunities for habitat creation/enhancement. Subject to the implementation of a sensitive landscape scheme therefore, which seeks to compensate for habitat loss through new planting and habitat creation, combined with the implementation of a sensitive lighting scheme, foraging opportunities and habitat connectivity for bats will be maintained onsite such that cumulative impacts in respect of bats are considered negligible.

Summary

9.241 Owing to the absence of significant residual effects predicted, cumulative effects are considered unlikely to arise in combination with those developments scoped into this cumulative impact assessment.

9.242 In consideration of IEFs associated with the Site, it is concluded that the proposals will conform to the respective legislative protection afforded to these IEFs and with respect to national and local planning policy requirements.

Residual Impacts

9.243 Subject to those mitigation measures outlined above, to be further detailed within the ECMS an LEMP and subject to sufficient habitat creation in respect of dormouse to ensure an overall net gain in terms of suitable habitats, residual effects anticipated during the construction and operation phase with respect to Designated Sites, Habitat and Species IEFs have been reduced to **Negligible** levels whilst habitat creation and management to provide botanically and structurally diverse habitats is likely to provide a minor beneficial effect.

Conclusion

9.244 This chapter provides an assessment of the significance and consequences of potential ecological effects upon identified IEFs arising from the proposed residential development of Land Adjacent to St Julian's House, Bridge Road, Old St Mellons, and has been prepared as part of an ES that accompanies an Outline Planning Application for residential development.

9.245 Avoidance, mitigation and compensation measures have been prepared as part of a holistic ecology strategy for the proposed development to address any potential significant effects that may arise during the construction (including demolition) and operational phases of the proposed development. Additional measures to further ensure all residual effects are avoided, mitigated and compensated for, in addition to further enhancements recommended to enable the proposed development to deliver positive ecological gain, is also discussed.

9.246 Further baseline information in support of this chapter is included within **Technical Appendices 9.1** and **9.2** and are referred to throughout the assessment. This chapter should also be read alongside a review of the Masterplan (**Appendix 9.3**), Arboricultural Technical Note provided at **Appendix 9.4** and Outline Dormouse Mitigation Strategy provided at **Appendix 9.5**. The approach taken in this assessment is made with reference to the guidelines published in 2018 by the Chartered Institute of Ecology and Environmental Management (CIEEM).

9.247 The baseline survey work has identified the following IEFs pertinent to the proposed development:

- Severn statuary Ramsar/SAC/SPA/SSSI;
- Cardiff Beechwoods SAC;
- River Rhymney SINC;
- St Julian's Meadow SINC;
- Hedgerow Network;
- Breeding Birds;
- Roosting Bats;
- Foraging/Commuting Bats;
- Dormouse; and
- Common Replies.

9.248 The impact assessment has identified that certain actions could result in significant negative effects. Inherent avoidance, mitigation and compensation measures, to be delivered through the detailed design of the proposals at the Reserved Matters stage and through the implementation of an ECMS, detailed landscape scheme, LEMP and future derogation licences approved by NRW, where appropriate, are therefore proposed. Such measures will ensure that residual effects identified are sufficiently ameliorated such that no significant negative effects upon habitat and species IEFs are likely, with beneficial effects delivered to ensure biodiversity opportunities are maximised.

9.249 Based on the impact assessment and consideration of the IEFs, it is concluded that the proposals will conform to the respective legislative protection afforded to these IEFs and with respect to national and local planning policy requirements.

CHAPTER 10
Landscape and Visual Impact

Introduction

Preface

10.1 This chapter addresses the potential landscape and visual impacts of the proposed development at St Julian's House, Bridge Road, Old St Mellons, Cardiff (hereafter referred to as 'the site'). In this LVIA, effects on features identified as important to the scenic quality, or effects on the landscape character of the site and its setting are assessed. Effects on peoples' views of the site and its setting, or visual amenity, are also assessed.

10.2 An environmental impact assessment has been sought by Cardiff Council following a Screening Opinion and this LVIA forms part of that assessment.

10.3 For the purposes of assessing the landscape and visual effects of this proposal, study areas have been defined:

- The Site extends to the boundary shown on **Figure 10.01**
- The immediate context covers the area within about 0.5km of the site and is defined by topography, mature vegetation and buildings
- The wider context extends to approximately 4km from the site boundary

10.4 The site, its surroundings, and the proposals are described in detail in Chapters 2 and 3 of this Statement. This assessment of Landscape and Visual Impacts has been undertaken against and with reference to this description of the existing site and the proposals advanced for it.

10.5 The LVIA is presented with separate sections dealing with effects on landscape, effects on visual amenity, and cumulative effects. The LVIA is illustrated by plans and photographs (see **Appendix 10.5**), as follows:

Figure 10.01	Site Location Plan
Figure 10.02	Designations
Figure 10.03	Public Access
Figure 10.04	LANDMAP
Figure 10.05	Site Context
Figure 10.06	Topography
Figure 10.07	Zone of Theoretical Visibility
Figure 10.08	Site Photographs
Figure 10.09	Viewpoint Photographs
Figure 10.10	Cumulative Assessment Sites

10.6 Detailed information is presented in Appendices as follows:

Appendix 10.1	General Assessment Methodology
Appendix 10.2	Landscape Policies
Appendix 10.3	Green Infrastructure Strategy
Appendix 10.4	Green Infrastructure Plan
Appendix 10.5	Figures

Assessment Methodology

10.7 The methodology used for assessing the landscape and visual effects is based on the recommendations in Guidelines for Landscape and Visual Impact Assessment 3rd Edition, published by The Landscape Institute and the Institute of Environmental Management & Assessment in 2013 (GLVIA3). A summary of the general methodology used is set out in **Appendix 10.1**.

10.8 The assessment process comprises a combination of desk studies and field surveys, with subsequent analyses, and involved:

- A review of landscape designations and planning policies for the landscape, and of other landscape studies relevant to the area, including landscape character assessments and LANDMAP;
- A survey of the site and landscape context study areas and inspection of views of the site from publicly accessible viewpoints, including a photographic survey. The surveys were carried out on 16th July 2020 in dry and clear weather conditions;
- Selection of viewpoint locations in discussion with Justin Jones, landscape officer, Cardiff Council;
- Evaluation of the features and elements of the landscape and their contribution to the landscape character, context and setting, based on these studies;
- Analysis of the development proposals and consideration of potential landscape and visual effects of the proposed development;
- Assessment of the susceptibility and sensitivity of the landscape to the changes likely to arise from the development;
- Identification of the extent of theoretic visibility of the development and viewers, their susceptibility and sensitivity, and view locations, supported by a viewpoint analysis;
- Consideration of the proposals and the mitigation measures to avoid, reduce or offset adverse effects; and
- Assessment of magnitude of change arising from the proposal, the degree and nature of effects on the landscape and on visual amenity and their significance, with the mitigation proposals in place.

Assessment and mitigation

10.9 The effects of the development, whether beneficial or adverse, may vary in nature and degree through its lifecycle and, where feasible, mitigation measures are proposed to be incorporated in the design of the development. Where design measures cannot address identified likely adverse effects, measures such as management of the construction and operational processes

or of the use of public rights of way may be proposed. The purpose of mitigation measures is first, to prevent or avoid the potentially adverse effects identified, and if that is not possible, to reduce the potential adverse effect. Where adverse effects are unavoidable, the purpose is to offset or compensate for the effect.

10.10 Details of the criteria for assessing landscape effects, visual effects, and cumulative effects, are set out in those respective sections.

Weather

10.11 The weather is a factor affecting the assessment of, especially, visual impacts. The Met Office[1] publish average statistics for weather patterns for the region, monthly and annual, for maximum and minimum temperatures, days of air frost, hours of sunshine, amount of rainfall - both generally and the number of days when rainfall is above 1mm. For Bute Park, Cardiff, the nearest Climate station to where the site is located:

- Rainfall above 1mm per day, which limits visibility, occurs on an average of 148.6 days in the year, about 10.6% of the year
- There are on average 35.7 days when air frost occurs, which can produce hazy conditions limiting visibility, about 9.8% of the year
- There is an average of 1549.4 hours of sunshine per annum for the station district, less than the England SW & Wales S regional average of 1519.7 hours).

Guidance etc

10.12 In addition to GLVIA3, the Landscape Institute's Guidance Note, Visualisation of development, September 2019[2] was referred to.

10.13 Relevant policy, landscape character assessments, and other contextual information sources were also referred to, including:

- LANDMAP
- Policies relevant to the landscape and visual amenity in national and regional policy including the Cardiff Local Development Plan (2016) and A Review of Landscape Character Areas (2008).

Photography

10.14 Photographs have a special role in describing landscape character and illustrating key views. In order for photograph to be representative and to create an image that is as similar as possible to that which is seen with the human eye, the Landscape Institute (LI) advises using a lens with a focal length equivalent to 50mm for a 35mm Single Lens Reflex (SLR) camera, and a horizontal field of view of a little under 40 degrees. The camera used for the appraisal photography was a Canon EOS 5D Mark iii digital SLR camera with a full frame sensor. Photographs were taken with a focal length of 50mm, unless otherwise stated.

10.15 Landscape photography includes wide angle or panoramic views requiring a sequence of photographs to be taken across the view. Where this approach is taken, a series of overlapping photographs are digitally spliced together in PTGui Pro using a cylindrical projection to provide

[1] The data quoted are those for Bute Park, Cardiff, England SW & Wales S, obtained from The Met Office website: https://www.metoffice.gov.uk/research/climate/maps-and-data/uk-climate-averages/gcjszmp44 [accessed 07 July 2020]

[2] The Landscape Institute Guidance Note, Visualisation of development, September 2019, on LI website: https://www.landscapeinstitute.org/visualisation/ [accessed 07 July 2020]

a panorama approximating to the normal field of view in a landscape context. Where necessary, the contrast and brightness of individual photographs is slightly manipulated in order to create a consistent panorama without visible joins.

10.16 The viewpoint locations were established using a camera mounted GPS device and verified against site survey. The viewpoint locations are shown on **Figures 10.05** and **10.07**.

Context

Legislative and Planning Policy Context

10.17 The following national planning policy relating to Landscape and Visual Impact are considered of relevance to the area surveyed and to the proposed development.

National Planning Policy

10.18 A number of over-arching policies are of relevance, not least of which are those described within Planning Policy Wales (PPW[3]). PPW 10 sets out the land use planning policies of the Welsh Assembly Government. The advice contained within PPW is supplemented for some material considerations by Technical Advice Notes (TAN's).

10.19 TANs identify a number of key principles which the Town and Country Planning system in Wales should incorporate. Those relevant to landscape and visual impact are detailed below:

- **TAN 12 Design** in paragraph 1.8 states that design should 'be a fundamental consideration from the outset and should not be treated or developed in isolation'. Five aspects of good design are identified: access; character; community safety; environmental sustainability; and movement.

- Paragraph 4.3 under delivering good design, describes the context of an area as: 'the local context comprises the characteristics and setting of an area in which a development is located. This includes the area's natural and human history, the forms of settlements, buildings and spaces; its ecology and archaeology; its location and the routes and waterways that pass through it. Understanding the site and its immediate and wider context is the basis for a meaningful and sustainable design response and is the responsibility of all those involved in the design process'.

Local Planning Policy - Cardiff Local Development Plan (2016)

10.20 The Cardiff Council Local Development Plan (LDP) was adopted on 28th January 2016. It is the most up to date Development Plan covering the authority's administrative area, and is used in the determination of planning applications.

10.21 The LDP sets out a range of policies and proposals relating to future development, and deals with the use and conservation of land and buildings within Cardiff up to 2026. A number of

[3] Welsh Assembly Government, Planning Policy Wales, 10th Edition, December 2018

policies within the LDP are considered of relevance to the landscape and visual aspects of the site and scheme, and are detailed below:

- **KP16: Green Infrastructure**

  Cardiff's distinctive natural heritage provides a network of green infrastructure which will be protected, enhanced and managed to ensure the integrity and connectivity of this multi-functional green resource is maintained.

  Protection and conservation of natural heritage network needs to be reconciled with the benefits of development. Proposed development should therefore demonstrate how green infrastructure has been considered and integrated into the proposals.

- **EN3: Landscape Protection**

  Development will not be permitted that would cause unacceptable harm to the character and quality of the landscape and setting of the city.

- **EN5: Designated Sites**

  Development will not be permitted that would cause unacceptable harm to sites of international or national nature conservation importance.

- **EN6: Ecological Networks and Features of Importance for Biodiversity**

  Development will only be permitted if it does not cause unacceptable harm to:

  i. Landscape features of importance for wild flora and fauna, including wildlife corridors and 'stepping-stones' which enable the dispersal and functioning of protected and priority species;

  ii. Networks of importance for landscape or nature conservation.

- **EN8: Trees, Woodlands and Hedgerows**

  Development will not be permitted that would cause unacceptable harm to trees, woodlands and hedgerows of significant public amenity, natural or cultural heritage value, or that contribute significantly to mitigating the effects of climate change.

- **T8: Strategic Recreational Routes**

  A strategic network of recreational routes will be maintained and developed To link Cardiff's coast, river corridors, open spaces, countryside, and the Regional network of routes, facilitating access to them by local communities, and forming an integral part of the wider cycling and walking network in Cardiff.

Designations

10.22 Landscape designations provide an indication of landscape value. They are areas that have been recognised for the scenic beauty and recreational potential of the landscape. Designations are shown on **Figure 10.02**.

Historic and cultural landscape designations

Conservation areas and listed buildings

10.23 The nearest conservation area is **Old St Mellons**, 1.3km to the south-east. It is a small conservation area and covers the church and it grounds and properties along the main street. There are no other conservation areas within 3km study area.

10.24 The nearest listed building to the site, about 60m to the north-east, is the Grade II **St Julian's Manor**. It is described as a 'large farmhouse. Of roughcast rendered stone with Welsh slate

roof with yellow brick end and ridge stacks. Roughly L-shaped plan with main range and parallel cross wings to rear, 2 storeys and attic.' The building is listed 'as a substantial traditional regional farmhouse which has retained considerable character'.

10.25 Approximately 620m to the south is the nearest Grade II* listed building, the **Church of St. Edeyrn**, a medieval church restored in 1888, 'Listed II* as a small medieval church retaining much of its historic fabric'.

10.26 There are two further listed buildings within 1km of the site, both Grade II listed: a **farmhouse at Bridge Farm**, 430m to the south-east; and **The Unicorn Inn**, which is adjacent to church St Edeyrn, 600m to the south. The setting of conservation areas and listed buildings is a consideration during the preparation of landscape and visual impact assessments.

Scheduled Monuments

10.27 The nearest scheduled monument to the site is **St Mellons Churchyard Cross**, a free standing cross about 1.4km to the south. The monument is of national importance for its potential to enhance our knowledge of the organisation and practice of Christianity.

10.28 The next closest scheduled monuments are **Castle Field Camp, East of Craig-Llwyn** and about 2km to the north-east, and the **Druidstone House Standing Stone** in the grounds of Druidstone House, 2km to the north-east.

Register of Landscapes, Parks and Gardens of Historic Interest

10.29 There are two Registered Historic Park and Gardens within 3km of the site:

- Approximately 420m north of the site boundary is **Cefn Mably**, which includes the listed buildings at Cefn Mably Hospital and terraces and ornamental structures in front of the hospital. The 'park woodland grounds and terraced garden [of the house have] features dating from the early eighteenth century to the early twentieth century. The steep slopes and mature oaks of the southern half of the park form a beautiful setting for the house and are visible from a wide area to the south.' The site is outside the essential setting as defined in the register, which covers the land north of the M4 about 220m to the north of the site boundary.
- Around 2.7km north of the site is **Ruperra Castle**, 'an early Jacobean mock castle of exceptional historical importance with its attendant deer park and structural remains of contemporary formal gardens. The site includes an outlying hilltop mount of great historic interest, with spiral walk and stone walled top, which is the site of a seventeenth century summer house. During the early decades of the twentieth century the gardens were elaborately laid out, with a magnificent glasshouse, still largely intact as a centrepiece.'

Ecological designations

10.30 The **Severn Estuary**, 4.8km to the south-east, is a Ramsar site, a Special Areas of Conservation (SAC), a Sites of Special Scientific Interest (SSSI), and a Special protection Area (SPA). Due to distance and intervening topography this area has been scoped out of the assessment.

Sites of Special Scientific Interest (SSSI)

10.31 From about 2.8km to the south-east, is the **Gwent Levels - Rumney and Peterstone SSSI**, one of a series of six SSSIs, totalling 5700 hectares, which lie alongside the Severn Estuary and

cover the whole of the Gwent Levels, stretching from east of Cardiff through to Caldicot. **Llanishen and Lisvane Reservoir Embankments SSSI** are just within the 3km study area to the west.

Local Nature Reserve

10.32 **Nant Fawr Corridor** LNR, which covers the woodland to the south and east of Llanishen Reservoir, is nearly 3km to the west of the site.

Ancient woodland

10.33 The nearest ancient woodland to the lies about 90m to the south-west on the opposite side of the new St Edeyrn's development. It is one of 16 parcels of ancient woodland within 1km of the site, all of which are small and isolated from each other.

Public access:

Public rights of way (PRoW)

10.34 The lane that runs along the northern site boundary to access St Julian's Manor is also a public footpath, which connects St Mellons Road to the Rhymney River and another footpath which follows the western bank of the river. There is a moderate density of public rights of way within 1km of the site, although many of these are absorbed within modern development. Further afield, the ridgeline to the north has numerous public rights of way, from many of which views are available across the lower lying land to the south.

Open Access Land

10.35 The only access land within 2km of the site are 3 areas of woodlands to the north, the nearest, and smallest, is about 800m from the site. The largest, Cefn Mably Woods, is about 300m further north and covers about 1km^2. The woodlands are overgrown, have little sign of public use, and screen external views from them.

Long distance footpaths (LDFP)

10.36 The Rhymney River Circular, just over 1.5km to the north, is the nearest promoted route to the site.

National cycle routes (NCR)

10.37 The nearest NCRs are over 3km from the site. The site is therefore not a feature of their setting.

Public roads

10.38 St Mellons Road, which passes the western site boundary, is a narrow tree and hedgerow lined lane. Parts of the road are being converted to a cycle lane as part of the St Edeyrn's development to the south. 600m to the east, on the far side of the Rhymney River, is Began Road, which is also encased by mature hedgerows and trees. The M4 motorway crosses the valley on an embankment about 200m to the north of the site, while the approach on either side is in cutting. Both the cuttings and the embankments are covered in maturing trees, which screen a lot of external views that would otherwise be available to passersby.

10.39 Immediately to the south and east of the site is the new St Edeyrn's development, a large area of housing that is currently under construction and primarily consisting of a mixture of 2 and 3 storey detached and semi-detached houses.

Interim summary

10.40 The following elements of the landscape policies and designations are relevant to the assessment of landscape and visual effects of this proposal:

- The design, size and scale of the proposals should respect the character of setting of the site (TAN 12 & EN3)
- Trees on the site should be retained and protected (EN8)
- Views available from, and the setting of, the public rights of way network
- The setting of Cefn Mably Registered Park and Garden
- The landscape setting and visibility of St Julian's Manor listed building

Methodology

Landscape Assessment

10.41 The assessment process is described generally in section 10.7 above. The general methodology for assessing the effects is set out in **Appendix 10.1,** and the criteria used at each stage of the assessment of landscape effects are set out in the tables below.

10.42 In summary, the degree of the likely landscape effects of the proposed development is determined by relating the sensitivity of the receptors to the changes arising from the development proposals, and the degree and nature of the changes in the landscape arising from the proposals.

Sensitivity

10.43 As described in **Appendix 10.1**, the sensitivity of landscape receptors[4] is dependent on their value and susceptibility to, or ability to accommodate, the changes that would be brought about by the proposed development. The sensitivity of landscape receptors is assessed by combining professional judgments of the value attached to the landscape or its components, established in the baseline study, and their susceptibility to the type of change arising from the development, as follows:

10.44 The following categories of landscape sensitivity to change are used, combining consideration of landscape value and susceptibility, with the criteria applied:

Table 10-1 Indicative criteria for assessing landscape sensitivity

Category	Indicative criteria
High sensitivity	A highly valued landscape e.g. of national or international importance, whose character or key characteristics are susceptible to change;

[4] The term used for elements and aspects of the landscape that might be affected by the proposals and people with views of the development.

Category	Indicative criteria
	Aspects of the landscape character are highly valued as "key characteristics" and susceptible to change, often identified in National or local character assessments; The landscape character is highly valued as intact and in good condition and particularly vulnerable to disturbance; A highly valued landscape with no or limited potential for substitution or replacement.
Moderate sensitivity	A landscape of local importance or value, whose character or key characteristics are susceptible to change; Other characteristics of the landscape character also valued in National or local character assessments and susceptible to change; The landscape character is valued for moderate condition and not particularly vulnerable to disturbance; A moderately valued landscape with some potential for substitution or replacement.
Lesser sensitivity	No or little evidence of value or importance attached to the landscape area, its features or characteristics; Few features, characteristics or qualities susceptible to disturbance or particularly susceptible to improvement or upgrading Good potential for substitution or replacement

10.45 These are the criteria against which receptors are considered in order to arrive at a judgement as to their sensitivity, but it is not necessary for all the criteria set out for a category to apply.

Magnitude of change

10.46 The degree of the likely landscape effects of the proposed development is determined by relating the sensitivity of the receptors to the changes arising from the development proposals, and the degree and nature of the changes in the landscape arising from the proposals.

10.47 The scale of magnitude of the changes is related to considerations of the size or scale of the change, the geographical extent of the area influenced, and the duration and reversibility of the change. The scale of magnitude of the changes is graded, as follows:

Table 10-2 Indicative criteria for assessing magnitude of landscape change

Magnitude of Change	Landscape Change
Great change	Major size or scale of change, affecting the landscape type or character of the area within which the proposal lies or extending over the wider area; likely to be longer term or permanently, with low prospect of reversibility
Medium change	Intermediate size or scale of change, affecting part of the landscape type or character of the area within which the proposal lies, or larger scale of change at the level of the site or immediate context; likely to continue into the medium term, with good prospect of reversibility

Magnitude of Change	Landscape Change
Small change	A minor proportion of the extent of the character type or area is affected or smaller scale of change over a larger extent; the changes occur at the level of the site or immediate context, and likely to be short term and reversible.
Negligible/no change	No apparent change to landscape characteristics

10.48 While GLVIA3 includes the duration of the change in the consideration of the magnitude of change, in some cases a major size or scale of change of shorter duration may be considered a "great change".

Assessing effects

10.49 The degree of effect, whether adverse or beneficial, is assessed by relating the sensitivity of the receptor and the magnitude of change, by considering the following indicative criteria:

Table 10-3 Indicative criteria for assessing landscape effects

Landscape effect	Indicative criteria
Major	Highly sensitive landscape completely degraded or greatly changed, with little or no scope for mitigation; Great improvement, sufficient to upgrade overall landscape character.
Moderate	Medium change to moderately sensitive landscape; lesser change to higher sensitivity landscape or greater change to less sensitive landscape.
Minor	Localised or limited adverse change to the existing landscape character; greater change to less sensitive landscape; Considerable scope for mitigation; Localised improvement to the existing landscape.
Negligible	Little or no perceived change to the existing landscape character; The change is difficult to discern.

10.50 Intermediate conditions may be described, such as Moderate-Major, where the criteria for Moderate may be exceeded but not qualify as Major. Where the magnitude of change is "none", the effect would correspondingly be None.

10.51 Major effects are likely to be considered "significant", especially if or adverse and long term or not reversible, and Minor or Negligible effects as "not significant". Moderate effects may be classified as either "significant" or "not significant", depending on each individual situation, identified in the assessment. Effects that are not significant but may be important considerations in decision making about the proposed development.

10.52 Effects may be adverse or beneficial. In some instances, the effect may be offset by other considerations, for example, through the mitigation proposals, and the resulting effect is neither beneficial nor adverse.

Visual Assessment

10.53 The assessment process is described in **Appendix 10.1**. The criteria for assessing the likely effects of the proposed development are set out below.

Visual Sensitivity

10.54 The sensitivity of viewers is affected by the susceptibility of the viewer to changes in views and visual amenity and the value attached to particular view locations and views. The context of the location contributes to susceptibility, for example, people viewing from residential properties or from a valued landscape are likely to be more susceptible to change than people viewing from an industrial context. Particular views may have importance and be valued as part of the experience of a valued landscape or promoted recreation facility or route.

10.55 The following criteria for visual sensitivity, combining susceptibility and value considerations, are used:

Table 10-4 Indicative criteria for assessing visual sensitivity

Category	Indicative criteria
High sensitivity	Viewers in residential or community properties with open views of the site Views experienced by many viewers Daily, prolonged or sustained views available over a long period, or where the view of the landscape is an important attractant A view from a landscape, recreation facility or route valued nationally or internationally for its visual amenity
Moderate sensitivity	Viewers in residential or community properties with partial or largely screened views of the site Frequent open views available of the site Viewers are pursuing activities such as sports or outdoor work, where the landscape is not the principal reason for being there or the focus of attention is only partly on the view A view of the site from other valued landscapes, or a regionally important recreation facility or route
Lesser sensitivity	A view of low importance or value, or where the viewer's attention is not focused their surroundings A view of the site from a landscape of moderate or less importance Occasional open views or glimpsed views available of the site passing views available to travellers in vehicles A view available to few viewers

Magnitude of change

10.56 The degree of the likely visual effects of the proposed development is determined by relating the sensitivity of the receptors and the changes in the landscape or view of the landscape to which they will be subjected. The scale of magnitude of the changes in visual amenity is

evaluated in terms of size or scale, the geographical extent of the area influenced, duration and reversibility, as follows:

Table 10-5 Indicative criteria for assessing magnitude of visual change

Magnitude of Change	Visual Change
Great change	Major size or scale of change, affecting a large proportion of the angle of the view or affecting views from a wide area; continuing into the longer term or permanently, with low prospect of reversibility
Medium change	Intermediate size or scale of change, affecting part of the angle of the view or affecting views from the wider context, or larger scale of change in views from within the site or immediate context; continuing into the medium term, with good prospect of reversibility
Small change	A minor proportion of the angle of view is affected or the contribution of the changed elements or characteristics to the composition of the view is not important; the changes are viewed from longer distances, are short term and reversible
Negligible/no change	Barely perceptible change or the change is difficult to discern; No change in the view or the changes due to the development are out of view.

Assessing effects

10.57 The degree of effect, whether adverse or beneficial, is assessed by relating the sensitivity of the receptor and the magnitude of change, using the following indicative criteria:

Table 10-6 Indicative criteria for assessing visual effects

Visual effect	Indicative criteria
Major	Large or very large change or visual intrusion experienced by highly sensitive viewers or from highly sensitive public viewpoints The proposal would cause a great deterioration in the existing view Large or very large improvement in the view, sufficient to upgrade overall visual amenity
Moderate	Medium change or visual intrusion experienced by moderately sensitive viewers Lesser change to higher sensitivity viewers or greater change to less sensitive viewers
Minor	Small or localised visual intrusion in the existing view, especially for less sensitive viewers Localised reduction in visual intrusion, or improvement in the view
Negligible	The change in the view is imperceptible or difficult to discern, even for a highly sensitive viewer.

10.58 Major effects are likely to be considered "significant", especially if long term or permanent, and minor or negligible effects as "not significant". Moderate effects may be classified as either "significant" or "not significant", depending on each individual situation, identified in the assessment. Effects that are not significant but may be important considerations in decision making about the proposed development.

10.59 In addition to these criteria, in some instances the effect may be discernible or greater, but offset by other considerations, for example, through the mitigation or restoration proposals, and the resulting effect is neither beneficial nor adverse.

Baseline Conditions

Landscape baseline

10.60 The landscape baseline is a description and analysis of the existing landscape, against which the effects of the proposed development are assessed, first, by reference to landscape character assessments for the area in which the site is located, at national and local levels and, then, from site-specific surveys and analysis carried out for the purposes of this assessment.

LANDMAP

10.61 Landscape Assessment, following the LANDMAP methodology, has been undertaken for Cardiff. The assessment uses the Natural Resources Wales (NRW) / Wales Landscape Partnership Group approach which separates the defining aspects of the landscape into five categories, or aspects; geology, habitats, historic, cultural, and visual & sensory. It considers the relationship that exists between people and places; how people have given meaning to places through time and how the physical landscape has shaped their actions, or how their actions have shaped the landscape,

10.62 LANDMAP information is summarised below for the relevant aspect areas. The findings of the LANDMAP studies have informed the baseline for the landscape and visual impact assessment.

Geological Landscape

10.63 The site is situated in aspect area **CRDFFGL010**, which has an overall evaluation of moderate. The aspect area is described as 'hummocky, generally south sloping plain below ORS escarpment, dissected by minor NNW-SSE stream valleys running off sandstone escarpment to N. Low rounded strike ridges run ENE-WSW locally'. There are no aspect areas in the study area evaluated as high or outstanding (**Figure 10.04-1**).

Landscape Habitats

10.64 The site is situated in aspect area **CRDFFLH011**, which has an overall evaluation of moderate. Habitats identified for the aspect area are: 'Semi-natural Broadleaved Woodland. Improved Grassland. Arable. Buildings. Semi-improved Neutral Grassland'. Llanishen reservoir, nearly 3km to the west, and woodland on the ridgeway over 3km to the north-west, are evaluated as high, while the Wentlooge Levels, nearly 3km to the south-east, are overall evaluated as outstanding (**Figure 10.04-2**).

Historic Landscape

10.65 The site is situated in aspect area **CRDFFHL008**, which has an overall evaluation of moderate. The aspect areas description states that '[t]his area is similar to the river Taff corridor being an important river corridor used for settlement, conquest and communication. The early castle sites at Cae Castell, Rhymney and Pen-y-Pil, St Mellons attest to the military significance of this area. The alluvial plain of the River Rhymney probably disguises the remnants of a medieval and perhaps earlier landscape due to the long-term masking effect of riverine alluviation'. The aspect area covers central southern part of the study area. The northern half of the study area and the easternmost part is covered by mixture of aspect areas with an overall evaluation of high or outstanding (**Figure 10.04-3**).

Cultural Landscape

10.66 The site is situated in aspect area **CRDFFCL015**. The classification of the area states that 'the area does have an important value as the side of the Rhymney valley and has the church tower at Llanedyrn which acts as a strong focus on the approaches to the city'. The rarity of the aspect area is assessed as commonplace. Llanishen reservoir, nearly 3km to the south west has a rarity value of rare, while the Wentlooge Levels, nearly 3km to the south-east, are very rare (**Figure 10.04-4**). The M4 and Cardiff Gate commercial area shortly to the north and north-west of the site have a group value of exceptional, as do the Wentlooge Levels nearly 3km to the south-east. The north-easternmost third of the study area has a group value of considerable (**Figure 10.04-5**). The overall evaluation of the site aspect area is low, while the north-eastern third of the study area is overall evaluated as high and the M4 and the Wentlooge Levels as outstanding (**Figure 10.04-6**).

Visual & Sensory Aspect

10.67 The site is situated in aspect area **CRDFFVS026**, which has a scenic quality of moderate. The overall evaluation of the area describes it as a '[g]entle east facing slopes enclosing the Rhymney valley floor falling from 50mAOD to 20mAOD. Landcover is irregular small-medium fields both pastoral and arable fields enclosed by low cut hedges with a few scattered hedgerow trees. The area therefore feels open. Settlement is semi-rural with urban fringe influences but the white painted church tower at old Llanedyrn is an important landmark, particularly when viewed from the A48. This is spoilt to an extent by a nearby steel clad building'. A very small part of the Wentlooge Levels nearly 3km to the south-east, is the only aspect area in within the 3km study area with a scenic quality evaluated as high, while there are no aspect areas evaluated as outstanding (**Figure 10.04-7**). The visual and sensory character of the site is assessed as moderate. To the south-east, Old St Mellons is assessed as outstanding (**Figure 10.04-8**). Overall, the site is evaluated as moderate. Nearly 3km to the south-east the Wentlooge Levels are overall evaluated as high (**Figure 10.04-9**).

Site-specific appraisal

The landscape of the site

10.68 The site currently sits amid major construction projects, with recently completed housing to the south, housing construction work to the east, site preparation work for housing construction to the north, and housing nearing completion of construction to the west. There is existing housing, all detached properties set on curtilages with mature vegetation, to the north-east, north-west and south-west of the site. Bridge Road (B4562) abuts the western site boundary, while the driveway to St Julian's Manor, which is also a public footpath, abutting the northern site boundary.

10.69 In the wider area, the M4 signifies the limit of urban Cardiff about 200m to the north of the site, beyond which is farmland with mature parkland trees. The Rhymney River lies a similar distance to the east at the bottom of a broad, flat bottomed and shallow valley. About 90m to the west of the site is the Pentwyn Link Road (A4232), beyond which is a retail park and the

Pontprennau housing estate. Throughout all of this development trees are a strong theme, with mature trees around the older elements and maturing tree bands and woodlands dividing the newer features. The landform gently drops from a plateau in the west to the river valley, rising again on the far side where the land use is predominantly farmland divided by mature trees lines.

Features of the site

10.70 The site is defined by a dense, high and mature hedgerow that encloses it on all sides apart from the north-western corner where it abuts the curtilage of St Julians House. Here the boundary is open and demarked by fences. The site is currently in use as pastoral farmland, is grazed by hoses and sheep and is sub-divided by a number of wooden post and rail fences. The north-west corner of the site, adjacent to St Julian's House, contains several small outbuildings associated with the equine use of the land. The only other feature within the site is a minor powerline which crosses the easternmost part of the site, which includes a pole in the north-east corner. The western half of the site is reasonably flat and lies at about 44m AOD, from here the land drops gently to the east to a low point on the eastern boundary of about 35m AO

Characteristics and aesthetics

10.71 The dense and mature hedgerow around the site creates a feeling of containment and a degree of isolation from the surroundings, although the noise from traffic on the M4 is a constant reminder of its nearby presence. During the site visit construction noise from the adjacent construction projects was also constant and disturbed the tranquillity of the site. The hedgerow around the site is both dense and high enough to screen the majority of the surrounding new development, allowing only glimpses of the higher portions of the new buildings. Filtered views through the hedgerows are likely during the winter, which would increase the prominence of the new developments from within the site.

Public access

10.72 There is no public access to the site. The nearest is a public footpath which runs parallel to the northern site boundary along St Julian's Manor driveway and Bridge Road, which runs parallel to the western site boundary. There will also be residential roads within the new development to the east and south of the site, although these were not complete during the site visit.

Landscape value

10.73 The characteristics, sensitivities and guidelines in the existing character assessments at national and local level and the site-specific analyses carried out for the purposes of this LVIA were taken into account as indicators of the aspects of the landscape important to the character, and evaluated according to the following criteria:

Table 10-7 Indicative criteria to determine landscape value

Value	Criteria
Higher Value	Landscapes subject to international, national or local designations, **and** non-designated landscapes where the following considerations apply: Areas of landscape whose character is judged to be intact and in good condition; Scenic quality, wildness or tranquillity, and/or natural or cultural heritage features make a particular contribution to the landscape;

Value	Criteria
	There are important cultural and artistic associations; They are representative of typical character of the area or have a character or elements that are valued for their rarity; Particular components may be identified as important contributors to the landscape character; The landscape is valued for recreational activities where experience of the landscape is important.
Lower Value	Areas of landscape whose character is in poor condition; Scenic quality, wildness or tranquillity, and/or natural or cultural heritage features are not key characteristics of the landscape; Cultural and artistic associations are absent; They are not representative of typical character of the area, but are also not valued for rarity; Particular components may be identified as important contributors to the landscape character; There is little scope for recreational activities where experience of the landscape is important.

10.74 Intermediate levels of value may be assessed, where the value falls between high and low, e.g. "medium". The features identified as important or "key" to the landscape character of the site are the site boundary hedgerow and the sense of enclosure that it creates.

10.75 In the overall evaluations the LANDMAP aspect areas covering the site, none are evaluated as high or outstanding. Many of the elements identified in the aspect area descriptions as being an important part of the character of the area have been lost due to extensive development in the context area of the site. The includes visual and sensory features like the original field pattern of the area, hedgerows and scattered trees, as well as the rural setting of St Edeyrn's Church.

Landscape baseline summary

10.76 The following elements of the landscape baseline are relevant to the assessment of effects of this proposal:

- The mature hedgerow around the site boundary is an important feature of the landscape habitats and the character of the site.
- The site sits in the centre of a landscape whose character is changing quickly due to new development, the character of the area is in a state of flux and the features identified in many of the LANDMAP aspect areas, most noticeably visual and sensory, are no longer present.
- The setting of nearby public rights of way.

Visual baseline

Zone of Theoretical Visibility (ZTV)

10.77 The computer generated ZTV is based on a digital terrain model generated from the 5m grid interval Ordnance Survey OS Terrain 5® dataset OR based upon the data in the Ordnance Survey OS Open Map Local ESRI® Shapefile, with viewer eye-height of 2m.

10.78 **Figure 10.07-1** shows show the predicted extent of the ZTV for the proposed development and is based on topographic data only – the "bare ground scenario" – minor undulations in the terrain may not be reflected in the 5m grid interval of the dataset. The ZTV shows theoretical visibility of the proposed development but actual visibility may be affected by intervening vegetation, building and topographic features.

10.79 The ZTV on **Figure 10.07-2**, including the screening effect of woodland and buildings. Woodlands have been modelled at a mean average height of 10m and buildings at a notional 8m height. The screening effects of other surface features such as individual trees and hedgerows are not taken into consideration.

10.80 For the visual impact assessment, a ZTV study area of about 3 kilometre radius from the site was investigated and mapped. Potentially sensitive visual receptors include residents, people visiting areas covered by landscape designations, areas or sites of historic interest, public footpaths, bridleways and cycle routes, and visitor attractions.

10.81 During the field study the ZTV was used as a starting point and features such as vegetation, buildings or localised topographic variation, which define actual visibility, were identified. Representative viewpoints were then selected for the visual impact assessment.

10.82 The locations of viewpoints studied relate to the "receptors", that is, residents and users of the landscape, and locations from which they may have views towards or of the site.

Viewpoint study

10.83 The ZTVs figures, **Figures 10.07-1 and -2**, illustrate the location of the proposed development and shows the ZTV at a scale of 1:25,000. The figures also show the locations of the assessment and viewpoint photographs, which were discussed with and agreed with the landscape officer at Cardiff Council.

10.84 A total of 10 views were taken to illustrate the site and its appearance in publicly available views (**Figures 10.09-1** to **-5**).

10.85 Views towards the site are divided into the following categories:

- Near views – from the adjacent or close to the site boundary
- Mid-distant views – within 1.5km of the site
- Distant views – between 1.5km and about 3.5km from the site

10.86 Views from within the site are also provided to illustrate the landform of the site and show other areas not publicly accessible from which the site is visible.

Table 10-8 Viewpoint details

VP Ref	Location	Distance from site (km)	Receptors represented
01	Bridge Road (B4562) on western site boundary	5m	Residents in adjacent properties Passersby on minor road
02	Footpath connecting Bridge Road with Pentwyn Link Road	120m	Users of footpath Representative of views from nearby properties, public footpath and minor road
03	Public footpath near to St Julian's Manor	50m	Users of public footpath Residents in nearby properties, which include a listed building
04	Church Road to south-east of site boundary	15m	Residents in adjacent properties Users of the footpath and cycleway Passersby on residential road
05	Public footpath alongside Rhymney River	350m	Users of public footpath
06	Public footpath along driveway to Cefn Mably housing estate	740m	Users of public footpath Visitors to the Registered Park and Garden Residents using the driveway
07	Public open space to north-west of St Mellons Parish Church	1.3km	Users of public open space Residents in nearby properties
08	Entrance to Fairwater Farm on Began Road	2.2km	Walkers using Rhymney River Circular Walk Passersby on minor road
09	Craig Ruperra	3.8km	Walkers visiting designated viewpoint Visitors to Scheduled Monument Visitors to the Registered Park and Garden
10	Cefn Llysfaen	3.9km	Users of bridleway

Table 10-9 Existing view descriptions

View-point Ref	Landscape context at viewpoint location	Existing view towards site
01	The viewpoint is located on Bridge Road on the western site boundary. To the west of Bridge Road a row of new houses is under construction, beyond which is a woodland belt along the Pentwyn Link Road. To the west of the link road is a retail park. Shortly to the	The site lies on the opposite side of Bridge Road behind a dense and mature hedgerow. A heavily filtered view through the hedgerow is only available when facing it directly. Although the view would be less heavily filtered in the winter, the

View-point Ref	Landscape context at viewpoint location	Existing view towards site
	south of the viewpoint a new housing development is nearing completion.	hedgerow would still be dense enough for there to be no oblique view into the site.
02	The viewpoint is located a short distance to the north-west of the site on a path connecting Bridge Road with Pentwyn Link Road. Recent vegetation clearance along the side of the path has created an open view to the south. Scrub and trees along the link road lie to the west, beyond which is a commercial area. To the east is an agricultural field, which at the time of the site visit, was in the initial stages of ground works for a new housing development.	The viewpoint faces towards the cluster of residential properties that are situated adjacent to the north-west corner of the site. The view depicts the extent of mature vegetation around these properties and how is screens them, and the adjacent public footpath and Bridge Road, from the site. Construction activity in the field to the north of the site is visible to the left of the view and to the north-east of the site.
03	The viewpoint is located on the public footpath and driveway to St Julian's Manor to the north-east of the site. To the north-east is the manor and a cluster of other houses, set amid well vegetated curtilages on land descending towards the Rhymney River. To the north-west and south-east are construction sites, linked by an access track that crosses the public footpath between the viewpoint and the site.	The foreground of the view is occupied by the access track, materials and activity associated with the adjacent construction sites. Beyond this, as the land rises slightly, is the site boundary hedgerow that runs around its perimeter. The interior of the site is screened from view by the hedgerow.
04	The viewpoint is located on Church Road, the main thoroughfare in the new development to the south of the site, which passes parallel to the eastern site boundary. At the time of the site visit the construction of properties in the area of the viewpoint was nearing completion, while those to the south were complete and had residents, and those to the north were at the early stages of construction. The road is also the access route to the construction site to the north of the site.	Church Road is in the foreground of the view with newly constructed residential housing on either side. As the road meets the site boundary the properties on the opposite side of the road stop, meaning that the site boundary hedgerow runs along the western side of the road. The hedgerow is dense and screens the site interior, although a heavily filtered view would be available during the winter.
05	The viewpoint is located on the public footpath that runs along the western bank of the Rhymney River. The river is	Open views across the construction site to the west of the path are available for much of its length. From

View-point Ref	Landscape context at viewpoint location	Existing view towards site
	bordered on both banks by mature trees. To the east is a flat flood plain with farmland and a golf course divided by mature trees lines, with a wooded hill beyond. To the west is a construction site, with the flood Plain in the foreground due to become public open space. Beyond, as the land starts to rise, construction work is currently in progress. The M4 lies shortly to the north on a wooded embankment while a major power lines crosses over the viewpoint running from the north-west to the south-east.	the viewpoint scrub in the foreground screens the flood plain. As the land rises beyond construction activity is apparent with machinery movement and mounds of stockpiled earth. To the left and on the horizon are newly completed buildings while to the right the properties around St Julian's Manor are visible set amongst mature trees. Between these and on the skyline is the hedgerow along the eastern site boundary. The interior of the site is not visible.
06	The viewpoint is located on a public footpath and the private driveway to the Cefn Mably housing estate. The surrounding farmland is part of the Cefn Mably Registered Park and Garden and contains numerous mature trees and copses. The landform rises from the flatter land to the south and includes some pronounced features with distinct spurs and valleys.	Mature trees throughout the landscape screen views and an open view towards the site is unusual. At the viewpoint the roads alignment is orientated directly toward the site. However, trees along the road, along the Pentwyn Link Road and to the north-west of the site screen the interior of the site in the view. The rooflines of properties in the new development beyond the site to the south are visible with Old St Mellons on a ridgeline beyond. The Bristol Channel and hills on its far side form the distant horizon.
07	The viewpoint is located in public open space to the north-west of Old St Mellons. The open space covers a north facing slope which provides panoramic views to the north. Residential housing borders the open space with there being views northwards from many of the houses along its southern side. Shortly to the south-east is St Mellons Church and a Conservation Area. Mature trees and buildings screen all views to north from these areas.	The foreground of the view consists of land falling towards the Rhymney River valley, initially grassland and then residential housing. Beyond the wooded valley bottom are the houses of the new development to the south of the site, which are distinctive and spread across the centre of the view. The site is situated beyond the largest cluster of these houses, identifiable by its boundary hedgerow. Hills, woods and farmland form the horizon of the view in the distance.

View-point Ref	Landscape context at viewpoint location	Existing view towards site
08	The viewpoint is located on a minor road to the south-west of Michaelston-y-Fedw opposite the entrance to Fairwater Farm. The topography drops in a continuous slope from the village in the north-east to the Rhymney River valley to the south-west. Farmland surrounds the viewpoint with large fields and few hedgerows providing open views to the west and south.	The open view looks across the Rhymney River valley, which appears as farmland and mature tree lines in the foreground of the view. Beyond the valley bottom, the M4 is just visible with the new housing development to the east and south of the site clearly identifiable as the land rises. To the right of this the site is visible as a hedgerow lined field. Low wooded hills form the horizon beyond with tall buildings in the centre of Cardiff visible to the left of the view.
09	The viewpoint is located on Craig Ruperra, a local high point, scheduled monument and designated viewpoint. Although set in woodland, vegetation has been cleared to provide a filtered but expansive view to the south. Many of the remaining trees that filter the view are ash that show signs of dieback. Ruperra Castle Registered Park and Garden cover the estate landscape to the south of the viewpoint while woodland covers the western, northern and eastern slopes of the hill.	The site lies to the far right of the view available from the viewpoint. The foreground consists of farmland divided by hedgerows and separated by woodland blocks. Beyond this, on a wooded spur, the Cefn Mably housing estate is visible with the new development to the south-east of the site beyond. The site itself is not identifiable among these features. In the distance beyond, is the residential area of Old St Mellons, with the Bristol Channel and English coastline forming the distant horizon.
10	The viewpoint is located on a well-used bridleway that follows the ridgeline of Craig Llysfaen. Open panoramic views towards the south are available from much of the path's length. To the south the landform drops steeply across pastoral farmland, while to the north the slope is more gradual. The farmland consists of small fields dived by old tree lined boundaries, many of which are in poor repair.	The viewpoint provides a 180 degrees panorama to the south, from Newport to the left to Cardiff to the right. As the steep slope in the foreground eases, farmland, woodland, mature trees and scattered buildings occupy the area between it and the northern built-up limit of Cardiff. The site lies to the left of the view, although is too distant to be identifiable. However, the rooflines of the new development to its south are just visible. The Bristol Channel and English coastline form the distant horizon.

Visual receptors

10.87 The assessment of visual effects is described by considering how the different groups of "visual receptors" may be affected. The following is a résumé of the viewers and locations from where views may be available, with references to the representative viewpoints or other photographs.

People in settlements and residential properties

10.88 St Julian's House is situated immediately adjacent to the north-western site boundary, it is the only property from which direct and unfiltered views of the site are available. The adjacent properties of St Julian's Forge and St Julian's Cottage are surrounded by dense hedgerows and mature trees, which screen all external views from the buildings. Properties on Bridge Road to the west of the site, most of which are nearing the completion of construction, are orientated to face the site. However, the intervening site boundary hedgerow is dense and during the summer almost entirely screens the interior of the site in the view. A heavily filtered view of the site would be available during the winter (**assessment photograph 01**).

10.89 St Julian's Manor and the properties in its vicinity are separated from the site by the site boundary vegetation, a construction access track and vegetation in the curtilages of the buildings. This results in there being no visual interaction between these properties and the site. Recently completed housing also borders the southern site boundary with more under construction close to the eastern boundary and planned close to the northern boundary. All these properties would either back onto or face the site from a short distance, although the site boundary vegetation either heavily filters or screens the view of the interior of the site from them (**viewpoint photographs 02** and **04** and **assessment photograph 03**).

10.90 The site can be seen as a small element in the views from residential properties with open views in the landscape to the north-west, north-east and south. From properties in the vicinity of Michaelston-y-Fedw the site is identifiable against the new development to its east and south. This is the only publicly accessible location from which the interior of the site is currently visible (**assessment photograph 08**). There are also open views towards the site from properties with a northern aspect to the south, notably in Old St Mellons. From these properties the site is seen directly behind the large new development to its south and is only identifiable by its boundary vegetation (**assessment photograph 07**).

Users of public rights of way and areas of public access

10.91 The only public right of way in close proximity to the site runs along its northern boundary (**assessment photograph 03**). The path follows the driveway to St Julian's Manor along a narrow hedgerow lined lane from which external views are screened. Heavily filtered views through the hedge are available from a few places into the site. They are no views from the path of the site as is moves away from the site boundary. There are open views from the public footpath along the western side of the Rhymney River, which include towards the site and the site boundary vegetation (**assessment photograph 05**).

10.92 There are also views towards the site from the high ground to the north, including from the Cefn Mably area (**viewpoint photograph 06**), from Michaelston-y-Fedw (**assessment photograph 08**) and from the ridgelines on the northern extent of the study area **(viewpoint photographs 09** and **10**).

Road users

10.93 Due to the dense nature of the site boundary vegetation there are no views into the site available to passersby on roads. The nearest road to the site, Bridge Road, runs along the western site boundary (**assessment photograph 01**). There are also screened views

towards the site from residential roads within the new housing development to the east and south (**viewpoint photograph 04**). In the wider study area, glimpsed views towards the site are available to road users from higher ground to the north, such as from near Michaelston-y-Fedw (**assessment photograph 08**).

Views from other landscape interests

10.94 There are no publicly accessible locations in the Cefn Mably Registered Park and Garden from which an open view of the site is available, the only view towards the site available is from the public footpath to the north of M4 junction 30 (**viewpoint photograph 06**). The views from listed buildings and conservation areas in the study area are similarly screened, including from St Julian's manor and from Old St Mellons Conservation Area.

Visual baseline summary

10.95 A summary of the visual baseline information to be taken into account as part of the detailed assessment of the effects on visual amenity is as follows:

- St Julian's House is the only residential property from which there are open views of the site
- The views from other residential properties within close proximity of the site are heavily filtered or screened by the site boundary vegetation
- Receptors viewing the site from beyond about 1.5km would find the location of the site difficult to identify
- The interior of the site is not visible to users of public rights of way, in near views the site boundary vegetation screens the view while in distant views the site is difficult to identify
- Views from Cefn Mably Registered Park and Garden are screened by intervening topography and vegetation

10.96 Details of the proposed development are provided on the planning application drawings and the in Chapter 3 of the LVIA accompanying the application. This section describes the main aspects of the proposed development which could potentially affect landscape and/or visual amenity. It also identifies features of the proposals which will assist in mitigating adverse landscape and visual impacts.

10.97 The proposal is for 160 dwellings, primarily consisting of a mixture of detached and terraced properties of 2 or 3 stories. There are also a small number of 3 storey flats. Vehicle access to the site would be via new connections to the new development to south and east, while pedestrian and cycle access is also proposed to the north and west. Aside from where access routes are located, the existing vegetation surrounding the site would be retained.

Sources of potential effects on landscape and views

10.98 The main features of the development proposal which could potentially result in landscape and visual impacts are:

- Removal of site boundary vegetation to provide site access
- Construction activity on the site
- Change is use of the site from agriculture to built form
- Addition of the proposed development to nearby views
- Establishment of proposed vegetation

Mitigation measures

10.99 The potential for adverse effects on landscape and visual amenity have been recognised and mitigation measures incorporated in the masterplan in the form of a Green Infrastructure Strategy. With these measures incorporated the proposals aim to avoid or reduce adverse effects or to offset or compensate for unavoidable adverse effects.

10.100 Mitigation measures incorporated into the scheme design are the retention of the site boundary vegetation, as shown in **Appendix 10.4**. Enhancement in the form of a green street / SuDS street through the site would establish a green corridor through the development.

10.101 The size and scale of the proposals are in accordance with the adjacent new development.

Consultation

10.102 The scope of the technical chapters to be included in the current ES was agreed by Cardiff Council in June 2020. An account of the Screening and Scoping process undertaken in set out in Chapter 6 of this Statement. This Screening and Scoping process outlined the surveys undertaken at the site, the results of which have been used to inform the assessment within this chapter.

Effects on the landscape

10.103 This section examines the nature and significance of the landscape effects arising as a result of the proposed development with reference to:

- effects on landscape fabric within the site, its features and qualities;
- effects on landscape character, including consideration of effects on designated landscapes; and
- effects on the landscape setting of settlements, public rights of way and roads.

Effects on landscape features qualities

10.104 Effects of the landscape fabric may occur where there are either direct or indirect physical changes to the landscape. Direct changes to landscape fabric would only occur within the application boundary.

Effects on Landscape Character

10.105 There is an overlap between the perception of change to landscape character and to visual amenity, but landscape character is derived from the combination and pattern of landscape elements. The effects of proposed development on landscape character would arise from its relationship to these combinations and patterns, and thus the character of the landscape. **Figures 10.04-1** to **10.04-9** show the LANDMAP aspect areas covering the site and those with an overall evaluation of high or outstanding in the study area.

10.106 The effect of the proposed development on landscape character will depend on the key characteristics of the receiving landscape, the degree to which the proposed development is considered consistent with or at odds with them, and how the proposed development would influence the landscape context, affected by:

- the distance from the site;
- weather conditions; and
- the 'fit' of the proposed development within the landscape pattern and characteristics.

Sensitivity

10.107 The sensitivity of landscape receptors is judged by considering their value, assessed in the baseline description above, and their susceptibility to the changes arising from the proposed development. The receptors, their value and susceptibility are set out in the following table, with the resultant judgement of their sensitivity to the proposed development:

Table 10-10 Sensitivity of landscape receptors

Receptor	Value	Susceptibility	Sensitivity
Landscape features and qualities – site	**High** – a mature feature and one of few surviving in the	**Low** susceptibility – proposals are to	**Moderate** – an important feature that is to be retained

Receptor	Value	Susceptibility	Sensitivity
boundary vegetation	immediate context area of the site	retain as much of it as possible	
LANDMAP aspect areas	**Low** – many important characteristics already lost in the site context area	**High** – new development has already altered the character of the area	**Moderate** – character already altered but remaining features need to be retained
Public access	**Medium** – no public access to the site	**Moderate** – public footpath adjacent to the site	**Moderate** – setting of public footpath adjacent to the site
Setting to settlement	**High** – residential properties adjacent to the site	**Moderate** – properties either separated from the site or are new development	**Moderate** – most of the properties are newly built and have not become established in their setting, others screened from the site.
Cefn Mably Registered Park and Garden	**High** – landscape of national importance	**Low** – intervening development and M4 between site and designated area	**Lesser** – separated from the context area of the site

Magnitude of change

10.108 The features of the development giving rise to changes in the landscape are:

- Creation of access gaps in the boundary hedgerow
- The long term change in use of the site from agricultural to built form
- The addition of the proposed buildings to the setting of the site
- The long term maturing of proposed vegetation

Construction phase

Site boundary vegetation

10.109 Although the proposals aim to retain as much of the site boundary vegetation as possible, gaps will need to be created for access points. Although the amount of vegetation removed would be kept to as little as possible, the creation of the gaps would by default break up the continuous nature of the hedgerow. Although this would be long-term and irreversible, the change would only affect a small area and the enclosing nature of the hedgerow would remain intact, creating a **small** magnitude of change.

LANDMAP aspect areas

10.110 Due to ongoing construction in the area around the site and the affect that that has already had on the aspect areas, the commencement of construction within the site would be read in this existing context. In relation to the size of both the aspect areas and the adjacent new development, the scale of change of the proposed development would be small, although it would be permanent. This would form a **small** magnitude of change.

Public access

10.111 The scale of change on the setting of public rights of way would vary depending on their proximity and connection to the site, with factors such as geographical extent, duration of the works and the possibility of reversibility also taken into consideration. Due to distance, new development, topography and vegetation the only public right of way that would be affected is the public footpath running adjacent to the northern site boundary. During the construction period the proximity of the site to the setting of the public footpath would create a short-term but large scale change, forming a **medium** magnitude of change.

Setting to settlement

10.112 With the exception of St Julian's House, the nearest properties to the site are either well screened by curtilage vegetation or are recently constructed and construction activity is currently part of their setting. Although construction activity would be a prominent feature in the setting of these properties, it would be for a relatively short period and is consistent with the baseline conditions. During construction the magnitude of change on the setting of settlement would be **medium**.

Cefn Mably Registered Park and Garden

10.113 Due to intervening feature, which include the M4, the future residential area to the north of the site, and vegetation along the driveway to the north of the site, there would be no interaction between construction activities on the site and the setting of Cefn Mably Registered Park and Garden, the magnitude of change would therefore be **no change**.

After completion

Site boundary vegetation

10.114 Although the removal of sections of the site boundary vegetation to create access points would be long-term, it would be short sections and the majority of the hedgerow would be retained, which would maintain a degree of separation between the site and the wider built-up area beyond and the integrity of the original vegetation pattern would be retained. In the long term this would create a **small** magnitude of change on this landscape feature.

LANDMAP aspect areas

10.115 At the time the proposed development is complete and becoming established in its setting, the new development to its north and east would be in a similar situation, forming a residential suburban character to the area. Although this character would be notably different to what the LANDMAP aspect areas describe, it would be the wider development that has the larger input to the change of character, as the site is a small and contained part of it. Although the development of the site and it becoming integrated into its setting would be long-term, it would be within the character of its setting, creating a **small** magnitude of change.

Public access

10.116 By the time the proposed development is complete there would already be new residential buildings to the north and east of the site, altering the setting of the public footpath that runs along the northern site boundary. Within this new context, the addition of the proposed development to the setting of the path would be in the same scale and character, forming a long-term **small** magnitude of change on the setting.

Setting to settlement

10.117 Proposed and housing currently under construction will have been completed prior to the completion of the proposed development, altering the setting of existing properties from the baseline conditions. After completion, the proposed development would be interpreted in this new setting as a similar scale and character. Older properties in the area will already have had their setting altered by the new development to the south, east and north of the site, and the addition of the proposed development to this setting would be interpreted in a similar manner, forming a long-term **small** magnitude of change.

Cefn Mably Registered Park and Garden

10.118 Prior to the completion of the proposed development the new housing area to the north of the site, which lies between the site and the Registered Park and Garden, will have been completed and have become established as part of its setting. Due to the location of the site beyond this new development and further new development in the area, the addition of the proposed development would not add an additional notable element to the setting of the Cefn Mably, the long-term magnitude of change would therefore be **no change**.

Assessment

10.119 Consideration of the magnitude of the changes due to the development is combined with consideration of the sensitivity of landscape receptors affected by the development to assess the degree and nature of the effect, and its significance, at each stage of the lifecycle of the development.

10.120 The assessment conclusions are set out in the following table:

Table 10-11 Assessment of landscape effects

Receptors	Sensitivity to changes arising from the proposals	Magnitude of change: during construction	Magnitude of change: after completion of construction	Degree & nature of effects & significance: during construction	Degree & nature of effects & significance: during operation
Landscape features and qualities: Site boundary vegetation	**Moderate**	Majority of vegetation retained: **Small**	Majority of vegetation retained: **Small**	Minor adverse – **Not significant**	Minor adverse – **Not significant**
LANDMAP aspect areas	**Moderate**	Site sits in context of surrounding new	Site sits in context of surrounding new	Minor adverse – **Not significant**	Minor adverse – **Not significant**

Receptors	Sensitivity to changes arising from the proposals	Magnitude of change: during construction	Magnitude of change: after completion of construction	Degree & nature of effects & significance: during construction	Degree & nature of effects & significance: during operation
		development: **Small**	development: **Small**		
Public access	**Moderate**	Footpath adjacent to site: **Medium**	Context of path already changed by new development to north: **Small**	Moderate adverse – **Not significant**	Minor adverse – **Not significant**
Setting to settlement	**Moderate**	Properties either screened or are yet to establish in their setting themselves: **Medium**	Properties either screened or recently built: **Small**	Moderate adverse – **Not significant**	Minor adverse – **Not significant**
Cefn Mably Registered Park and Garden	**Lesser**	Separated from site by new development: **No change**	Separated from site by new development: **No change**	No change – **Not significant**	No change – **Not significant**

Effects on visual amenity

Sensitivity

10.121 The sensitivity of views is affected by factors such as the distance to the viewer, the number of viewers affected and the importance of the site in the overall view. The context of the viewpoint may also contribute to the ability to accommodate change. For example, people viewing from residential properties or from a valued landscape might be regarded as less able to accommodate change, than those viewing from an industrial context.

10.122 The sensitivity of the visual receptors is assessed as follows:

- People in settlements and residential properties: high susceptibility to changes in their visual amenity; open unobstructed views including the site assessed as of high value: high sensitivity, and heavily filtered, distant, oblique or partial views of lesser value: moderate sensitivity.
- Users of public rights of way: medium susceptibility to change in their visual amenity; near, but heavily filtered views of medium value: moderate sensitivity, and open but distant views of lesser value: low sensitivity.
- Users of public roads: low susceptibility to change in their visual amenity; screened or distant view of lesser value: lesser sensitivity.
- Visitors to the valued landscape: high susceptibility to change in their visual amenity; heavily filtered and distant views of lesser value: lesser sensitivity.

Magnitude of change

10.123 The representative views are described below with an analysis of the degree and nature of changes in them resulting from the development, to inform the effects assessment.

Table 10-12 View with development & magnitude of change

View-point Ref	View during construction	View after completion of construction	Magnitude of change
01 15m from site boundary	A heavily filtered view of construction activity within the site would be available to residents in their properties on the west side of Bridge Road, although this would be seen in the context of current construction both to the north and the south. The dense hedgerow would screen the oblique views available to passersby on the road. The scale of the change would be small, close to the viewpoint and would be permanent.	The site boundary hedgerow would continue to heavily filter the view into the site, while in the longer term the maturing of proposed planting within the site would soften the appearance of any buildings that may be visible in the view. There would be no views of the site available to road users. Although a permanent change, its scale would be small as the site is separated from the receptors by intervening vegetation.	**Small**, both during construction and in the long term.
02 120m from site boundary	In the view from near the north-west site boundary the site is screened by curtilage vegetation of intervening properties. During the construction phase it is also likely that the land to the north of the site will have been built on, which would reduce the availability of views further. Although the change would be permanent, the scale of the change would be small as the site is screened in the view.	Similar to the construction phase, the view from the viewpoint is likely to become further restricted due to the development of the adjacent land. It is unlikely that any of the proposed development would be visible. The scale of change would be negligible, as although long term, the development would be contained within the site and would not add a notable feature to the view.	**Negligible**, both during construction and in the long term.
03 50m from site boundary	Users of the public footpath may be able to glimpse the movement of vehicles within the site and of the construction of the nearest properties. However, this activity would be seen in the context of housing which is currently under construction immediately	A glimpsed and heavily filtered view of the nearest buildings may be available through the site boundary vegetation, although this would be seen in the context of new housing and roads in the foreground of the view and immediately adjacent to the site. The proposed	**Small**, during construction, **Negligible** in the long term.

View-point Ref	View during construction	View after completion of construction	Magnitude of change
	adjacent to the viewpoint. This would create a long term but small scale of change over a small area.	development would be a permanent change in the view, although over a small area and of small scale.	
04 15m from site boundary	A glimpsed and filtered view of construction activity on the eastern part of the site would be available to residents in the housing currently under construction along Church Road and to pedestrians, cyclists and passersby using the road when it is completed. The scale of change would be small, as although long term, the construction would be heavily filtered in the view.	The view of the proposed development from the new properties and from the footpath and cycleway, which would be filtered by site boundary vegetation, would be interpreted in a similar manner to the new development surrounding the viewpoint. Although this would be a permanent change, its scale is small and in an area that is heavily filtered in the view.	**Small**, both during construction and in the long term.
05 350m from site boundary	Properties currently under construction on the building site to the east and south of the site will have been completed and screen the site in the view. Occasional construction activity within the site may be visible, as may some of the rooflines, but this would be seen in the context of the intervening new development and create a negligible scale of change to the view and over a small area.	In the long term, both the foreground development and the proposed development on the site will have become established in their setting. When viewed against the foreground construction, any features on the site that may be visible would not add a notable element. Although the change would be permanent, it would be of negligible scale and over a very small area.	**Negligible**, both during construction and in the long term.
06 740m from site boundary	Due to distance and intervening features filtering or screening the view, any activity on the site that may be visible would be interpreted as part of general movement or features in the landscape. The scale of change would be negligible, over a very small proportion of the view and long term.	Following the completion of construction any part of the site that may be visible would be interpreted as part of the context of its setting, which would include the development to its north. Although a permanent change, its scale would be negligible and over a very small area.	**Negligible**, both during construction and in the long term.
07	It is likely that the construction of roofs will be visible from the	After completion, some rooflines of the new	**Negligible**, both during

View-point Ref	View during construction	View after completion of construction	Magnitude of change
1.3 km from site boundary	viewpoint, although this would be both distant and seen against the new development immediately in front of the site. As the site is distant it occupies a very small part of the view. The scale of change to the view would be negligible.	development may be visible. However, these would be seen in the context of the new development in the foreground. This would create a negligible scale of change over the long term on a very small part of the view.	construction and in the long term.
08 2.2 km from site boundary	Receptors at the viewpoint would be able to see construction activity on the site. However, the site is both distant and a small part of the view and it would be seen in the context of the development currently under construction in its vicinity. The scale of change to the view would be negligible.	After the completion of construction, the site would be interpreted as part of the wider new development to its north, east and south. Although the addition of the site would be a permanent change, it would be over a small area and of a negligible scale in the context of the view.	**Negligible**, both during construction and in the long term.
09 3.8km from site boundary	Although the development to the south-east of the site is just visible from the viewpoint, woodland on an intervening spur at Cefn Mably screens the site itself. Therefore, no aspects of construction would be visible from the viewpoint.	In the long term, the site and the proposed development would continue to be screened by intervening features.	**No change**, both during construction and in the long term.
10 3.9km from site boundary	The site is a tiny part of a wide panoramic view. Although some higher level construction activity may be visible, it would be too distant and over too small an area to be identified by receptors at the viewpoint.	Although there is the potential for some rooflines to be added to the view, they would be of too small a scale and too distant to be interpreted as an additional feature to receptors at the viewpoint.	**No change**, both during construction and in the long term.

Assessment

10.124 The visual effects assessment has been informed by the ZTV study shown on **Figure 10.07-1** and **-2**. It identified a number of locations from which the proposed development might be theoretically visible. A selection of representative views to illustrate the views available at a range of distances and for different receptors are identified and described in Table 10-11 and the sensitivity of the viewers (visual receptors) represented defined in paragraph 10.126 above.

10.125 The following table sets out the assessment of effects on the visual amenity of the identified viewers likely to be affected by the proposals:

Table 10-13 Assessment of visual effects

Viewers/ Visual Receptors & Sensitivity	Ref. View-points	Magnitude of change: during construction	Magnitude of change: after completion of construction	Degree & nature of effects & significance: during construction	Degree & nature of effects & significance: after completion of construction
People in settlements and residential properties, open views: **high sensitivity**	**-**	Open views of construction work in close proximity to property, permanent, large scale change over the view: **Large**	New buildings in close proximity to receptors, permanent change of a large scale across the view: **Large**	Major adverse – **significant**	Major adverse – **significant**
People in settlements and residential properties, filtered, oblique, distant or partial views: **moderate sensitivity**	**01, 02, 03, 04, 07, 08**	Site heavily filtered in views, small scale of change and over a small area, but change permanent: **Small**	Site heavily filtered in views, small scale of change and over a small area, but change permanent: **Small**	Minor adverse – **not significant**	Minor adverse – **not significant**
Users of public rights of way, near but heavily filtered views: **moderate sensitivity**	**02, 03, 05**	Site heavily filtered in views, small scale of change and over a small area, but change permanent: **Small**	Site heavily filtered in views, small scale of change and over a small area, but change permanent: **Small**	Minor adverse – **not significant**	Minor adverse – **not significant**
Users of public rights of way, open but distant views: **Lesser sensitivity**	**08, 09, 10**	Site distant, small part of view and difficult to identify, small scale of change but permanent: **Negligible**	Site distant, small part of view and difficult to identify, small scale of change but permanent: **Negligible**	Negligible – **not significant**	Negligible – **not significant**

Viewers/ Visual Receptors & Sensitivity	Ref. View-points	Magnitude of change: during construction	Magnitude of change: after completion of construction	Degree & nature of effects & significance: during construction	Degree & nature of effects & significance: after completion of construction
Users of public roads, screened or distant views: **Lesser sensitivity**	**01, 04, 08**	Site is screened, heavily filtered or distant, long term but small scale of change over a small area: **Negligible**	Site is screened, heavily filtered or distant, long term but small scale of change over a small area: **Negligible**	Negligible – **not significant**	Negligible – **not significant**
Visitors to the Cefn Mably Registered Park and Garden partial, distant and filtered views: **Lesser sensitivity**	**06**	Unlikely to be visible due to intervening development and vegetation: **no change**	Unlikely to be visible due to intervening development and vegetation: **no change**	None – **not significant**	None – **not significant**

Landscape Assessment Conclusions

10.126 No significant landscape effects are identified either during the construction phase or in the long term. All long-term effects are either minor adverse or no change.

10.127 Moderate adverse, but not significant effects are identified during the construction period on the setting of the public footpath parallel to the northern boundary and on nearby settlement. However, due to the large amount new development currently being built in setting of both of these receptors, by the time the proposed development is established in its setting the baseline condition will be notably different and it is against these changes that the setting of these receptors will be interpreted.

10.128 The construction of large new residential areas to the north and east of the site, combined with new houses that are under construction to its south and west, would alter the setting of the site prior to its completion. Upon completion of the proposed development this change in the character of the setting of the site results in it being interpreted as part of an urban environment in which it shares characteristics of scale and form, rather than of the character of the area that is identified in the LANDMAP aspect areas

Visual Assessment Conclusions

10.129 Major adverse effects, and therefore significant, have been identified on receptors at St Julian's House during both the construction period and in the long term. The property is the only location from which unfiltered views of the site are available and residents would have direct and open views of both construction work and of the completed development. Although the proposed development would soften in its setting over time, the view from the property would still be of built form rather than of agricultural land.

10.130 Due to a combination of the screening effect of the site boundary vegetation and the context of the setting of the site with new development on all sides, all other effects identified are either negligible or none and are therefore considered to be not significant in both the construction period and in the long term.

CHAPTER 11
Ground Conditions

Introduction

Preface

11.1 The purpose of this chapter is to provide an understanding of the baseline physical environment on and adjoining the proposed development site on land adjacent to St. Julian's House in St. Mellons (hereafter referred to as 'the site'). The utilised information includes designated sites, topography and land stability, soils, geology, groundwater, and potential historic contamination) to consider the possible direct or indirect effects that construction, and use of the proposed development could have on this environment; and to detail methods by which these potential impacts can be mitigated.

11.2 The baseline information has been compiled using Integral Geotechnique Site Investigation Report Ref. 12564/JJ/20/SI dated April 2020 attached at **Appendix 11.1**.

11.3 The site, its surroundings, and the proposals are described in detail in Chapters 2 and 3 of this Statement. This assessment of ground conditions has been undertaken against and with reference to this description of the existing site and the proposals advanced for it.

Legislative and Planning Policy Context

11.4 The following national planning policy relating to Ground conditions are considered of relevance to the area surveyed and to the proposed development.

Local Development Plan - Air Noise Light Pollution and Land Contamination

11.5 Development will not be permitted where it would cause or result in unacceptable harm to health, local amenity, the character and quality of the countryside, or interests of nature conservation, landscape or built heritage importance because of air, noise, light pollution or the presence of unacceptable levels of land contamination.

Planning Policy Wales

11.6 The Planning Policy Framework ensures that through the planning process and application of planning conditions a site is only developed once it has been proved suitable for its new use taking account of ground conditions, pollution arising from previous uses and any proposals for mitigation including land remediation or impacts on the natural environment arising from that remediation; after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part 2A of the Environmental Protection Act 1990. Planning decisions need to take into account:

- The potential hazard that contamination presents to development itself, its occupants and the local environment
- The results of a specialist investigation and assessment by the developer to determine the contamination of the ground and to identify any remedial measures required to deal with any contamination.

11.7 Where significant contamination issues arise, the local planning authority will require evidence of a detailed investigation and risk assessment prior to the determination of the application to enable beneficial use of land. Where acceptable remedial measures can overcome such contamination, planning permission may be granted subject to conditions specifying the necessary measures. If contamination cannot be overcome satisfactorily, the authority may refuse planning permission.

Assessment Methodology

Consultation

11.8 The scope of the technical chapters to be included in the current ES was agreed by Cardiff Council in June 2020. An account of the Screening and Scoping process undertaken in set out in Chapter 6 of this Statement. This Screening and Scoping process outlined the surveys undertaken at the site, the results of which have been used to inform the assessment within this chapter.

Baseline

11.9 The baseline information has been compiled from the following sources of information: -

- British Geological Survey Data
- Published solid and drift geological maps;
- Natural Resources Wales Data
- Source Protection Zone maps;
- Groundwater Vulnerability maps;
- British Geological Survey (BGS): Radon GeoReport;
- Integral Geotechnique Site Investigation Report Ref. 12564/JJ/20/SI dated April 2020.

Methodology

Soils and Geology

11.10 The assessment of impacts on soils and geology follows guidance by the DETR: 'Planning Research Programme – Preparation of Environmental Statements for Planning Projects that Require Environmental Assessment – A Good Practice Guide, 1995'.

11.11 The main impacts associated with this development are associated with potentially contaminated soils, i.e. the impact of contaminated soils upon the proposed development, and the possibility of the construction and occupation of the proposed development causing ground contamination.

11.12 In determining the potential impacts upon the proposed development from contaminated soils, a combination of qualitative and quantitative assessment, using the 'source-pathway-receptor' approach, has been undertaken to determine the potential risks posed to construction workers, buildings and end users of the proposed development.

11.13 The assessment has sought to identify whether the impact is beneficial or adverse, direct or indirect, permanent or temporary, and short-term, medium-term or long-term, based on no mitigation measures being implemented.

Hydrogeology

11.14 The potential impacts to water resources have been assessed in a qualitative manner. This is due to the difficulties in assigning any value to the impacts which could potentially occur from the proposed development. As a result, a descriptive identification and assessment of impacts has been carried out.

11.15 An assessment of the importance, magnitude and significance of predicted impacts on water resources is based on the categories shown in Figures 11-1 to 11-3.

11.16 In general, the identification and assessment of impacts has been made with reference to the information within the report listed at paragraph 11.2 above and the particular issues highlighted by them. This is interpreted using professional judgement and experience based on previous developments. A judgement has been made on the importance and/or sensitivity of the receptor(s) involved, as indicated below.

Figure 11.1: Receptor Sensitivity and Definitions

Receptor Sensitivity	Definitions
High	- Designated sites, such as geological and groundwater SSSI's RIGS and GCR's - Areas of critical topography, including steep slopes and historic locations - Areas of existing mineral extraction (coal) and areas designated as Primary Coal Resources - Zone 1 Groundwater Source Protection Zones - Areas of high groundwater vulnerability - Major aquifers - Areas of known/confirmed contaminated land/groundwater - Rivers with a Grade A water classification.
Medium	- Typical rural topography - Area of Search for minerals and areas designated as Secondary or Tertiary Coal Resources - Zone II and III Source Protection Zones - Minor aquifers - Areas with intermediate groundwater vulnerability - Rivers with a Grade B water classification -
Low	- Industrial site topography - Areas without known mineral resources - Rivers with a Grade C or D water classification - Non-aquifers - Areas with low groundwater vulnerability

Magnitude of Change

11.17 A large magnitude change would be one that is likely to cause a direct adverse permanent or long-term impact on the integrity/value of the receptor whereas a small change would be one that is likely to have a minor adverse impact on a receptor but recovery is expected in the short term. The following gives examples of levels of magnitudes of change on the physical environment.

Figure 11.2: Magnitude of Change

Magnitude	Definitions
Large	Change is likely to cause a direct, adverse, permanent or long-term (more than 10 years) impact on the integrity/value of the receptor.
Medium	Change is likely to impact adversely on the integrity/value in the medium term (5-10 years) and there is predicted to be no permanent impact on its integrity.
Small	Change is likely to adversely impact the integrity/value of the receptor but recovery is expected in the short term (1-4 years) or is within the bounds of likely natural variation.
Negligible	A change well within the bounds of natural variation. No effect detectable or recovery within a very short timescale (< 1 year).

Assessment of Residual Effects

11.18 An assessment has been made of the significance of residual effects, i.e. those impacts that are predicted to remain after the mitigation measures have been implemented. The categories used when classifying overall significance are indicated below. In each case, the reasons for the judgements reached are stated.

Figure 11.3: Residual Effects

		Sensitivity		
		High	**Medium**	**Low**
Magnitude of Change	**Large**	Major Significance	Moderate Significance	Minor Significance
	Moderate	Moderate Significance	Minor Significance	Insignificant
	Small	Minor Significance	Insignificant	Insignificant
	Negligible	Insignificant	Insignificant	Insignificant

11.19 The magnitude of a potential impact is independent on the importance of the feature and is estimated based on no mitigation measures being implemented. The significance of a specific potential impact is derived from both the importance of the feature and the magnitude of the impact.

11.20 Estimated residual impacts are based on the proposed mitigation measures being implemented.

11.21 Using the above assessment criteria, some issues may be identified as being "insignificant" in terms of their environmental impact. However, it should be noted that, whilst they may be considered to be such, they may still result in a breach of legislation. Under the Water Resources Act 1991 it is an offence to cause or knowingly permit poisonous, noxious, or polluting matter, or any solid waste matter to enter controlled waters (which include rivers and groundwater). The Groundwater Regulations 1998 require the prevention of entry of List I substances (which includes hydrocarbons) to groundwater and to prevent List II substances from polluting groundwater. As such controls shall still be required to prevent the entry of substances to surface waters and groundwater.

11.22 The following section contains a summary of the information presented in the Integral Geotechnique Site Investigation Report Ref. 12564/JJ/20/SI dated April 2020, which should be read in conjunction with this chapter.

Agency and Hydrological

Discharge Consents

11.23 There are no recorded discharge consents within 250m of the site. The nearest recorded discharge consents comprise two effective consents situated approximately 254m to the east of the site and operated by Welsh Water. These permit the discharge of storm water overflow into the Rhymney River.

Pollution Incidents to Controlled Waters

11.24 There have been no pollution incidents to controlled waters recorded on site or within 250m of the site. The nearest recorded pollution incident to controlled waters was recorded approximately 299m to the east of the site in 1991. The pollutant is listed as light oil, the receiving waters is not given. The incident severity is listed as a Category 2 – Significant Incident.

Prosecutions Relating to Controlled Waters

11.25 There have been no prosecutions relating to controlled waters or to authorised processes and no enforcement or prohibition notices recorded within 500m of the site.

Water Abstractions

11.26 There are no groundwater abstractions recorded within 1km of the site boundary. There are two recorded surface water abstractions situated approximately 247m to the northeast of the site. These are located at the Rhymney River and are utilised for dust suppression purposes.

Groundwater

11.27 The Natural Resources Wales groundwater vulnerability map and aquifer database classifies the superficial deposits (Glacial Till) beneath the site as a Secondary Aquifer-Undifferentiated.

11.28 The Natural Resources Wales groundwater vulnerability map and aquifer database classifies the underlying rock strata (Raglan Mudstone Formation) as a Secondary 'A' Aquifer.

11.29 Secondary Aquifer-Undifferentiated is assigned in cases where it has not been possible to attribute either category A or B to a strata type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the strata type.

11.30 Secondary 'A' Aquifers are permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers.

Flooding

11.31 Natural Resources Wales Flood Risk Map indicates that the site is not at risk to extreme flooding from rivers or sea without defences.

Waste

11.32 An historical landfill site is recorded approximately 123m to the northeast of the site at 'St Julian's Farm'. The last input date is recorded at 31st December 1990. The deposited waste is listed as industrial and household waste. There are no further historical landfills recorded within 250m of the site. Due to the proximity of the historical landfill there is a risk that landfill gases could affect the site. A programme of gas monitoring is recommended in order to quantify the overall gas risk.

11.33 There are no recorded active landfill sites within 1000m of the site.

Geological

Geological Survey Estimates

11.34 The Envirocheck report, which features within the Site Investigation Report, lists British Geological Survey (BGS) estimates for Arsenic, Cadmium, Chromium, Lead and Nickel concentrations at the site. All the concentrations quoted are at amounts less than those considered safe for residential gardens.

BGS Recorded Mineral Sites

11.35 There are no BGS recorded mineral sites located within 1km of the site.

Coal Mining

11.36 The site is not located within an area that would be affected by past, present or future underground coal mining.

Risks from Collapsible Ground, Compressible Ground, Landslide Ground, Running Sand Ground and Shrinking and Swelling Clay Ground

11.37 The British Geological Survey advises that risks from these potential hazards are 'very low', 'no hazard', 'low-very low', 'very low' and 'very low'.

Radon

11.38 The Envirocheck and BGS Radon GeoReport indicates that the majority of the site is in a lower probability radon area, with less than 1% of homes above the action level, therefore no radon protective measures are necessary in new dwellings. However, the eastern extent of the site lies within an intermediate probability area with 3-5% of homes above action level and therefore basic radon protective measures would be required.

Site Geology

11.39 The 1:50,000 scale geological map of the area indicates the site to be underlain by bedrock strata of the Raglan Mudstone Formation of the Devonian period. These rocks typically comprise red mudstones and silty mudstones with calcretes and sandstones.

11.40 Superficial Glacial Till deposits of the Quaternary period are indicated to overlie the bedrock strata beneath the site. These deposits generally comprise poorly sorted and variable in nature clays, sands and gravels.

11.41 Anticipated ground conditions. The following general succession of superficial deposits and solid geology is anticipated beneath the site: - Recent: Topsoil and potential localised made ground. Quaternary: Glacial Till comprising poorly sorted and variable in nature clays, sands and gravels. Devonian: Raglan Mudstone comprising red mudstones and silty mudstones with calcretes and sandstones.

Industrial Land Use

11.42 There are no Trade Directory Entries on the site. There are two active entries within 250m of the site boundary for two petrol filling stations located 237m and 248m to the north.

Predicted Impacts

11.43 The following section considers the overall effect of the development on the ground conditions, assessing the adverse effects that arise from construction and operation of the scheme.

Soils and Geology

11.44 The development of the site is proposed from the current mainly agricultural land use with an existing residential dwelling to a residential land use. The following assessment of impacts describes the potential impacts involved with the development of the site. The most sensitive on and off-site receptors are considered to be water resources, uncontaminated soils and end users.

Construction Phase

11.45 The construction phase will essentially comprise preliminary earthworks which are required to be undertaken to create development platform and groundworks for the actual construction operations.

11.46 The construction phase will involve moving or stationary plant and equipment which may impact site soils. These impacts are mainly associated with spills and drips or accidental releases of hazardous substances during operation, storage or re-fuelling of plant and equipment. Additionally, the potential exists for spills and drips to occur associated with stored chemicals brought onto the site to facilitate development. The release of these materials to the soil environment may result in soils being contaminated. It is therefore considered that temporary adverse impact on the site soils, of major significance, could potentially occur through poor site practices.

11.47 Vehicles tracking over soils have the potential to spread this contamination and carry it off-site. The potential impact of vehicles tracking over the site is a temporary adverse impact of moderate significance, as contaminants may be deposited on uncontaminated site soils.

11.48 The excavation and disturbance of the soils during cut and fill works, may lead to a number of impacts primarily associated with soils. Additionally, the construction of hardstanding areas and building foundations such as excavations for foundations, may lead to a number of impacts primarily associated with contaminated soils.

11.49 Given the fact that the Site Investigation Report did not identify any on-site contamination, it is not considered that construction workers would be exposed, during the excavation of material, to potentially harmful contaminants. However, given the fact that allowances for dealing with any encountered made ground within the site needs to be borne in mind, the potential impacts would be direct, neutral on the construction workers' health in the short term, and taking effect over a chronic timescale (a lifetime of 70 years). This assumes the worst case.

11.50 Disturbance of soils may alter the chemical conditions within the site soils resulting in mobilisation of potential contaminants. The migration of mobilised contaminants has the potential to have a direct, moderately significant impact on the uncontaminated site soils and construction workers over a long timescale.

11.51 Arisings from the excavation of soil will potentially result in the stockpiling of soils on the site. The exposed soils are not considered to be a source of potential contaminants and as such should not pose any risk both on site and off the site through dust generation, or to underlying soils through leaching and surface water run-off. As such, this is considered to be an insignificant impact to surrounding land users and construction workers as there is a limited potential exposure to potentially contaminated dusts, and to underlying strata due to leaching of contaminants.

11.52 Should, during the construction phase, any contaminated soils be identified and the subsequent treatment or off-site disposal of contaminated soils is therefore required, this will result in the permanent removal of some contaminated soils. The impact of the removal of contaminated soils from the site is a beneficial impact, which is direct and long term.

11.53 Excavations may encounter perched water bodies and necessitate local dewatering to maintain a dry operational area. Based on the current site investigation information it is considered that the risk to controlled waters from any run-off would be low.

Operational Phase

11.54 Potential longer-term impacts of the redevelopment are considered to occur both as a consequence of changes to the site's character and also future use of the redevelopment.

11.55 It is not considered that the proposed residential development will have any continuing effect on geology.

11.56 Sulphate, which can aggressively attack building materials and structures, may be present at the site. The potential impact of chemical attack on building materials is considered to be a direct impact of minor significance that may occur over a long timescale.

11.57 There is also the potential for contaminants to migrate along service trenches to uncontaminated soils. The potential migration of contaminants off site is considered to be a long-term adverse impact of moderate significance.

Hydrogeology

11.58 Groundwater resources can be impacted by either changes in levels, flows or by changes in quality. Changes in quality can also seriously affect abstractions. However, as there are no groundwater abstractions recorded on the site, and the nearest one to date are a surface water abstraction 245m to the east, impacts to current abstractions are considered to be insignificant.

Construction Phase

11.59 The construction phase of the work will require the use of mobile plant including excavating machinery, lorries, diesel generators and diesel pumps. There is a potential for the plant to leak or spill oil and or fuel. Leaks and spillages may occur in any area of the site in which the plant is operating but is most likely to occur during refuelling. Additionally, the potential exists for spills and drips to occur associated with stored chemicals brought onto the site to facilitate development. There is potential that such spillages could enter the underlying aquifer, depending on the permeability of the overlying soil and geology, and contaminate the groundwater. The effect on groundwater is considered to be of minor significance as the quantity of oil and fuel is likely to be of moderate magnitude.

11.60 The tracking of heavy plant across the site during construction may compact the ground surface causing an increase of runoff and a decrease in infiltration. A decrease in infiltration may lead to a reduction in local groundwater levels and therefore, a reduction in base flow to surface waters and supply to abstraction boreholes. However, due to the small area of land likely to be affected, the magnitude if the impacts considered to be negligible and therefore insignificant.

11.61 In some areas of the site, contaminated material surfaces may be exposed during cut and fill or excavations of foundations, which may cause dissolution and/or mobilisation of contaminants by percolating water. List I and List II contaminants, as classified by the Groundwater Regulations 1998 may leach both directly and indirectly from the contaminated material to the groundwater. The potential leaching of the contaminants into the groundwater may occur over a long period of time. However, the desk study information has indicated that the site is likely to present a low risk to controlled waters. As such, it is considered that there is negligible magnitude as potential contaminants would likely be currently leaching into the groundwater from these areas. The significance of the impact is therefore considered to be 'insignificant'.

Operational Phase

11.62 Potential longer-term impacts of the redevelopment are considered to occur both as a consequence of changes to the site's character and also future use of the development.

11.63 In terms of hydrology, run-off from roads and parking areas potentially containing elevated levels of hydrocarbons (oils) and heavy metals could enter the water environment; however, the levels of these arising from a developed residential area are unlikely to be significant.

11.64 In relation to hydrogeology, foundation construction could introduce vertical migration pathways through the superficial geology for surface contamination to impact upon the deeper groundwater regime (Secondary A Aquifer); and a reduction in the surface recharge of both shallow and deep groundwater regime due to an increase in impermeable land cover (property footprint and roadways).

Mitigation

11.65 The main mitigation measure to prevent adverse impacts on soils, geology and hydrogeology, during all phases of the development is to ensure good site practice and management. The site management practices should be undertaken in accordance with the following Environment Agency Pollution Prevention Guidelines: -

- PPG 1 – general guide to the prevention of pollution;

- PPG2 – above ground oil storage tanks;
- PPG6 – working at construction and demolition sites;
- PPG7 – refuelling facilities;
- PPG8 – safe storage and disposal of used oils;
- PPG18 – managing fire water and major spillages;
- PPG21 – pollution incidence response planning; and
- PPG26 – storage and handling of drums and intermediate bulk containers.

11.66 Additionally, Site Environmental Rules should be established through an Environmental Management Plan (EMP) for the construction phase and followed at all times throughout the contract. The following measures should also be considered: -

- A watching brief should be maintained during construction works and where contamination is identified or suspected, appropriate sampling, analysis and risk assessment should be undertaken and suitable measures put in place to prevent the creation of pollutant linkages;
- Construction activities may mobilise contaminants in the soil, which would be potentially harmful to the workforce. Risk assessments should be conducted to restrict exposure to potentially harmful substances to a safe level and CDM practices should be applied;
- Any encountered contaminated made ground should be re-used on site in areas beneath hard standings or capped beneath a suitable thickness (typically 600mm) of clean subsoil and topsoil in all garden and landscape areas;
- Dust suppression measures can be implemented at the site to prevent against excessive dust generation, for example impermeable covers spread over mounds of bare oil and wetting of bare soil during dry conditions. Implementation of these simple measures can reduce the impacts to construction workers and adjacent site users from potentially contaminated dusts;
- All vehicles leaving the site should go through a wheel wash to prevent spreading of detritus onto off-site roads. Furthermore, vehicles carrying soils off-site should only be loaded up to appropriate levels and be covered to prevent conditioned sediments dropping onto roads;
- Any potential ground gas at the site may be mitigated by incorporating gas protection measures into building designs;
- Any potential effects of ground contamination on building materials should be identified and taken into consideration at the building design stage, for example, the foundations of the buildings should be designed in accordance with BRE guidance Special Digest 1: 2005 'Concrete in Aggressive Ground';
- Water pipes placed at the site should be constructed from a suitable material to resist hydrocarbon attack from contaminants which may be present in the ground, if such contaminated ground is found to be present after completion of the site investigation works, in accordance with recommended guidance;
- All surface water and process water should be treated, for example, through the use of oil interceptors, lined sumps etc. before being discharged to the ground or surface;

Any Cumulative Impacts

11.67 This section assesses the likely significant cumulative effects on the site when considered in the context of the proposed development.

11.68 The effects of the development on the geology and land contamination are generally confined to the site. The proposed development design should include measures to achieve an on-site earthworks balance. If remediation is found to be required on-site remediation techniques should be used where possible. This will ensure that the removal of waste spoil off-site is kept to a minimum, this will minimise the impact on local waste disposal facilities. If imported materials are required in any fill areas to raise levels, this should also be kept to a minimum with on-site materials used from cut areas if possible. This will also conserve local aggregate resources.

11.69 In conclusion, it is considered that the cumulative effects on the site when considered in the context of the proposed development is unlikely to be significant.

Residual Impacts

11.70 A detailed summary of residual impacts, following implementation of the mitigation measures identified in the assessment, and their significance, is provided below in Figures 11-4 and 11-5.

Figure 11.4: Residual Impact Summary Table – soils and geology

Development Phase	Description of Potential Impact	Assessment of Significance Without Mitigation	Proposed and Recommended Mitigation Measures	Residual Impact
Construction	Operation of moving or stationary plant - Oil/ fuel spills and drips from plant during operation and refuelling onto site soils	Major Adverse	Good site management practices should be undertaken in accordance with Environment Agency Pollution Prevention Guidelines. Site Environmental Rules should be established through an EMP for the construction phase and followed at all times.	Insignificant
	Storage of hazardous materials - Construction chemicals from spills and drips, and during failure of containers onto site soils	Major Adverse	Good site management practices should be undertaken in accordance with Environment Agency Pollution Prevention Guidelines. Site Environmental Rules should be established through an EMP for the construction phase and followed at all times.	Insignificant
	Vehicles cross the site - Tracking of contaminated materials across the site	Moderate Adverse	All vehicles leaving site are to go through a wheel wash to prevent spreading of contamination onto off-site roads.	Insignificant

	Excavation of soils - exposure of construction workers to contaminants at depth	Major Adverse	Use of PPE and good hygiene practises, to ensure that health and safety risks are minimised during construction.	Insignificant
	Excavations in confined spaces - Exposure of construction workers to ground gases	Major Adverse	Use of PPE and good hygiene practises, to ensure that health and safety risks are minimised during construction.	Insignificant
Construction	Disturbance of potentially contaminated soils - mobilisation of contaminants to site soils and construction workers	Major Adverse	Use of PPE and good hygiene practises, to ensure that health and safety risks are minimised during construction.	Insignificant
	Stockpiling of excavated soils - Migration of contaminants through dust generation and leaching	Major Adverse	Dust suppression measure should be implemented e.g. impermeable covers spread over mounds of bare soil and wetting of bare soil during dry conditions.	Minor adverse
	On site reuse of contaminated soils – Exposure of construction workers and adjacent and users to contaminate dusts	Moderate Adverse	Dust suppression measure should be implemented e.g. impermeable covers spread over mounds of bare soil and wetting of bare soil during dry conditions.	Minor adverse
	Encountering unforeseen contamination, not identified during the site investigation, in excavations for foundations or services and spreading this contamination, either to clean areas within the site.	Moderate Adverse	Site staff would be briefed to ensure that all excavations are regularly inspected to provide an early indication of unforeseen areas of contamination, which, through excavation and movement of materials within or off the site, could spread contamination.	Insignificant

	Off-site removal of contaminated soils - permanent removal of some contaminated	Minor Adverse	No specific mitigation required in relation to soil removal other than on site health and safety procedures set out above.	Insignificant
Construction	Unintentional import of contaminated materials as fill e.g. to increase ground levels and as necessary within the amenity and landscape areas of the site.	Moderate Adverse	Any secondary materials would be analysed for the presence of total and leachable contaminants before being brought to site, to ensure that it presents no significant risk of contamination to soils, groundwater or controlled waters.	Insignificant
	Storage of potentially contaminated groundwater - Contaminated water leaking onto uncontaminated soils	Moderate Adverse	Good site management practices should be undertaken in accordance with Environment Agency Pollution Prevention Guidelines. Site Environmental Rules should be established through an EMP for the construction phase and followed by all.	Insignificant
	Build-up of Radon gas within confined spaces and buildings	Major Adverse	Gas protection measures into building designs would be incorporated if required.	Insignificant
	Daily use of the site – Pollutant linkages between contaminated soils and landscape areas	Moderate Adverse	Contaminated soils were not encountered. Protective measures within landscaped areas would not be required.	Insignificant
	Daily use of the site - Build-up of ground gas within confined spaces and buildings	Major Adverse	A programme of gas monitoring is recommended. Should elevated concentrations be recorded protective measures would be incorporated	Insignificant
	Below ground building materials and structures - Aggressive chemical attack by sulphate on	Minor Adverse	Any potential effects of ground contamination on building materials should be identified and taken into consideration at the building design stage.	Insignificant

Operational	In-ground water pipes - Chemical attack on water pipes and potential contamination of water supply.	Moderate Adverse	Any water pipes placed at the site within any made ground should be constructed from a suitable material to resist chemical attack from contaminants present in the ground, and surrounded with a suitable clean gravel fill, in accordance with WRAS guidance.	Insignificant
	Service trenches - Migration of contaminants along trenches to contact with uncontaminate d soils	Moderate Adverse	Placement of suitable bunds e.g. clay around pipes	Insignificant
	Surface water run-off from roads and car parks – Spillages and leaks of oil/fuel entering soils directly or via run-off	Moderate Adverse	Design of drainage system to remove contaminants.	Insignificant

Figure 11.5: Residual Impact Summary Table – hydrogeology

Development Phase	Description of Potential Impact	Assessment of Significance Without Mitigation	Proposed and Recommended Mitigation Measures	Residual Impact
Construction	Operation of moving plant - Oil/ fuel spills and drips from plant during operation and refuelling directly entering groundwater	Minor Adverse	Good site management practices should be undertaken in accordance with Environment Agency Pollution Prevention Guidelines. Site Environmental Rules should be established through an EMP for the construction phase and followed at all times.	Insignificant

	Storage of hazardous materials - Construction chemicals from spills and drips, and during failure of containers directly entering groundwater	Minor Adverse	Good site management practices should be undertaken in accordance with Environment Agency Pollution Prevention Guidelines. Site Environmental Rules should be established through an EMP for the construction phase and followed at all times.	Insignificant
	Tracking of vehicles - Compaction of ground surface, increasing run off and decreasing infiltration	Minor Adverse	Good site management practices should be undertaken in accordance with Environment Agency Pollution Prevention Guidelines. Site Environmental Rules should be established through an EMP for the construction phase and followed at all times.	Insignificant
	Disturbance of potentially contaminated soils - Leaching of contaminants both directly and indirectly from contaminate material into groundwater.	Major Adverse	Good site management practices should be undertaken in accordance with Environment Agency Pollution Prevention Guidelines	Insignificant
	Dewatering of ground to provide dry working conditions - Reduction of local groundwater levels, reducing base flow to surface water, and potentially inducing settlement below structures	Minor Adverse	Undertake an investigation of the groundwater regime. Mitigation measures to control groundwater include sheet piling around the excavation, and controlled discharge to controlled waters.	Insignificant
Construction	Runoff of silt water from materials stockpiles and roadways	Minor Adverse	Excavated soils would be stockpiled clear of any water course to minimise the potential for silt runoff in wet weather. Road sweeping would be carried out as necessary, to remove deposits of silt from roads and therefore prevent migration into gullies and hence controlled waters.	Insignificant

Operational	Surface water runoff from roads and car parks – Spillages and leaks of oil/fuel entering groundwater directly or via runoff	Minor Adverse	Design of drainage system to remove contaminants before discharge to controlled waters.	Insignificant
	Construction of piled foundations – Migration of contaminants within the ground into the underlying groundwater and controlled waters	Minor Adverse	No intention to utilise piled foundations as shallow foundation types anticipated	Insignificant

Conclusion

11.71 The desk study derived baseline conditions show that the site is underlain by Raglan Mudstone Formation which are overlain by superficial Glacial Till deposits. Due to the 'greenfield' nature of the site, it is considered that site soils are not potentially contaminated. This has been confirmed by the laboratory chemical testing which was undertaken as part of the site investigation works.

11.72 Potential impacts have been identified during both the construction and operational phases of the proposed development in relation to soils and geology, and also hydrogeology. Many, if not all, of the construction impacts can be substantially reduced or removed by adherence to good site practice. A number of operational phase impacts are unlikely to create residual impacts as a result of the implementation of proposed mitigation measures.

11.73 The mitigation measures outlined in this chapter would minimise the potential for construction operations to contaminate soils and controlled waters. These measures would be incorporated into a Pollution Prevention or Construction Management Plan, prepared by the appointed contractor and agreed with Natural Resources Wales and the Local Planning Authority prior to the commencement of construction.

CHAPTER 12
Drainage

Introduction

Preface

12.1 This chapter addresses the foul and surface water drainage strategy of the proposed development at Land Adjacent St Julian's House, Bridge Road, Old St Mellons, Cardiff (hereafter referred to as 'the site').

12.2 The chapter includes a summary of the current conditions found within the surveyed area, constraints that dictate the drainage strategy for the residential development and interaction with the surrounding infrastructure.

12.3 The scope of the drainage strategy has been developed based on:

- Provision of foul and drainage to serve the development;
- A scheme that will comply with mandatory design standards in Wales;
- Avoiding environmental and ecological impacts where practicable;
- Maximising use of existing site topography to minimise ground engineering works; and
- Utilising existing infrastructure provisions.

12.4 The site, its surroundings, and the proposals are described in detail in Chapters 2 and 3 of this Statement. The drainage strategy has been developed in reference to this description of the existing site and the proposals advanced for it.

Legislative and Planning Policy Context

12.5 The following national planning policy relating to drainage are considered of relevance to the area surveyed and to the proposed development.

National Planning Policy

12.6 A number of over-arching policies are of relevance, not least of which are those described within Planning Policy Wales (PPW[1]). PPW 10 sets out the land use planning policies of the Welsh Assembly Government. The advice contained within PPW is supplemented for some material considerations by Technical Advice Notes (TAN's).

12.7 TAN 5 (Nature Conservation and Planning) and TAN 15 (Development and Flood risk) identify a number of key principles which the Town and Country Planning system in Wales should incorporate.

12.8 For surface water TAN 5 and TAN 15 policies are now enforced through the Welsh Assembly Government's 2018 Statutory Standards for Sustainable Drainage Systems – designing, constructing, operating and maintaining surface water drainage systems. All new surface drainage must be vetted, approved and where applicable mandatorily adopted by the Local

[1] Welsh Assembly Government, Planning Policy Wales, 10th Edition, December 2018

SUDS Approval Body (SAB) which is Cardiff County Council. This is legally enforced prior to start of any works on site.

12.9 For foul water the drainage systems are subject to mandatory adoption by the Water Authorities through the Welsh Assembly Governments July 2012 implementation of Section 42 of the Flood and Water Management Act 2010 whereby all new foul drainage must be vetted, approved and where applicable mandatorily adopted by the Water Authority which is Dwr Cymru Welsh Water (DCWW). This is enforced prior to start of any drainage works on site.

Local Planning Policy - Cardiff Local Development Plan

12.10 The Cardiff Council Local Development Plan (LDP) was adopted on 28th January 2016. It is the most up to date Development Plan covering the authority's administrative area, and is used in the determination of planning applications.

12.11 The LDP sets out a range of policies and proposals relating to future development, and deals with the use and conservation of land and buildings within Cardiff up to 2026. A number of policies within the LDP are considered of relevance to the drainage and are now enforced by WAG Legislation and controlled by CCC SAB Team for surface water and DCWW for the foul water.

Methodology

Consultation

12.12 The scope of the technical chapters to be included in the current ES was agreed by Cardiff Council in June 2020. As outlined above all drainage matters are subject to mandatory approval processes.

SAB Mandatory Requirements

S.1 Surface run-off destination - defined by a hierarchy of acceptable SW discharge points.
S.2 Surface water run-off hydraulic control - to prevent flood risk to third parties.
S.3 Water Quality – to intercept contaminants at source and break them down through natural processes.
S.4 Amenity – integrating green infrastructure as usable area and creating natural environments to urban areas.
S.5 Biodiversity – creating SUDS features than can environmentally reinforce and increase biodiversity.
S.6 Design of drainage for construction, operation and maintenance – ensuring the construction process and lifetime maintenance of the SUDS is viable and does not compromise the current or future environment and ensure viable maintenance of the ongoing enhanced amenity and biodiversity provided by the green infrastructure.

12.13 The SAB process has a Pre-application and Full application stage.

12.14 Full approval and completed legal agreement must be in place before start of any works on site.

The Flood and Water Management Act 2010 Section 42

- This section of the Act was brought into force by WAG in 2012 to ensure all foul drainage sewers and laterals are adopted under Section 104 of the same Act.
- The mandatory legislation requires the adoption of all foul sewers and lateral drains through third party land by the Water Authority, DCWW.
- A Section 104 technical approval and completed S104 Legal Agreement must be in place prior to start of any drainage works on site.

12.15 The influence of these design legislation on the development are noted in the following sections.

Impact Assessment

12.16 The following section considers the potential effects of the development drainage on the existing site and any beneficial environmental effects of drainage proposals. It should be noted that aspects of the existing site infrastructure for the surrounding St Ederyn's Village were developed with consideration of this land parcel going forward and have previously been consented. Since that consent further mandatory standards have been brought into place that provide betterment beyond the previously consented local infrastructure works.

Predicted Impacts

12.17 To establish the predicted impacts of developing the site in terms of Drainage, the philosophy of the drainage design has been developed with consideration for the key factors affecting drainage on the site and the required legislation previously noted. These key factors are identified in the Engineering Design Statement (**Appendix 12.1**) and are:

- Geology;
- Topography;
- Ecology; and
- Existing Infrastructure.

Geology

12.18 A site investigation has taken place and the full findings of these investigatory works are outlined in Chapter 11 of this ES (Ground Conditions). Indeed, Appendix 11.1 provides the Site Investigation Report, where it was found that Superficial Glacial Till deposits of the Quaternary period are indicated to overlie the bedrock strata beneath the site. These deposits generally comprise poorly sorted and variable in nature clays, sands and gravels.

12.19 Adjacent trial pitting works noted topsoil overlying soft becoming firm to stiff sandy CLAY with gravels and cobbles which was proven to be impermeable during percolation test. Soakaways cannot be used for this development. Attenuation basins will be needed.

Topography

12.20 The proposed development site has a total area of 4.57 hectares. From the topography survey done on the site contours show that the site has a high point of approximately 46.30m AOD located on the southern boundary, approximately 65m from the western boundary with Bridge Road. The low point on the eastern side of the site is approximately 35.50m AOD. This 10.8m fall occurs over 200 metres resulting in a mean gradient of 1 in 19. To the western boundary there is a 2m fall over the 65m distance giving a mean gradient of 1 in 33.

12.21 There is a step down in levels on the southern boundary reflect by batters to the rear gardens of the recently constructed residential units of the St Ederyn's Village development.

12.22 The SUDS systems will need to incorporate attenuation basins which will require relatively large flat areas to form a level basin and incorporate 1 in 3 batters necessary for ease of access in line with design standards and best practise under CIRIA Report C753 – The SUDS Manual.

12.23 The site is not flat and the formations of large basins will require engineering works. Basins are sited at low spots of sites and near points of surface water connection without need for use of third-party land access.

12.24 Based on the crest within the site there will need to be two basins; one to the NE and the other to the SW. Ground raising will be required to form these basins. This will involve earthworks. The works will be near boundaries which are generally hedgerows that may contain protected species such as Door mice.

Ecology

12.25 The site has hedgerow to 90% of the site boundaries. From past ecological surveys for the St Ederyn's development which abuts this site, the presence of Door mice was noted. These are a protected species and necessary mitigation of any works in the proximity to their habitat will be necessary. Other habitats will need to be considered following completion of the current site ecological surveys.

12.26 The site will require basins to be formed and some general land forming works which may extend into margins of the habitats. Such works will be minimised and would have to consider seasonal effects and recommendations within an approved ecological survey and mitigation reports.

Existing Infrastructure

12.27 As noted above the site is bounded on two sides by the St Edyerns Village development which has been on site for approximately 4 years. Site works are still ongoing. During the Masterplan design development for the St Edyerns Village our site was incorporated within the infrastructure works at planning stage which included foul water drainage provisions, surface water points of connection and indication of two highway access points to the main site estate roads.

12.28 The built works to date make provision for this site. The two highway access points will also be the two servicing points for the development; however due topographical issues some servicing will need to be via the Bridge Road boundary which is Public Highway.

12.29 Two other pedestrian link routes are shown from our site, one to Bridge Road to the west and the other to the northern boundary where there is a public footpath route. Any servicing via

Bridge Road will be coordinated with the pedestrian access link to minimise any ecology matters.

12.30 Surface water attenuation is to be dealt with on out site in line with the SAB process.

12.31 The highway access and main site service corridors within them will penetrate the hedgerows. The locations of these points have been coordinated with the St Edyerns Village infrastructure works and CCC highway comments.

12.32 The access levels are dictated by the existing infrastructure and our roads will rise steeply to minimise disruption of the hedgerow and mitigate excessive land forming works.

12.33 Based on the summary of the key design development considerations the initial risk effects

Construction Stage Risks

REF	Works Description	Risk	Effect	Significance
C1	Engineering works to form land plateaus, basins and highway access points.	Proximity to ecology corridors, habitats and root protection zones	Threat to life or damage of habitat for protected species, trees and other wildlife due to uncontrolled works relative to ecological environment.	Major
C2	Engineering works to form land plateaus and basins. Ongoing site works	Poor site management	Uncontrolled run-off over exposed soils and site-based contaminants to third party land and water features.	Major

Design Stage

REF	Design	Risk	Effect	Significance
D1	Creation of hard surface such as roads and roofs	Requires positive drainage for surface run-off generating high flow rate if an unrestricted discharge	Increased flood to third parties	Major
D2	Creation of hard surface such as roads and roofs	Reduced water quality due to new development generated pollutants conveyed by surface water.	Increased pollution to soils and aquatic environment	Major
D3	Failure of the drainage system	Uncontrolled overland flows due to blockage or poor SUDS management	Increased flood to third parties	Moderate

Mitigation

12.34 As part of the mandatory requirement for full SAB approval prior to start of any works on site, the SAB approval process introduces another layer of consultation beyond the planning process with statutory bodies such as DCWW, NRW and CCC ecology, arboriculture and landscape – as well as any other appropriate consultees.

12.35 This offers a robust risk and mitigation approval process for the proposed drainage works, their construction and long-term maintenance. The full SAB approval incorporates a legal agreement between the developer and CCC to ensure works are completed in accordance with the approved design.

12.36 For this site CCC will seek to adopt the SUDS features which will collect on plot and estate road surface water run-off.

12.37 The mitigation aspect for the construction and design stage works that are incorporated in the SAB approval are:

- Compliance with recommendations of CIRIA Report C753 – The SUDS Manual;
- Provision of a construction status Construction Environmental Management Plan provided by the contractor that will carry out the proposed site-works;
- A review of the SAB connection hierarchy to verify the compliance with the chosen points for SW discharge;
- A full assessment of pre and post development discharge rates which must be set at or below existing greenfield run off rates;
- Design calculation for required attenuation volumes, their location, size and accessibility for maintenance;
- Above ground flow routes should there be a system failure - this will have to verify that of site flows will not affect third parties;
- An assessment of development generated pollutants in line with the SUDS Manual, schedule of the design pollution mitigation solution to be provided which for this scheme includes rain gardens, Engineered Swales and Detention basins;
- Calculations for the sizing of the pollution design solutions;
- Provision of landscaping design for SUD features, amenity provisions and biodiversity improvement statement;
- Site specific maintenance plan incorporating locations of the SUD features, maintenance type required for each feature and frequencies.

12.38 In summary, SAB approval is an all-encompassing mandatory legislation that addresses drainage and flood mitigation, existing ecology constraints, enhanced biodiversity, pollution control during construction works, pollution control for the completed development and its long-term maintenance covered by CCC SAB adoption.

Cumulative Impacts

12.39 The development is in a green field site which has already been identified as an area for residential development. The site has primarily been agricultural but with low-level usages and some biodiversity retained mainly to the hedgerows.

12.40 The SAB process has a robust approval process for risk and mitigation of SUDS solutions, most of which will be adopted CCC. This ensures longevity of the sustainable drainage systems proposed.

12.41 Whilst housing development is a hard development the SAB predominantly sets out to provide environmental benefits across the whole site through soft engineering features that can create betterment of biodiversity, whilst concurrently forming public amenity which creates wellbeing within the community around it.

Residual Impacts

12.42 The SUDS features will provide a long-term community benefit re-integrating housing into a nature driven environment.

12.43 Necessary measures will be in place to maintain the existing ecological corridors and green infrastructure will both reinforce and enhance biodiversity of the scheme.

12.44 Residual risks are generally associated with poor maintenance regimes. Through liaison with CCC SAB Team it is intended to minimise the reliance on any private SUDS features. This will bring the drainage systems into CCC's adoption and therefore residents will have a single point of contact for maintenance concerns and issues should they arise.

Conclusion

12.45 The proposed drainage strategy will meet the WAG criteria under Planning Policy Wales ed.10 with specific reference to TAN 5 and TAN15, which stipulate the requirements flood mitigation, water quality and ecological benefits for green infrastructure corridors. This will be enforced through the mandatory requirement for a full SAB approval from CCC.

12.46 This process has already been initiated with a pre-application SAB consultation meeting with the CCC SAB team and the layout offered within this outline planning application fully incorporate the initial comments received.

12.47 The layout incorporates detention basins and road-side rain gardens / engineered swales forming linear green infrastructure routes through the site. These provide interception and treatment of pollutants plus amenity and biodiversity opportunities for the green infrastructure within the development. A formal pre-application SAB submission is being made to CCC in tandem with the PAC process to inform on the layout for any future planning consent.

CHAPTER 13
Heritage

Introduction

Preface

13.1 This chapter addresses the potential archaeological, architectural and cultural heritage issues in respect of the proposed development at Land Adjacent St. Julian's House, Bridge Road, Old St. Mellons, Cardiff (hereafter referred to as 'the site').

13.2 The chapter includes a summary of the heritage assets found within the study area, an evaluation of the asset, an account of considered impacts, and proposed mitigation associated with the construction of the proposed residential development.

13.3 The scope of the Heritage Impact Assessment (HIA) has been developed based on:

- Chartered Institute for Archaeologists *Standard and guidance for desk-based assessment* (CIfA 2017); and
- Cadw *Setting of Historic Assets in Wales.* (Cadw 2017)
- Guidelines for Landscape and Visual Impact Assessment (GLVIA3, 2013)

13.4 A full copy of the Report is attached at **Appendix 13.1**.

13.5 The site, its surroundings, and the proposals are described in detail in Chapters 2 and 3 of this Statement. This assessment of Heritage Impacts has been undertaken against and with reference to this description of the existing site and the proposals advanced for it.

- The field is bounded by hedgerows, with Bridge Road to the west of Site and a private track to the north side leads to a small residential development to the northeast
- A small group of private houses lies to the northwest of Site and a cluster of agricultural buildings is located within the northwest corner of Site
- A modern housing development is located to the south and southeast of Site.
- The M4 is located further north and the Pentwyn Link Road further west
- The local geology is Raglan Mudstone Formation – mudstone and sandstone interbedded, formed during the Silurian Period (419 to 424 million years ago) in a local environment previously dominated by rivers. Superficial deposits are recorded as Till, Devensian – Diamicton formed in the Quaternary Period to up 2 million years ago in a local environment previously dominated by ice age conditions (British Geological Survey 2020).

Legislative and Planning Policy Context

13.6 The following national planning policy relating to Heritage Impact are considered of relevance to the area surveyed and to the proposed development.

National Planning Policy

13.7 A number of over-arching policies are of relevance, not least of which are those described within Planning Policy Wales (PPW[1]). PPW 10 sets out the land use planning policies of the Welsh Assembly Government. The advice contained within PPW is supplemented for some material considerations by Technical Advice Notes (TAN's).

13.8 TAN 24 identifies a number of key principles which the Town and Country Planning system in Wales should incorporate. Those relevant to heritage impact are detailed below:

- Archaeological Remains
- Listed Buildings
- The Register of Historic Parks and Gardens and the Register of Historic Landscapes in Wales

13.9 Of the key principles, the most relevant to this site and scheme are:

- The conservation of archaeological remains is a material consideration in determining a planning application. When considering development proposals that affect Scheduled Monument of other nationally important archaeological remains, there should be a presumption in favour of their physical preservation in situ. In cases involving less significant archaeological remains, local planning authorities will need to weigh the relative importance of the archaeological remains and their settings against other factors, including the need for the proposed development (TAN 24, 2017).
- Where development might reveal, disturb or destroy archaeological remains, including palaeoenvironmental evidence, it is important that the opportunities to record archaeological evidence are taken and that archaeological remains are not needlessly destroyed. The ability to record such evidence should not be a factor in deciding whether controlled removal should be permitted.
- When considering planning applications that affect known or potential archaeological remains, the local planning authority should consult with their archaeological advisor, about the impact including the potential scale and harm, of the development on archaeological remains, and/or the adequacy of the mitigation of what has been proposed. These two factors are material considerations in determining the planning applications. Where a planning application directly affects a Scheduled Monument and its setting, then the local planning authority is required to consult the Welsh Ministers through Cadw.
- The case for the preservation of archaeological remains that are not considered to meet the criteria for national importance, must be assessed on the individual merits of each case. The local planning authority muse take into account relevant policies and material considerations and will need to weigh the significance of the remains against the benefits of and need for the proposed development.

Local Planning Policy - Cardiff Local Development Plan

13.10 The Cardiff Council Local Development Plan (LDP) was adopted on 28th January 2016. It is the most up to date Development Plan covering the authority's administrative area and is used in the determination of planning applications.

[1] Welsh Assembly Government, Planning Policy Wales, 10th Edition, December 2018

13.11 The LDP sets out a range of policies and proposals relating to future development and deals with the use and conservation of land and buildings within Cardiff up to 2026. Policy KP17 within the LDP details aspects of relevance to the heritage of the site and scheme, and is detailed below:

- Policy KP17 affords strategic policy protection for Cardiff's historic environment as required by legislation and PPW.
- The policy protects the 28 Scheduled Ancient Monuments, almost 1000 listed building, 27 conservation areas, 19 historic parks and gardens and 1 historic landscape in Cardiff.
- The policy also identifies the significance of locally listed buildings have in forming the character of their area.
- The policy encourages developers to identify the cultural and historic significance of a place before developing proposals for change in order to preserve and enhance the historic environment which respond to and complement their context.

Methodology

Consultation

13.12 The scope of the technical chapters to be included in the current ES was agreed by Cardiff Council in June 2020. An account of the Screening and Scoping process undertaken in set out in Chapter 6 of this Statement. This Screening and Scoping process outlined the surveys undertaken at the site, the results of which have been used to inform the assessment within this chapter.

Information Sources

- Historic Environment Record (HER) for Glamorgan
- National Monuments Record for Wales (NMR) held by the Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW)
- Central Register for Air Photography for Wales held by the National Archives
- Cadw
- National Museum of Wales (NMW)
- Portable Antiquities Scheme (PAS)
- Natural Resources Wales
- Google maps and satellite images
- Where identified, local archaeologists/historians and other archaeological organizations for unpublished information and/or specialist local knowledge
- Any other relevant sources identified

Field Inspection Methodology

13.13 A field inspection of the proposed development site was undertaken by Red River Archaeology Ltd on 16 July 2020.

13.14 The primary purpose of a field inspection is to assess local topography in order to identify any potential low-visibility archaeological and/or historical sites that are not currently recorded, and which may be impacted upon negatively by the proposed development. It is also the purpose of the field inspection to survey any known monuments or sites and to consider the relationship between them and the surrounding landscape, all of which need to be considered during the assessment process.

13.15 The methodology used during the field inspection involved recording the present land use as well as the existing topography for the entire area comprising the proposed development site. A photographic record and written description were compiled for any known and/or potential sites of archaeological, architectural and/or cultural significance. In addition, a GPS (Global Positioning System) waypoint was taken for each identified site of said significance.

Assessment of Baseline Value

13.16 In order to categorise the baseline environment in a systematic manner, 'baseline values' have been assigned to each identified archaeological, architectural and/or cultural heritage asset within the study area. The baseline value of a site is determined with reference to the 'importance' and 'sensitivity' of the site.

13.17 The importance of a site is determined based on the following criteria: legal status, condition, historical associations, amenity value, ritual value, specimen value, group value and rarity.

13.18 The sensitivity of a site is determined based on its susceptibility to direct or physical impact, as well as susceptibility to impact on setting (indirect impact). Taking the above factors into consideration, the criteria that have been defined are provided in Table 1 below.

Subject	**Baseline Value**
Scheduled Monuments Listed Buildings Grade I and II* Registered Parks and Gardens Conservation Areas	Very High
SMRs which are not designated as Scheduled Monuments or Listed Buildings Listed Buildings Grade II Heritage Designations on Local Area Plans Registered Historic Parks, Gardens and Demesnes which do not form part of the curtilage of a Listed Building Defence Heritage Sites which are not designated as Scheduled Monuments or Listed Buildings Industrial Heritage Sites which are not designated as Scheduled Monuments or Listed Buildings Unregistered built heritage sites that comprise extant remains which are in good condition and/or which are regarded as constituting significant cultural heritage features Undesignated features of archaeological potential "All other areas" regarded as constituting areas of high archaeological potential	High
Unregistered built heritage sites that comprise extant remains which are in poor condition Unregistered cultural heritage sites (not including built heritage sites) that comprise extant remains Parish boundaries that comprise extant remains "All other areas" regarded as constituting areas of high/medium archaeological potential	Medium/High
Unregistered cultural heritage sites for which there are no extant remains but where there is potential for associated subsurface evidence Parish boundaries for which there are no extant remains "All other areas" regarded as constituting areas of medium/low archaeological potential	Medium/Low

Subject	Baseline Value
Unregistered cultural heritage sites for which there are no extant remains and where there is little or no potential for associated subsurface evidence "All other areas" regarded as constituting areas of low archaeological potential	Low

Table 1 Baseline values of sites

13.19 Caution should be exercised when assessing the perceived significance of an archaeological, architectural or cultural heritage site as such categorisation is open to subjectivity. In addition, the perceived levels of importance as identified in this report are liable to future revision in the instance where new information, through the undertaking of further archaeological investigations, is provided.

Types of Impact

13.20 The following table lists the type of impacts that a proposed development may have on the cultural heritage resource:

Type of Impacts	Definition
Direct	Direct impacts arise where an archaeological, architectural and/or cultural heritage feature or site is physically located within the footprint of the proposed development, or its associated physical impact zone, whereby the removal of part, or all of the feature or site is thus required.
Indirect	Indirect impacts arise when an archaeological, architectural or cultural heritage feature is not located within the footprint of the proposed development, or its associated physical impact zone, and thus is not impacted directly. Such an impact could include impact on setting or impact on the zone of archaeological potential of site whereby the actual site itself is not physically affected.
Cumulative	The addition of many impacts to create a large, significant impact.
Undeterminable	Whereby the full consequence that the proposed development may have on the cultural heritage resource is not known
Residual	The degree of environmental change that will occur after the proposed mitigation measures have taken effect.

Table 2 Type of Impacts

Magnitude of Direct Impacts

13.21 Direct impacts arise where an archaeological, architectural and/or cultural heritage feature or site is physically located within the footprint of the proposed development, or its associated physical impact zone, whereby the removal of part, or all of the feature or site is thus required. They may be caused by a range of activities during the construction phase of development, including ground disturbing excavations for turbine foundations, crane pads, access tracks, borrow pits, storage and compound areas and cable and service trenches. Direct impacts on cultural heritage features are normally adverse, permanent and irreversible.

13.22 The following criteria have been used to assess the magnitude of potential pre-mitigation impacts, as well as residual impacts, of the proposed development on the baseline environment:

Impact magnitude	Criteria
Severe	Applies where mitigation would be unlikely to remove adverse effects. Reserved for adverse, negative effects only. These effects arise where an archaeology site is completely and irreversibly destroyed.
Major	An impact which, by its magnitude, duration or intensity, alters an important aspect of the environment. An impact like this would be where part of a site would be permanently impacted upon, leading to a loss of character, integrity and data about a cultural heritage site.
Moderate	A moderate impact arises where a change to a site/monument is proposed which though noticeable, is not such that the archaeological integrity of the site is compromised and which is reversible. This arises where an archaeological feature can be incorporated into a modern day development without damage and that all procedures used to facilitate this are reversible. A moderate impact to a site/monument may also arise when a site is fully or partly excavated and all recovered data is preserved by record.
Minor	An impact which causes changes in the character of the environment, such as visual impact, which are not high or very high and do not directly impact or affect an archaeological feature or monument.
Negligible	An impact on archaeological features or monument capable of measurement but without noticeable consequences.

Table 3 Criteria used for rating magnitude of direct impacts

Magnitude of Indirect Impacts (Settings)

13.23 Many archaeological sites are not visible, or barely visible, from ground level. Such sites will not usually be vulnerable to visual effects i.e. effects on setting. However, some invisible or partially visible sites may be located in an area where the immediate topography and landscape is important to an understanding of the site, and consequently the setting and location might be more sensitive.

13.24 A selection process was undertaken to identify cultural heritage sites that may receive/have indirect setting effects arising from/as a result of the proposed development. Selection operated on the following basis:

- All Scheduled Monuments, Listed Buildings, Conservation Areas and Registered Parks and Gardens with potential inter-visibility with the proposed development
- Any other Cultural Heritage sites within the study area with potential inter-visibility with the proposed development and have a baseline rating of High or Very High

13.25 Their sensitivity to indirect visual effects [on their setting] has been separately determined according to the criteria below.

13.26 Each viewpoint has been selected and identified as the most appropriate location for assessment of inter-visibility. This process was undertaken using the 'best' views to and from the monument allied to its landscape setting and the topography as it relates to the site and any other associated sites in the general landscape. Any inter-visibility with the proposed development has then been assessed from this location.

- The magnitude of effects on the setting of cultural heritage sites has been assessed according to established principles and criteria set out in published guidance, Chartered Institute for Archaeologists *Standard and guidance for desk-based assessment* (CIfA 2017); Cadw *Setting of Historic Assets in Wales.* (Cadw 2017); and Guidelines for Landscape and Visual Impact Assessment (GLVIA3, 2013)

13.27 For each site, the viewpoint taken into consideration will be the one with the greatest magnitude of effect. Note, impacts on setting can be positive (beneficial) as well as negative (adverse).

Magnitude	Guideline criteria
Major (beneficial)	The contribution of setting to the cultural heritage asset's significance is considerably enhanced as a result of the development; a lost relationship between the asset and its setting is restored, or the legibility of the relationship is greatly enhanced. Elements of the surroundings that detract from the asset's cultural heritage significance or the appreciation of that significance are removed.
Moderate (beneficial)	The contribution of setting to the cultural heritage asset's significance is enhanced to a clearly appreciable extent as a result of the development; as a result, the relationship between the asset and its setting is rendered more readily apparent. The negative effect of elements of the surroundings that detract from the asset's cultural heritage significance or the appreciation of that significance is appreciably reduced.
Minor (beneficial)	The setting of the cultural heritage asset is slightly improved as a result of the development, slightly improving the degree to which the setting's relationship with the asset can be appreciated.
Negligible	The setting of the cultural heritage asset is only imperceptibly changed as a result of the development; the only noticeable adverse changes to the landscape are to elements that are not considered relevant to the setting of the cultural heritage asset.
Minor (adverse)	The contribution of the setting of the cultural heritage asset to its significance is slightly degraded as a result of the development, but without adversely affecting the interpretability of the asset and its setting; characteristics of historic value can still be appreciated, the changes do not strongly conflict with the character of the site, and could be easily reversed to approximate the pre-development conditions.
Moderate (adverse)	The contribution of the setting of the cultural heritage asset to its significance is reduced appreciably as a result of the development and cannot easily be reversed to approximate pre-development conditions. Relevant setting characteristics can still be appreciated but less readily.
Major (adverse)	The contribution of the setting of the cultural heritage asset to its significance is effectively lost or substantially reduced as a result of the development, the relationship between the asset and its setting is no longer readily appreciable.

Table 4 Criteria used for rating magnitude of indirect impacts (setting)

Methodology used for assessing significance level of impacts

13.28 The significance level of a construction or operation impact on a feature is assessed by combining the magnitude of the impact and baseline value of the feature. The matrix in Table 5.4 provides a guide to decision-making, but is not a substitute for professional judgement and interpretation, particularly where the baseline value or impact magnitude levels are not clear or are borderline between categories. The permanence of the effects are also taken into account, with irreversible effects being more significant while temporary or reversible changes are likely to be less significant.

Magnitude of Impact	**Baseline Value**				
	Very High	**High**	**Medium/High**	**Medium/Low**	**Low**
Severe	Very significant	Very significant	Significant	Moderate	Low

Major	Very significant	Significant	Moderate	Low	Low
Moderate	Significant	Moderate	Low	Low	Negligible
Minor	Moderate	Low	Low	Negligible	Negligible
Negligible	Low	Low	Negligible	Negligible	Negligible

Table 5 Criteria for assessing significance levels of impacts

Difficulties experienced during compilation of assessment

13.29 No difficulties were encountered during the compilation of this assessment.

Statutory and Non-Statutory Heritage Designations

- Bridge Farmhouse (Listed Building no. 13834)
- St. Julian's Farmhouse (Listed Building no. 13928)
- Registered Park and Garden of Cefn Mably (PGW(Gm)11(CAE))

Summary of Valued Heritage Assets

13.30 A summary of the heritage assets described as part of the baseline and their location and value are summarised in Table 6.

Name	NGR	Description	Designation	Value
Bridge Farmhouse, Old St. Mellons (01293s)	ST22348232	A regional lobby entry house with central and gable chimneys.	Grade II listed building. No. 13834	High
Maes Y Bryn (01337s)	ST21758323	C17th/18th vestigial long house, formerly thatched.	Purported Grade II listed building.	Medium/Low
Ty'n Y Gwern (01348s)	ST21558278	C16th to C17th core; extended and part rebuilt in late C18th to C19th.	Purported Grade II listed building.	Medium/Low
St Julians Farmhouse, Old St Mellons (01349s)	ST22298296	C17 to C18th with later alterations.	Grade II listed building. No. 13928	High
St. Edeyrn's Church	ST220819	Medieval Church restored in 1888.	Grade II* listed. No. 13868	High
St Julian's Farm, Stable (01350s)	ST22298296	A former cartshed and loft, probably of early/mid c19th	-	High
St Julian's Forge (02129s)	ST21988278	Noted as New Forge on the 1st edition OS map of 1891, a short distance away from St. Julian's Farm (01349s).	-	Medium/High
Fields Near Llanedeyn Bridge (02137s)	ST22558230	Two or three oval enclosures seen on aerial photographs,	-	High

Name	NGR	Description	Designation	Value
		the southern of which is well-defined and measures c. 300m x 150m.		
Llanedeyrn (02379s)	ST223831	A sunken way runs from St. Julian's farm (01349s) towards the River Rhymney, where it turns and descends the steep bank, running parallel with the river to a stone bridge. Probably part of the current footpath.	-	High
Historic Field Boundaries/Hedgerows (05484s)	ST22248251	Two forms of historic field boundaries or hedgerows; namely low earthen banks or stone walls with hedge or trees over.	-	Low
Possible Shrine		Possible *temenos* of a shrine or temple found during Phase 2 evaluation and excavation works at St. Edeyrn's Village.	-	Low
Late Iron Age to Roman Enclosures		Southern extent of Late Iron Age/early Roman enclosure and 2nd century enclosure with associated metalworking	-	Low
Possible Holloway		Possible continuation of 02379s west of St. Julian's Farm (01349s) to Bridge Road.	-	High
Cefn Mably Park and Garden		Park, woodland grounds and terraced garden at Cefn Mably, the seat of the Kemeys family from the 16th century. Some terracing and the kitchen garden are 18th century with	Grade II Registered Park and Garden no. PGW(Gm)11(CAE)	High

Name	NGR	Description	Designation	Value
		further developments during the 19th and 20th centuries.		

Table 6 Summary of Heritage Assets their location and value

Impact Assessment

13.31 The following section considers the overall effect of the development on the heritage assets, assessing the adverse effects that arise from construction and operation of the scheme and any beneficial effects of mitigation and landscaping proposals.

Predicted Impacts

13.32 The following details the type, nature, extent, duration, magnitude and significance level of all impacts that the proposed scheme will have on each individual heritage asset during the construction phase prior to mitigation.

Asset	Impact Type	Description of Impact	Magnitude of impact prior to implementation of mitigation measures	Baseline Value	Significance level of impact prior to implementation of mitigation measures
Possible Holloway	Direct	Removal of two sections of the southern boundary of this possible medieval holloway is required to facilitate footpath access to the new development	Minor	High	Low
Possible below ground archaeological remains	Direct	Construction of the proposed development would destroy any potential below ground archaeological remains	Severe	Medium/High	Significant
Bridge Farmhouse, Old St. Mellons (01293s)	Indirect	The proposed development would affect the setting of the listed building	Negligible	High	Low
St Julians Farmhouse, Old St Mellons (01349s)	Indirect	The proposed development would affect the setting of the listed building	Minor	High	Low

Asset	Impact Type	Description of Impact	Magnitude of impact prior to implementation of mitigation measures	Baseline Value	Significance level of impact prior to implementation of mitigation measures
Cefn Mably Park and Garden	Indirect	The proposed development would affect the setting of the listed building	Minor	High	Low
St. Edeyrn's Church	Indirect	The proposed development would affect the views of the listed building	Negligible	High	Low

Table 2 Summary of construction impacts and impact magnitude prior to mitigation

Mitigation

13.33 The mitigation strategies outlined in this section detail the techniques to be adopted in order to ameliorate the impacts that the proposed development may have on features of archaeological, architectural and/or cultural heritage within the study area during the construction of the proposed development. The residual impacts that will remain once these mitigation measures have been implemented are identified further on.

13.34 In order to establish the presence or not of buried archaeological remains within the Site, a geophysical survey could be undertaken, as this was found to be an effective measure in identifying the below ground archaeological remains to the north and south of Site. The results of this survey could then be used to inform the need for further mitigation in the form of e.g. sensitive design to minimise impact, trial trench evaluation, a watching brief, or strip, map and record.

13.35 Any potential impact on setting could be partly mitigated through sensitive design or screening to minimise the impact on the immediate setting of St. Julian's Farmhouse (01349s; listed building 13928) and the wider setting of Bridge Farmhouse (01293s) and Cefn Mably Park and Garden. The possible medieval hollow way to the north of Site should be retained and a watching brief implemented on any areas to be removed. Hedgerows should also be retained where practicable to provide screening and to preserve the ability to 'read' the landscape, especially those to the north of Site which could be contemporary with St, Julian's Farmhouse (01349s; listed building 13928).

Asset	Impact Type	Description of Impact	Baseline Value	Suggested mitigation measures
Possible Holloway	Direct	Removal of two sections of the southern boundary of this possible medieval holloway is required to facilitate	High	Retain

Asset	Impact Type	Description of Impact	Baseline Value	Suggested mitigation measures
		footpath access to the new development		
Possible below ground archaeological remains	Direct	Construction of the proposed development would destroy any potential below ground archaeological remains	Medium/High	Geophysical survey to inform further mitigation
Bridge Farmhouse, Old St. Mellons (01293s)	Indirect	The proposed development would affect the setting of the listed building	High	None
St Julians Farmhouse, Old St Mellons (01349s)	Indirect	The proposed development would affect the setting of the listed building	High	Screening
Cefn Mably Park and Garden	Indirect	The proposed development would affect the setting of the listed building	High	Screening
St. Edeyrn's Church	Indirect	The proposed development would affect the views of the listed building	High	None

Any Cumulative Impacts

13.36 The cumulative impacts that the scheme will have on the baseline cultural heritage environment are provided in this section.

13.37 The cumulative impacts comprise the impact on the settings of the listed buildings of St. Julian's Farmhouse (01349s), Bridge Farmhouse (01293s) and Cefn Mably Registered Park and Garden. The proposed development represents in-fill within a large housing development current under construction and which also encompasses St. Julian's Farmhouse and Bridge Farmhouse. The current development has resulted in the extensive compromise of the settings of both listed buildings, and the minor compromise of the setting of Cefn Mably Park and Garden. This not only affected the prominence of both buildings historically within the former agricultural landscape, but also the historic association of both buildings and Cefn Mably Park and Garden with the historic ownership, tenancy and use of the land. The proposed development site is the only extant parcel of land remaining which is historically associated with the former St. Julian's Farm.

13.38 The proposed development combined with the current surrounding developments also have the cumulative impact of loss of the historic agricultural landscape and hedgerows. The majority of the previous landscape appearance has been altered through re-landscaping of topography and removal of the hedgerows. The Site is one of the few remaining extant historical features in the landscape, however it is now almost entirely out of context due to the alterations from the surrounding development.

Asset	Impact Type	Magnitude of impact taking into account mitigation measures	Baseline Value	Significance level of impact after implementation of mitigation measures
Bridge Farmhouse, Old St. Mellons (01293s)	Indirect	Negligible	High	Low
St Julians Farmhouse, Old St Mellons (01349s)	Indirect	Minor	High	Low
Cefn Mably Park and Garden	Indirect	Negligible	High	Low

Table 3 Summary of cumulative impacts prior to mitigation

Residual Impacts

13.39 The residual impacts that the scheme will have on the baseline cultural heritage environment are provided in this section.

Asset	Impact Type	Magnitude of impact taking into account mitigation measures	Baseline Value	Significance level of impact after implementation of mitigation measures
Possible Holloway	Direct	Minor	High	Low
Possible below ground archaeological remains	Direct	Negligible	Medium/High	None
Bridge Farmhouse, Old St. Mellons (01293s)	Indirect	Negligible	High	None
St Julians Farmhouse, Old St Mellons (01349s)	Indirect	Negligible	High	None
Cefn Mably Park and Garden	Indirect	Negligible	High	Negligible

Table 3 Summary of residual impacts after implementation of mitigation measures

13.40 A total of 13 heritage assets have been identified within the study area for this assessment, none of which lie within the Site boundary. Two of the assets are Grade II listed buildings and one is a Grade II Registered Park and Garden.

13.41 The proposed housing development will likely have a significant direct impact on any buried archaeological remains within the Site. A geophysical survey to further assess the archaeological potential and inform any additional mitigation is recommended. The proposed development will have a Low direct impact on a possible medieval Holloway located along the northern boundary of Site. The majority of this asset is being retained, and a watching brief is recommended on any areas to be removed. The development will have a low indirect impact on the setting of the listed buildings of St. Julian's Farmhouse (01349s), Bridge Farmhouse (01293s) and the Registered Park and Garden of Cefn Mably. Suitable screening, potentially through retaining the extant mature tree hedgerows is recommended.

CHAPTER 14
Noise

Introduction

Preface

15.1 This chapter of the ES assesses;

- The impact of environmental/traffic noise on the proposed residential development site, including design specifications for acoustic glazing and ventilation where required to meet planning condition limits.
- The impact of traffic associated with the site on the existing road network, covering the road links agreed with Cardiff Council by Corun Consultants prior to them carrying out the Transport Assessment.

15.2 This chapter has been prepared by Hunter Acoustics Ltd, an independent acoustic consultancy established in 1994 and a member organisation of the Association of Noise Consultants (ANC). The author of the assessment, David Hunter, is a corporate member of the Institute of Acoustics (MIOA), Chairman of the Welsh Branch of the Institute of Acoustics, and has over 30 years' experience working as an independent acoustic consultant.

15.3 This chapter should be read in conjunction with Hunter Acoustics' Environmental Noise Assessment report 5795/ENS1 dated 26th May 2020. This is included in **Appendix 14.1**.

Legislative and Planning Policy Context

Planning Policy Wales

15.4 The Welsh Government's Planning Policy Wales (Edition 10) dated December 2018, states the following;

> *"6.7.20 Where sensitive developments need to be located close to existing transportation infrastructure for sustainable movement and access they should be designed, as far as practicable, to limit harmful substances and noise levels within and around those developments both now and in the future. This may include employing the principles of good acoustic design and the inclusion of active travel or travel management measures as part of development proposals. Such development, however, should preferably be located away from existing sources of significant noise, which may include aircraft noise or roads, particularly new roads or those with programmed route improvements."*

15.5 The document states *"For more information on the principles of good acoustic design, readers are referred to Professional Planning Guidance (ProPG) Supplementary Document 2, produced by the Association of Noise Consultants, the Institute of Acoustics and the Chartered Institute of Environmental Health (http://www.association-of-noise-consultants.co.uk/propg/). ProPG has been written principally to assist with the planning process in England, but the design principles put forward in Supplementary Document 2 may also be adopted in Wales.*

ProPG Supplementary Document 2

15.6 Professional Practice Guidance on Planning & Noise, New Residential Development 'Supplementary Document 2 – Good Acoustic Design' produced by the ANC, IOA and CIEH discusses the general principles of Good Acoustic Design, including the following hierarchy of noise management measures in descending order of preference;

i) Maximising the spatial separation of noise source(s) and receptor(s).
ii) Investigating the necessity and feasibility of reducing existing noise levels and relocating existing noise sources.
iii) Using existing topography and existing structures (that are likely to last the expected life of the noise-sensitive scheme) to screen the proposed development site from significant sources of noise.
iv) Incorporating noise barriers as part of the scheme to screen the proposed development site from significant sources of noise.
v) Using the layout of the scheme to reduce noise propagation across the site.
vi) Using the orientation of the buildings to reduce the noise exposure of noise-sensitive rooms.
vii) Using the building envelope to mitigate noise to acceptable levels.

"It should be remembered that good acoustic design is a process that begins as soon as land is under consideration for development. The timeline for good acoustic design stretches from the conceptual design stage, through quality control during construction, and beyond to post construction performance testing.

Both internal and external spaces should be considered in the acoustic design process. Care should be taken to ensure that acoustic mitigation measures do not result in an otherwise unsatisfactory development. Good acoustic design must be regarded as an integrated part of the overall design process".

Technical Advice Note (Wales) 11

15.7 TAN11 uses 'Noise Exposure categories' (NECs) ranging from A-D to aid local authorities in their consideration of applications for residential development near transport related noise sources.

15.8 Noise bands defining categories A-D of TAN 11 are set in terms of LAeq,16hr daytime and LAeq,8hr night time levels for road traffic noise and mixed sources, free field 1.2-1.5m above ground level as follows;

Table 14.1 – TAN11 Noise Exposure Categories

Recommended noise exposure categories for new dwellings near existing noise sources (ref Table 2 of TAN 11 (Wales) October 1997)					
Noise Source	**Time**	**Noise Exposure Categories**			
		A	**B**	**C**	**D**
Road Traffic	07:00-23:00	<55	55-63	63-72	>72
	23:00-07:00	<45	45-57	57-66	>66
Rail Traffic	07:00-23:00	<55	55-66	66-74	>74

	23:00-07:00	<45	45-59	59-66	>66
Air Traffic	07:00-23:00	<57	57-66	66-72	>72
	23:00-07:00	<48	48-57	57-66	>66
Mixed Sources(4)	07:00-23:00	<55	55-63	63-72	>72
	23:00-07:00	<45	45-57	57-66	>66

Note: In addition, sites where individual noise events regularly exceed 82dB(A) L_{max}(slow), several times in any night time hour should be treated as being in NEC C, unless the L_{eq}(8 hour) already puts the site in NEC D.

(4) Mixed sources: this refers to any combination of road, rail, air and industrial noise sources. The "mixed source" values are based on the lowest numerical values of the single source limits in the table. The "mixed source" NECs should only be used where no individual noise source is dominant.

15.9 The following show Cardiff Council's road traffic noise related planning conditions, as issued for the sites immediately north of the application site.

"20) The details submitted in compliance with condition 1 of this permission shall, for each phase of the development, include a scheme for approval, in writing, by the Local Planning Authority, to provide that all habitable rooms exposed to external noise shall be subject to sound insulation measures to ensure that all such rooms achieve an internal noise level of 40 dBA Leq 16 hour during the day and 35 dBA Leq 8 hour at night.

The submitted scheme shall ensure that where mechanical ventilation to habitable rooms is required the proposed measures shall be provided with acoustically treated active ventilation units. Each ventilation unit (with air filter in position), by itself or with an integral air supply duct and cowl (or grille), shall be capable of giving variable ventilation rates ranging from: 1) an upper rate of not less than 37 litres per second against a back pressure of 10 newtons per square metre and not less than 31 litres per second against a back pressure of 30 newtons per square metre, to 2) a lower rate of between 10 and 17 litres per second against zero back pressure.

No habitable room shall be occupied until the approved sound insulation and ventilation measures have been installed in that room.

Reason: To ensure that the amenities of future occupiers are protected

21) The details submitted in compliance with condition 1 of this permission shall, for each phase of the development, include a scheme for the approval, in writing by the Local Planning Authority, a scheme verifying that a minimum of 50% of the garden area has been designed so that maximum daytime noise levels shall not exceed 55dB LAeq,16hr.

Reason: To ensure that the amenities of future occupiers are protected."

15.10 Internal noise levels quoted in the planning condition are in line with 'reasonable' internal ambient noise level criteria for habitable rooms quoted in British Standard 8233:2014 'Guidance on Sound Insulation and Noise Reduction for buildings'.

15.11 Taking a 15dB loss through a partially open window (World Health Organisation), internal criteria quoted in the above condition imply external free field trigger levels for additional acoustic treatment of;

- 55dBLAeq(0700-2300hrs daytime)
- 50dBLAeq(2300-0800hrs night)

Impact of Proposed Development on Existing Noise Climate

Design Manual for Roads & Bridges (DMRB)

15.12 Assessing noise effects from roads is described in Volume 11 of Design Manual for Roads and Bridges, 2008 (DMRB), relating to environmental impact assessment. The DMRB approach is to compare noise levels for the 'do something' (with scheme) scenario against noise levels for the 'do minimum' (without scheme) scenario. This procedure has been used in this assessment by assessing the examining the changes in levels of road traffic noise that would result from the implementation of the development proposals.

15.13 DMRB quotes the following impact ranges for changes in road traffic noise;

Table 14.2 – DMRB Traffic Noise Impact

Short Term		Long Term	
Noise Change $L_{A10, 18\ hour}$	Magnitude of Impact (Opening Year)	Noise Change $L_{A10, 18\ hour}$	Magnitude of Impact (15 years)
0	No change	0	No change
0.1 - 0.9	Negligible	0.1 - 2.9	Negligible
1 - 2.9	Minor	3 - 4.9	Minor
3 - 4.9	Moderate	5 - 9.9	Moderate
5+	Major	10+	Major

15.14 This assessment compares traffic flow rates with and without the proposed development in the year of completion (2021) and 5 years hence (2026), in line with the Transport Assessment scope agreed between Corun Consultants and Cardiff Council.

15.15 The noise change has been calculated referring to methodology of the Department of Transports' 'Calculation of Road Traffic Noise' 1988.

15.16 The scale or severity of any noise change, positive or negative, requires description to indicate the degree of impact where possible. Significance criteria are then applied to categories of change. A change threshold of 3dB(A) has commonly been used in traffic noise assessments in the UK to approximate the threshold of significance.

15.17 Significance criteria shown in the table below have been developed based upon DMRB guidance, to assess noise effects arising from the operation of the proposed Car Park.

Table 14.3 Significance Criteria

Change in noise level L_{Aeq} (1-hour) (dB)	Magnitude criteria	Significance
>5.0	Major Adverse	Significant
3.0 to 4.9	Moderate adverse	

1.0 to 2.9	Minor Adverse	Insignificant
0.1 to 0.9	Negligible	
0	No Change	
-0.9 to -0.1	Negligible	
-2.9 to -0.1	Minor Beneficial	
-4.9 to -3.0	Moderate Beneficial	Significant
> -5.0	Major Beneficial	

Methodology

Consultation

15.18 The scope of the technical chapters to be included in the current ES was agreed by Cardiff Council in June 2020. An account of the Screening and Scoping process undertaken in set out in Chapter 6 of this Statement. This Screening and Scoping process outlined the surveys undertaken at the site, the results of which have been used to inform the assessment within this chapter.

Environmental Noise Survey

15.19 In order to assess noise impact on the proposed residential development, we must first confirm existing ambient noise levels on the site.

15.20 Full details of survey methodology and results are detailed in Hunter Acoustics' Environmental Noise Assessment report 5795/ENS1-R1, included in **Appendix 14.1**.

CoVid 19

15.21 CoVid 19 restrictions have resulted in significantly reduced traffic flows on all roads. Hunter Acoustics undertook an environmental noise survey for the site immediately to the north of the St Julian's House site in 2019. These results have been used as the basis for the assessment as they give accurate measurements of source traffic noise from the M4 to the North, and Pentwyn Link Road (A4232) to the west, before the current CoVid 19 restrictions. This is in line with current Institute of Acoustics and Association of Noise Consultants guidelines for assessments during the current CoVid 19 crisis.

15.22 Noise survey results indicate night-time road traffic noise levels (LAeq, 2300-0700hrs) between 6.5dB and 7.3dB quieter than daytime (LAeq, 0700-2300hrs). Referring to the planning condition criteria, this indicates daytime to be the critical period (the difference between day and night criteria is only 5dB, therefore if we design to control daytime noise intrusion, we also meet night time criteria).

Noise Map Analysis

15.23 Noise maps have been plotted across the proposed site using proprietary Noise Map Five software, which in turn uses methodology of the Department of Transport's 'Calculation of Road Traffic Noise' (CRTN).

15.24 Results of the noise surveys have been used to calibrate the noise map model.

15.25 The noise map allows road traffic noise levels to be predicted across the site including for distance and screening losses from site topography and between new plots.

15.26 Noise Maps have been plotted at ground and first floor level.

Figure 14.1 - LAeq, 16hr Daytime (0700 – 2300hrs); Developed Site (1.5m height)

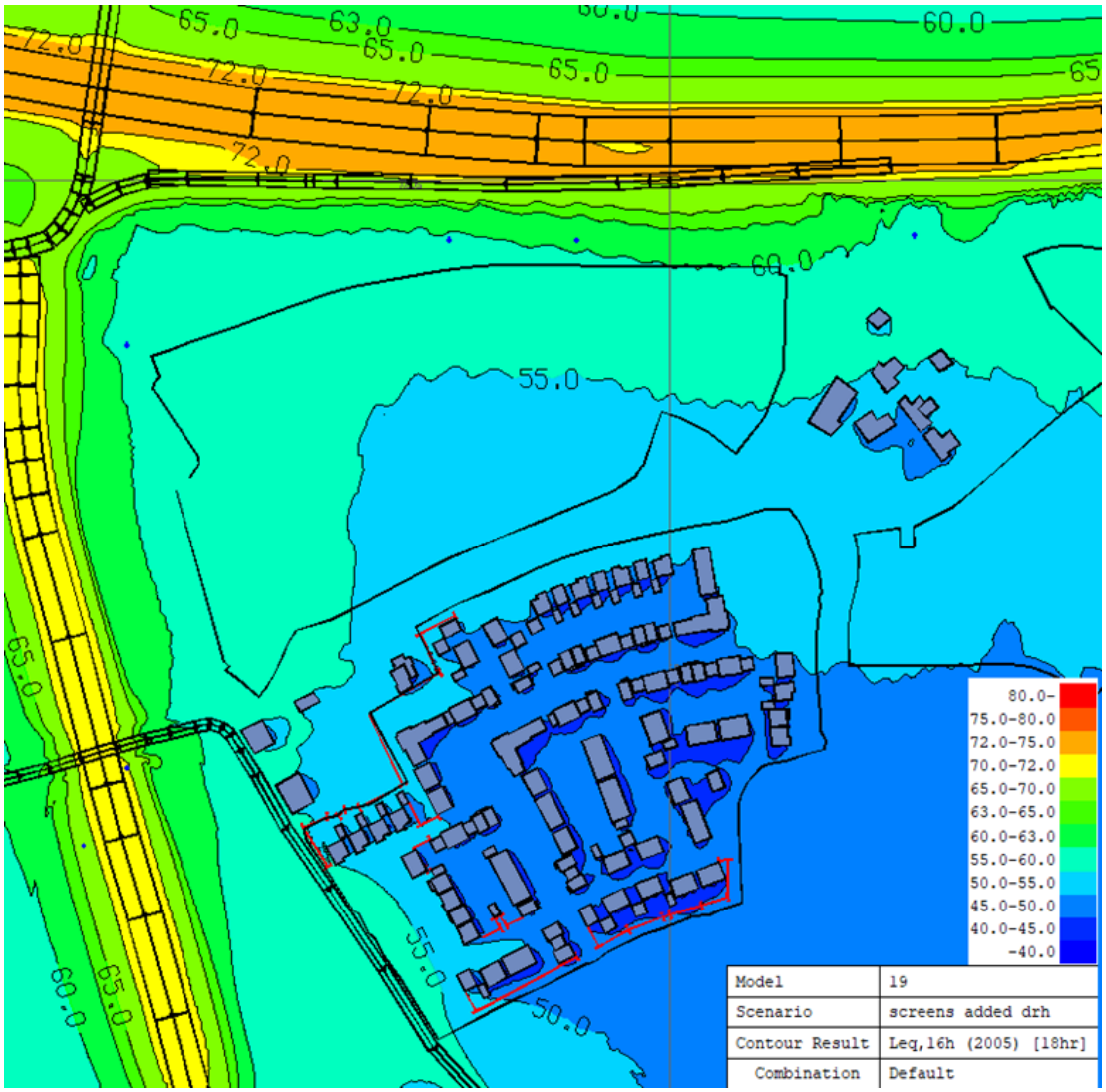
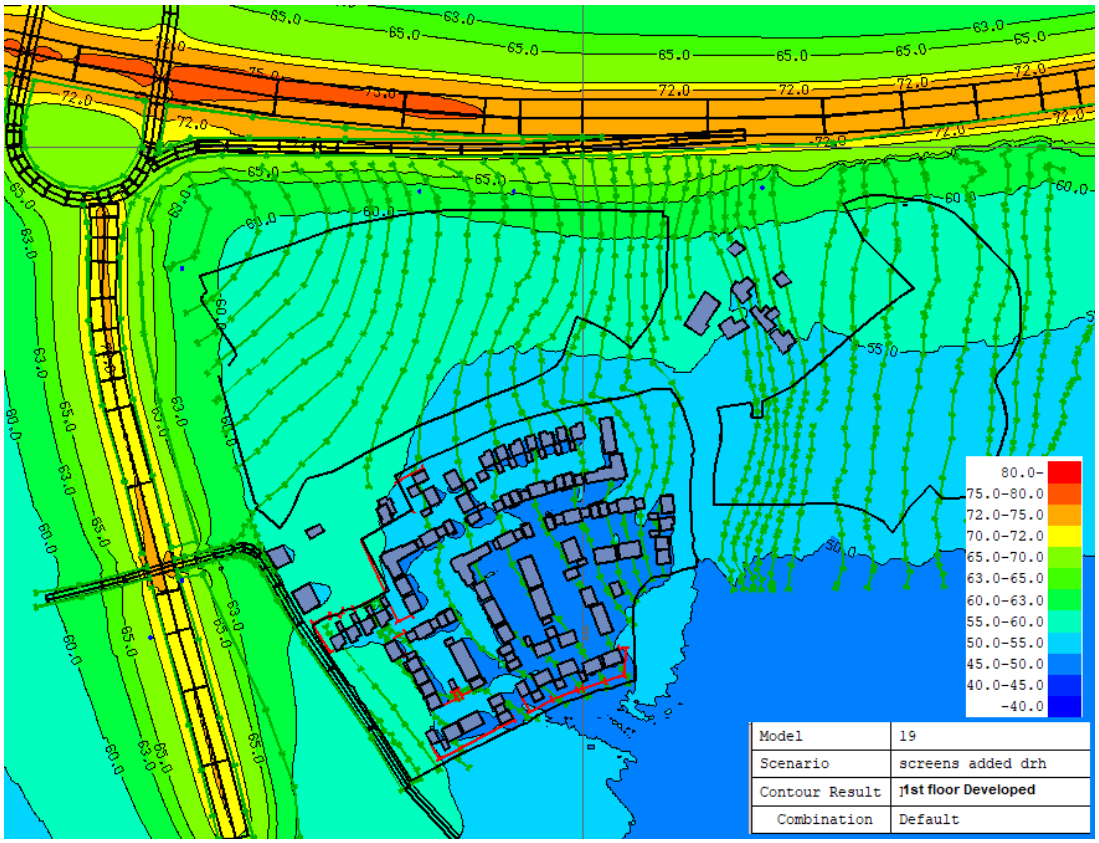


Figure 14.2 – LAeq, 16hr Daytime (0700 – 2300hrs); Developed Site (4.5m height)



Mitigation

15.27 Based on these results the following site plan identifies plots requiring additional acoustic treatment, in line with Cardiff Council's planning condition.

Figure 14.3 – Facades Requiring Additional Sound Insulation

15.28 Traffic noise levels at proposed residential façade lines are at worst;

- Ground Floor: between 50-55dB LAeq(16 hour) along north and west boundaries
- 1st Floor: between 55-60dB LAeq(16 hour) along north and west boundaries

15.29 Taking a 15dB loss through a partially open window (World Health Organisation), the 40dB internal daytime criterion from Cardiff's standard condition is indicated to be marginally exceeded at first floor level (4.5m above local ground height) of facades highlighted red in Figure 14.3 (Figure 5.1 paragraph 15.27 of the Noise Report).

External Building Fabric Sound Insulation

15.30 All habitable rooms, at first floor level on façades highlighted in RED (paragraph 15.27), require acoustic glazing with mechanical ventilation as specified below, to give residents the option to close windows while maintaining airflow levels. For remaining facades standard thermal double glazing/trickle vents are indicated sufficient.

15.31 The following preliminary acoustic specifications have been calculated based on the outline layout plan and typical room/façade details. Acoustic specifications are to be confirmed at detailed design stage once plot and floor plan layouts are confirmed. However implications for

the external building fabric are not indicated to be onerous.

Glazing

15.32 The following acoustic specification has been calculated for glazing on critical facades (the Table reference is from Hunter Acoustics main assessment report);

Table 5.4 – Window Sound Reduction Index Figures

Element	Description	Sound Reduction Index, *R* (SRI: BS EN ISO 140) at Octave Band Centre Frequency (Hz)				
		125	250	500	1k	2k
Windows	For budgetary guidance: based on Pilkington 6mm / 6 – 16mm / 4mm	21	20	25	38	37

Roof

15.33 A standard pitched tile roof with 9mm plasterboard ceiling to bedrooms below and 100mm mineral wool quilt in the loft space is indicated sufficient. If a mansard/room in roof is proposed, the pitched roof section shall meet a minimum Rw45 weighted sound reduction index on critical plots identified in paragraph 15.27.

Ventilation

15.34 All habitable rooms on critical facades highlighted in paragraph 15.27 require a ventilation strategy that does not rely on opening windows to achieve 'whole building' and 'extract' ventilation rates as required by Building Regulations Part F:

System 3: Continuous mechanical extract.

15.35 Guidance on minimum provisions for extract and whole building ventilation is set out in table 1.2c of Part F.

S*ystem 4: Continuous mechanical supply and extract with heat recovery.*

15.36 Guidance on minimum provisions for extract and whole building ventilation is set out in Table 1.2d of Part F.

15.37 If System 3 (MEV) is used to provide fresh air through (background) trickle ventilators, the trickle ventilators shall be acoustically treated to achieve the following performance (Table reference is taken from our main report);

Table 14.5 – Acoustic Trickle Ventilator Specifications

Element	Description	$D_{n,e}$ at Octave Band Centre Frequency (Hz)				
		125	250	500	1k	2k
Ventilator	For budgetary guidance: based on Renson AK80/3 (open)	37	32	34	46	52

15.38 The calculation has allowed for a maximum of 2 acoustic trickle ventilators per room.

15.39 The successful tenderer shall provide independent laboratory test data showing their vent meets the above performance requirements.

15.40 Alternatively, a System 4 (MVHR) could be utilised which does not require any trickle vents in the external façade. (do not include standard trickle ventilators in the external façade).

15.41 The MVHR system should be designed to ensure that inlet and discharge ducts/grilles do not face the road. The system shall also be designed so the fan/system meets NR25 in bedrooms, in line with CIBSE guidance.

Gardens / Outdoor Living Spaces

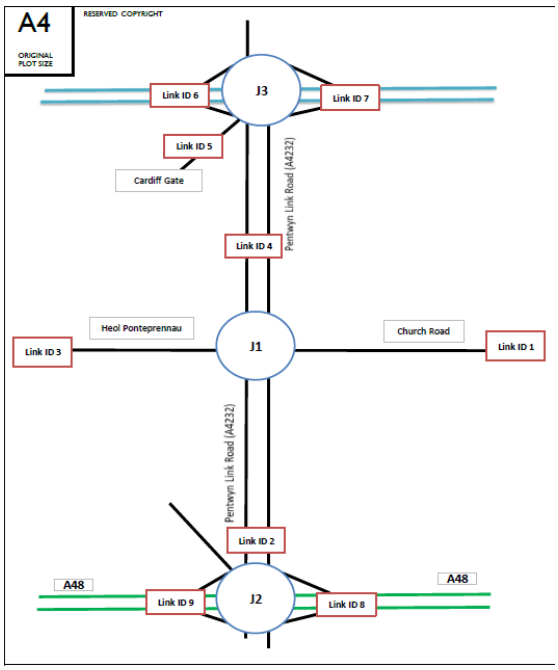
15.42 Noise map Figure 4.2 (Paragraph 0) indicates the 55dB(A) in 50% of garden areas criterion quoted in Cardiff Council's standard condition is achieved in all private garden areas to dwelling-houses with the proposed 1.8m high closed boarded fences.

Operation: Development Traffic Impact on the Existing Noise Climate

15.43 There are no significant changes to the local road network associated with the proposed development. The following therefore assesses the impact of traffic associated with the proposed development on existing road traffic noise levels, referring to the Department of Transport's 'Design Manual for Roads & Bridges' (refer to paragraph 0).

15.44 An assessment of impact on the existing road scheme has been carried out, calculated from the predicted traffic growth with and without the proposed development' for the year of completion (2021), and 5 years hence (2026). The assessment is in line with the scope of the Transport assessment agreed with Cardiff Council by Corun Consultants. That assessment covers the following road links;

15.45



15.46 The following Table shows predicted traffic flow growth rates on the Link Roads identified above. Assessments have been carried out with and without development for the completion year (2021) and 5 years hence (2026).

Table 15.6.2 – Predicted Impact of Traffic Associated with Proposed Development

Year of Completion: 2021					
Link	**2021 Forecast Base**	**2021 Total Traffic**	**% Traffic Increase 2021**	**ΔdB (10log(% increase))**	**Impact**
1	6945	7732	11.33%	0.47	Negligible
2	32415	32719	0.94%	0.04	No Change
3	17003	17106	0.61%	0.03	No Change
4	31734	32113	1.19%	0.05	Negligible
5	15366	15475	0.71%	0.03	No Change
6	24146	24323	0.73%	0.03	No Change
7	9610	9687	0.80%	0.03	No Change
8	15720	15833	0.72%	0.03	No Change
9	17403	17538	0.78%	0.03	No Change
5 Years: 2026					
Link	**2026 Forecast Base**	**2026 Total Traffic**	**% Traffic Increase 2026**	**ΔdB (10log(% increase))**	**Impact**
1	8985	9772	8.76%	0.36	Negligible
2	35137	35441	0.87%	0.04	No Change
3	18317	18420	0.56%	0.02	No Change
4	34562	34941	1.10%	0.05	Negligible
5	16587	16696	0.66%	0.03	No Change
6	26072	26249	0.68%	0.03	No Change
7	10390	10467	0.74%	0.03	No Change
8	16970	17083	0.67%	0.03	No Change
9	18807	18942	0.72%	0.03	No Change

15.47 The effect of additional traffic associated with the site is therefore indicated to be negligible.

Construction

15.48 The exact method of construction is set at detailed design stage, and this is critical when assessing potential impact. The impact of construction activities is therefore to be controlled by the use of a Construction Environmental Management Plan (CEMP).

15.49 Further guidance can be taken from typical conditions issued by Cardiff Council, an example is shown below;

Construction site activity to take place between 0800-1800hrs Monday to Friday and 0800-1300hrs Saturdays, with no such activities on Sundays or Public/Bank holidays. Any works required to take place outside of these periods to be agreed in advance with the Local Planning Authority.

All contractors and sub-contractors will also be required to work to best practice site management principles as defined in the Considerate Constructors scheme.

15.50 The site specific CEMP should include;

- An organisational structure setting out staff responsible for controlling environmental impact, including their respective roles,/responsibilities and identifying the nominated environmental manager.
- Environmental Audit programme eg. ISO 14001
- Environmental Risk register including procedures for controlling said risks.
- Environmental Training of Staff.
- Procedures for internal communication of Environmental matters to site including monitoring, recording and dissemination.
- Procedures for handling external communications and complaints including a clear audit trail.
- Procedures for addressing non-compliance.

- Procedures for dealing with major incidents, unexpected occurrences, or finds, especially that affect noise or vibration.

General

15.51 Inevitably on most construction sites, significant noise levels are generated in the immediate vicinity. It is the duty of the contractor to use 'best practical means' to minimise noise levels.

15.52 BS5228:2009 Part 1 – 'Code of Practice for Noise & Vibration Control on Construction and Open sites' gives guidance on 'best practical means' on basic procedures and methods of controlling noise.

15.53 The main issues are listed below;

1. Quietest plant available should be selected, or where possible existing plant modified to reduce noise. Manufacturers often have attenuation kits for their equipment.
2. All equipment shall be properly maintained and switched off/throttled down to the minimum required when not in use, so no unnecessary noise is caused.
3. All access roads should be kept clean and maintained in a good state of repair to avoid unwanted rattle and "body slap" from vehicles.
4. Any reversing alarms fitted to vehicles should be minimised as far as is reasonably practicable and subject to maintaining site safety. This could involve automatic alarm volume setting relative to site ambient noise levels; and / or manoeuvring vehicles in a circular manner to avoid the use of reversing alarms.
5. Site layout should locate the noisiest stationary plant as far as is practicable from critical receivers, and allow mobile plant to enter and exit site in a forward direction except where space limitations do not allow this.
6. The operatives of the site should be made aware of noise control requirements and trained to employ appropriate techniques to keep site noise to a minimum including;
    a. The proper use and maintenance of equipment,
    b. The positioning on site of machinery to limit emissions to critical neighbouring receivers and site personnel,
    c. The avoidance of unnecessary noise when carrying out manual operations and when operating plant,
    d. The protection of persons against excessive noise.

7. Operatives working in noisy areas to be monitored to ensure they are wearing all necessary hearing protection and not exceeding their permitted exposure levels.
8. Local residents to be informed in advance of starting works in sensitive areas, and working hours confirmed (in particular for potentially noisy operations such as piling).
9. Options for potentially noisy operations to be reviewed – for example if piling were required, BS5228 advises the following:

8.5.2.1 Selection of piling method

The selection of a method to be used for the installation of piles will depend on many factors (see Annex H for types of piling). A decision regarding the type of pile to be used on a site should not be governed solely by noise, but should also take into account criteria such as loads to be carried, strata to be penetrated and the economics of the system, e.g. the time it will take to complete the installation and other associated operations such as soil removal. In some cases, adjacent land uses can play a significant role in the choice of piling technique, e.g. due to the effects of noise.

It might not be possible for technical reasons to replace a noisy process by a quieter alternative. Even if it is possible, the adoption of

a quieter method might prolong the piling operation; the net result being that the overall disturbance to the community, not only that caused by noise, will not necessarily be reduced.

Conclusion

15.54 Road traffic noise assessments have been undertaken for the proposed residential site on Land adjacent to St Julian's House, St Edyrns, Bridge Road, Cardiff, CF3 6UZ, covering;

1. Traffic Noise Impact on proposed residences, referring to Cardiff Council's standard planning condition requirements.
2. Impact of road traffic associated with the proposed development, on the existing road network.

Traffic Noise Impact on Proposed Residences

15.55 Road traffic is indicated to control the ambient noise climate day and night.

15.56 Environmental noise surveys carried out in 2019, prior to the current CoVid 19 restrictions have been used to calibrate noise maps across the proposed site.

15.57 These surveys indicated that daytime is the critical period when assessing traffic levels against criteria quoted in Cardiff Council's standard traffic noise conditions.

15.58 Acoustic glazing and ventilation to habitable rooms are indicated to be required on critical facades at first floor level only, and preliminary specifications are included in this report.

15.59 Final specifications to be confirmed once final site layouts and plot floor plans are confirmed at detailed design stage; however implications for the external building fabric are not indicated to be onerous.

15.60 Noisemap models also confirm the garden noise criterion of 55dB LAeq,16hr in 50% of garden areas is met.

Impact of traffic from the new development on the existing road network

15.61 There are no significant changes to the local road network associated with the proposed development.

15.62 An assessment of impact on the existing road scheme has been carried out, calculated from the predicted traffic growth with and without the proposed development' for the year of completion (2021), and 5 years hence (2026). The assessment covers road links as detailed in the scope of the Transport assessment, which was agreed between Cardiff Council and Corun Consultants.

Predicted impact is negligible on all road links.

Construction/Site Noise

15.63 The exact method of construction is set at detailed design stage, and this is critical when assessing potential impact. The impact of construction activities is therefore to be controlled by the use of a Construction Environmental Management Plan (CEMP).

15.64 Advice is included on good practice, referring to BS5228 'Code of Practice for Noise & Vibration Control on Construction & Open Sites'.

15.65 Further guidance has been taken from typical conditions issued by Cardiff Council.

CHAPTER 15
Agricultural Land Classification & Soil Resources

Introduction

Preface

15.1 The Agricultural Land Classification and Soil Resources Chapter has been prepared by Land Research Associates Limited ('the Consultant'). It considers the potential impacts of the proposed developmentof land adjacent to St Julian's House, Bridge Road, Old St Mellons (hereafter referred to as 'the site') to agricultural land and soil resources.

15.2 The land surveyed is proposed as residential development and is presently in use as agricultural land for grazing of sheep and goats with horses grazing one of the paddocks. Agricultural land is therefore a receptor of potential effects arising from the project.

15.3 The soil on which current and future land uses are based acts as a filter to attenuate and immobilise substances falling on it; regulates rainfall movement to surface water and groundwater; and supports ecological habitats and biodiversity. The sustainable management of soil and land is a central pillar in sustainable development, and consequently any effects of the proposed development on soil resources will also be important.

15.4 The objectives of this assessment are to:

- Carry out an appraisal of existing baseline conditions relating to soil resources and Agricultural Land Classification (ALC) within the Site;
- Establish potential impacts of the Proposed Development upon the existing agricultural and soils environment;
- Establish and appraise the likely significance of any identified effects;
- Recommend, where necessary, appropriate measures that will assist in the mitigation of potentially significant adverse environmental effects; and
- Evaluate the residual effect of the Proposed Development upon the soil and agricultural land resources

Legislative and Planning Policy Context

15.5 The following national planning policy relating to Agricultural Land is considered of relevance to the area surveyed and to the proposed development.

National Planning Policy

15.6 The protection of Best and Most Versatile (BMV) agricultural land is detailed in paragraphs 3.54 and 3.55 of Planning Policy Wales 2018 (Edition 10). To summarise, it sets out that:

- BMV land (Grades 1, 2 and 3a of the Agricultural Land Classification system (ALC)) should be conserved as a finite resource
- Weight should be given to protecting BMV land from development when considering the search sequence and in development plan policies / management decisions –

they should only be developed if there is an overriding need or land in lower agricultural grades is unavailable, or available lower grade land has an environmental value recognised by a landscape, wildlife, historic or archaeological designation

Local Planning Policy - Cardiff Local Development Plan

15.7 The Cardiff Council Local Development Plan (LDP) was adopted on 28th January 2016. It is the most up to date Development Plan covering the authority's administrative area, and is used in the determination of planning applications.

15.8 The LDP sets out a range of policies and proposals relating to future development, and deals with the use and conservation of land and buildings within Cardiff up to 2026. Policy KP 18: Natural Resources is relevant to this Chapter and sets out that:

"*In the interests of the long-term sustainable development of Cardiffdevelopment proposals must take full account of the need to minimise impacts on the city's natural resources and minimise pollution, in particular the following elements:*
i. Protecting the best and most versatile agricultural land…"

Methodology

Assessment Methodology

15.9 The assessment is designed to assess the effect of the Proposed Development on two receptors: soil resources and agricultural land.

15.10 Soil resources were reviewed by means of a desk study of published and unpublished soil maps and geological data and more accurately assessed by a detailed survey across the Application Site. The detailed survey involved observations of soil and land characteristics at intersects of a 100 m grid.

15.11 Agricultural land quality was assessed using information from the soil resources survey and other constraints to agricultural land use, such as climate, flooding and slope. The survey was undertaken in line with post 1988 Agricultural Land Classification published by the former Ministry of Agriculture, Fisheries and Farming (MAFF) by an experienced soil surveyor. Topsoil texture was confirmed by a representative sample (made up of subsamples from each observation point) that was sent to a UKAS accredited laboratory for textural analysis by sedimentation (laboratory certificates included at the end of the Technical Report in Appendix 15.1).

Significance Criteria

15.12 There is no nationally agreed scheme for classifying the effects of development on agriculture or soils and the approach used in this chapter has been developed over a number of years. Effects of a project can be adverse, causing significant negative effects on a receptor, beneficial, resulting in advantageous or positive effects on a receptor, or negligible.

15.13 The magnitude of effect on best and most versatile land will depend on the amount to be taken by the development. Town and Country Planning (Development Management Procedure) (Wales) (Amendment) Order 2016 only requires the Welsh Government Agriculture Department (Welsh Ministers) to be consulted on development that involves the

loss of not less than 20 ha of grades 1, 2 or 3a agricultural land. Consequently, the magnitude of losses smaller than this threshold is considered to have a small effect on the national stock of best and most versatile land. Losses of over 80 ha of best and most versatile land are equivalent to the size of a medium to large farm and consequently the magnitude of effect is considered to be high. The judgment-based classification is given in Table 15.1.

Table 15.1: Magnitude of Impacts

Receptor	High	Medium	Low	Negligible
Soil Resource	Loss or irreversible damage to all topsoil resources. Sealing[1] of more than 75% of the soils within the site.	Loss or irreversible damage to at least 50% of topsoil resources. Sealing of 50 – 75% of the soils.	Beneficial re-use of all or nearly all good quality topsoil resources[2]. Sealing of less than 50% of the soils within the site.	Only minor disturbance of soils within the site, minimal surface sealing.
Agricultural Land	Irreversible loss of more than 80 ha of best and most versatile land.	Irreversible loss of 20 – 80 ha of best and most versatile land.	Irreversible loss of 5 – 20 ha of best and most versatile land.	Irreversible loss of less than 5 ha of best and most versatile land.

[1]as by impermeable surfaces or through over-compaction of exposed soils
[2] defined for this purpose as loamy, freely to imperfectly draining topsoils

15.14 Assessing the effects on soil is complicated as it is a multi-functional resource. Soils are able to mitigate flood risk, provide physical support and nutrient cycling to plants and dispose and decompose of wastes and dead organic matter. A provisional classification, for this chapter, is included in Table 15.1.

15.15 Permeable loamy soils are regarded as of the highest sensitivity, since these soils are most effective at mitigating the effects of flooding and are of highest quality for reuse in gardens and planting schemes (and are most likely to meet British Standards criteria for use at other sites). Lower quality soils are more susceptible to damage and less valuable if lost.

15.16 Best and most versatile agricultural land (i.e. Grades 1, 2 and 3a on MAFFs 1988 Agricultural Land Classification (ALC) system) is considered to be a finite national resource, is given special consideration in national policy, and can be considered to be of higher sensitivity than land in Grades 3b, 4 and 5. In line with Welsh Government Planning Policy best and most versatile land should be conserved as a finite resource for the future (ref paragraph 3.54 of Planning Policy Wales Edition 10 December 2018).

15.17 The sensitivity criteria used in the assessment of effects on soils and agricultural land are summarised in table 15.2 below. Table 15.3 combines the magnitude and sensitivity to give the overall significance of effect.

Table 15.2: Sensitivity of Receptors

	High	Medium	Low
Soil Resources	Permeable loamy soils providing a broad range of ecosystem services and/or supporting valuable habitats.	A mixture of soils, none of them supporting valuable habitats.	Slowly permeable damaged or contaminated soils providing a limited range of ecosystem services.
Agricultural Land	Grades 1, 2 and Subgrade 3a		Subgrades 3b, 4 and 5

Table 15.3: Significance of Effects

MAGNITUDE	SENSITIVITY			
	High	**Medium**	**Low**	**Negligible**
High	Major	Major	Moderate	Minor
Medium	Major	Moderate	Minor	Negligible
Low	Moderate	Minor	Minor	Negligible
Negligible	Minor	Negligible	Negligible	Negligible
N.B. major adverse effects are considered significant				

Baseline Conditions

Soil Resources

15.18 The site is made up of deep loamy soils. They comprise slightly stony medium clay loam topsoil and upper subsoil overmoderately stony sandy clay loam lower subsoil. In the south of the site, the subsoil is gleyed (grey and reddish coloured mottles), an indication of seasonal waterlogging. The topsoils and upper subsoils are a high quality resources for reuse in gardens and landscaping.

Agricultural Land Classification

15.19 The majority of the land within the site (90%) is of BMV subgrade 3a agricultural quality, with a smaller area of subgrade 3b land in the west. See table below for land grade areas and Appendix 15.1 for further details.

Table 15.4: Areas occupied by the land grades

Grade/subgrade	Area (ha)	% of the land
Subgrade 3a	4.3	90
Subgrade 3b	0.3	6
Non Agricultural	0.2	4

Total	4.8	100

Potential Impacts

Soil Resources

15.20 There is the potential for soil resources to be damaged during the working phase of the proposed development through improper soil handling and storage. This would result in the loss of suitable topsoil and subsoil resources leaving insufficient resources available to complete the restoration of the site. The medium loamy topsoils and upper subsoils are high sensitivity receptors, the loss of which would be of high magnitude resulting in a potential major adverse impact of the proposed development.

Agricultural Land

15.21 As construction proceeds on the site, the use of the agricultural land will cease. There will be a loss of 4.3 ha of BMV subgrade 3a land – a negligible magnitude loss of a high sensitivity receptor which equates to a potentially minor adverse impact of the proposed development.

Mitigation

Soil Resources

15.22 There is the potential for all soil resources to be damaged if handled incorrectly (i.e. stripped when wet or compaction through excessive trafficking). This would render them unsuitable for reuse in landscaping and gardens of the proposed development. Mitigation for the loss or damage of soil resources requires the adoption of a Soil Management Plan (see Section 4, 5 and 6 of Technical Report in Appendix 15.1 and summarised below), undertaken by a suitably qualified practitioner in accordance with the principals outlined in the Construction Code of Practice for Sustainable Use of Soils on Construction Sites, which will detail:

- Depth and method of topsoil stripping and stockpiling;
- Identification of landscaping topsoil requirements and assessment of suitability and availability of on-site resources; and
- Means of subsoil protection from compaction damage and remedial measures to remove damage.

15.23 Adhering to the Soil Management Plan would protect the entire soil resource within the site allowing for its beneficial re-use in restoration or future agricultural uses, thereby, mitigating the magnitude of effects to low on high sensitivity receptors. This is a minor adverse impact of the proposed development.

Agricultural Land Classification

15.24 There will be a loss of 3.4 ha of BMV land within the site. Welsh Planning Policy states that where losses of BMV land are anticipated a sequential test should be carried out so that areas of poorer land are prioritised. Using the predictive ALC map and soil maps for the area, it has been found that the site is of typical agricultural quality for the area. The majority of land surrounding the site is predicted to be of subgrade 3a quality with areas of grades 1 and 2 to the east of the site. Small areas of subgrade 3b land are shown however these are already under construction. Therefore, the site is of average agricultural quality for the area.

Any Cumulative Impacts

Soil Resources

15.25 The soil resources will be protected through the implementation of the Soil Management Plan, therefore there are no cumulative impacts associated with this receptor.

Agricultural Land Classification

15.26 Agricultural land loss from an individual site should be considered on a site by site basis (against the benefits of the scheme) and therefore it is not considered there are any relevant cumulative effects to the Proposed Development.

Residual Impacts

Soil Resources

15.27 The topsoils will be stripped, stored and reused within the proposed development. This will represent a sustainable use of the soil resource, which will retain their useful properties and continue to perform ecosystem services within the site. The effect of the proposed development on soil resources remains minor adverse.

Agricultural Land

15.28 Once the proposed development is complete, all agricultural land will be permanently lost within the site. This is a minor adverse effect of the proposed development.

Conclusion

15.29 The site poses no significant effects to agricultural land or soil resources provided mitigation is adhered to. The loss of 4.3 ha of BMV subgrade 3a land is a minor adverse impact of the proposed development, sequential assessment has found there to be no poorer land available in the local area. There is the potential for all soil resources to be lost if soils are not handled correctly. Soil protection will be facilitated through the implementation of a Soil Management Plan (see Technical **Appendix 15.1** for full details).

CHAPTER 16
Cumulative Impacts

Introduction

16.1 Schedule 4 (5) of the 2017 EIA Regulations identifies the need for, amongst other types of impact, cumulative impacts, to be considered.

16.2 It is considered that the key and most relevant area which the site will impact is the adjacent wider site allocation 'G'. As a result, this chapter of the ES draws together a summary of the potential cumulative impacts of the proposed built development at the application site together with the wider Strategic Site. Further detailed information pertaining to the likely cumulative impacts is provided within the relevant chapters of the ES and is summarised below.

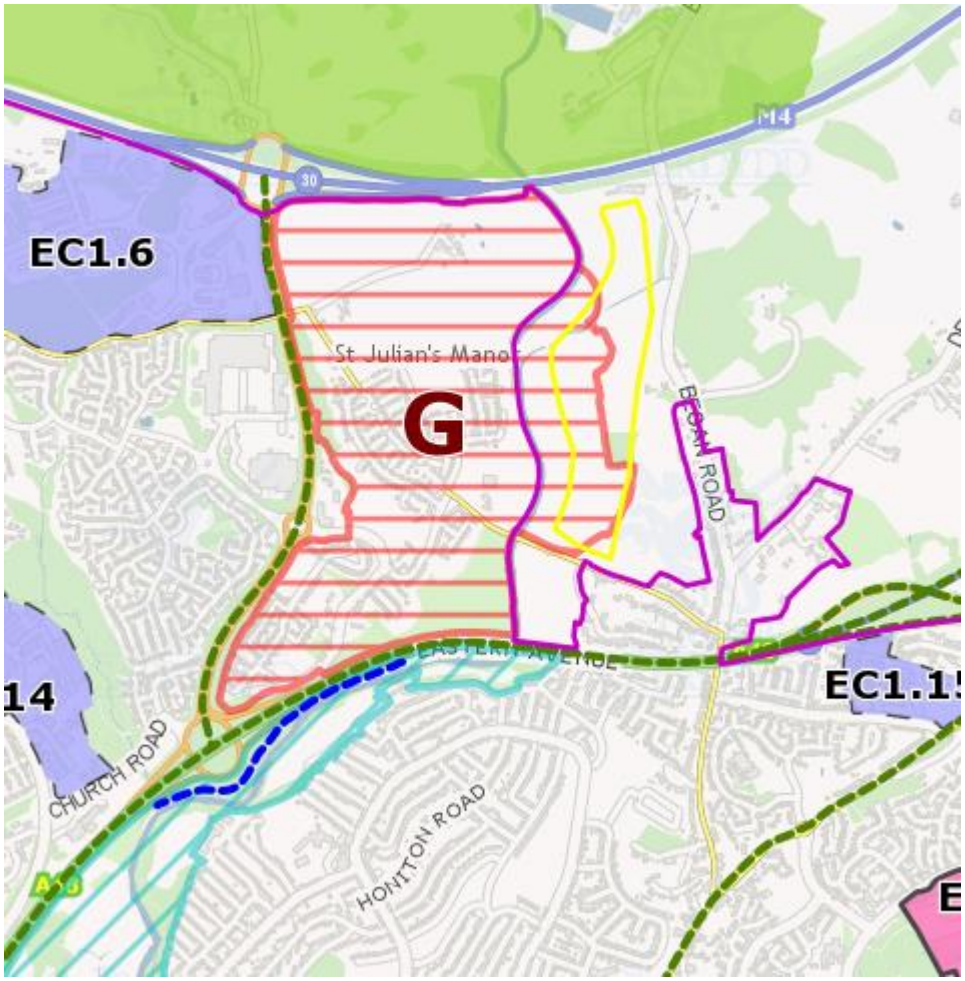
16.3 The cumulative impact in respect of highways, ecology and landscape and visual impact are considered to be the key considerations in relation to the wider Strategic Site 'G'.

Other Development Schemes

16.4 The key and most relevant 'other development' sites which the site will impact is the adjacent wider site allocation 'G'. The total allocation for Strategic Site G is for circa. 1,300 new homes during the plan period, coupled with supporting services and facilities. The proposed site forms the final portion of Strategic Site 'G', with the other parts of the allocation. The positioning of the wider allocation relative to the application site is depicted in the following extract from the Proposals Map to the LDP.

16.5 The following applications for residential schemes have been approved as part of the allocation:

- Land at Church Road, Llanedeyrn Village (Ref. 10/01681/DCO) and subsequent reserved matters consent (Ref. 16/01325/MJR);
- Land at Highfields, Church Road (Ref. 18/00397/MJR); and
- Land on the south side of, Bridge Road (known as Highfields) (18/01654/MNR).



LDP Proposals Map

16.6 Moreover, the wider site known as St Edeyrn's Village benefits from outline consent (Ref. 13/00578/DCO) and has a number of further Reserved Matters applications which have been submitted and approved:

- St Edeyrn's Village Phase 1 (Ref. 14/02556/MJR);
- St Edeyrn's Village Phase 2 (Ref. 17/00488/MJR and 19/01733/MJR);
- St Edeyrn's Village Phase 3 (Ref. 17/01787/MJR);
- St Edeyrn's Village Phase 5 (Ref. 19/03238/MJR);

16.7 St Edeyrn's Village Phase 6 (Ref. 19/03205/MJR) is not yet determined.

16.8 The build out of the wider site is well-underway, with a large part already occupied. As a result, it is deemed that St Ederyn's Village is the key development to consider in terms of this site's impact - given its proximity to the site.

Transportation

16.9 Highways Impacts resulting from the development of the site have been assessed in Chapter 8 of the ES and are supported by the findings in **Appendix 8.1** within the Transport Assessment for the scheme.

16.10 The site is located within an existing area of high development where construction traffic will continue until the completion of LDP Strategic Site 'G'. The site is located just off the A4232 and less than 2km from the M4 trunk road, which both already cater for high volumes of heavy vehicles. The impact of construction traffic will be managed via a Construction Management Plan (CMP), to be secured by a planning condition. As such, the CMP will be able to regulate construction traffic and therefore the impact on receptors (i.e. those affected by such traffic) to an acceptable level.

16.11 As part of the development proposal, sustainable modes of travel amongst prospective residents and visitors will be maximised from the outset. In order to do so, measures such as a Travel Plan, appropriate pedestrian routes, cycleways and access to public transport are being proposed.

16.12 The cumulative impacts of background traffic growth, the wider LDP Strategic Site G and indeed housing and job growth within the region has been considered as part of the 2021 and 2026 assessment scenarios.

Ecology

16.13 The ecological impacts associated with the site have been assessed in Chapter 9 of the ES and are supported by the findings in **Appendix 9.1** within the Ecological Baseline Report for the scheme.

16.14 In respect of the proximity of St Julian's Forge Fields SINC to the site combined with a net increase in residential units, there is the potential for cumulative impacts by way of an increase in recreational pressure and subsequent damage/degradation of the SINC. In response, potential recreational impacts will be mitigated through the provision of footpaths, cycle links and areas of formal and informal open space within the Site with areas of green open space to be delivered across adjacent development.

16.15 Moreover, given the proximity of the Site to other developments within the immediate area, the hedgerow resource provides some level of connectivity between sites and across the landscape. Inherent within each scheme, however, is the retention/proposed retention of the onsite hedgerow resource combined with delivery of a landscape strategy intended to enhance biodiversity and local green infrastructure resource.

16.16 In terms of dormice, favourable conservation status in the long term, combined with the implementation of a landscape scheme which seeks to compensate for habitat loss through new planting and enhancement of the retained hedgerow resource, will ensure cumulative impacts arising remain negligible.

16.17 The masterplan provides for the retention and enhancement of semi-natural habitats to be delivered for amenity and wildlife with pedestrian links and natural play areas. Of the development proposals considered within a cumulative assessment, although each will deliver additional residential housing, extensive areas of open space are proposed alongside the provision of new community facilities, play areas and footpath links, providing alternative recreational facilities for new residents.

16.18 Subject to the implementation of a sensitive landscape scheme combined with the implementation of a sensitive lighting scheme, foraging opportunities and habitat connectivity for bats will be maintained onsite such that cumulative impacts in respect of bats are considered negligible.

16.19 As a result, there are no significant residual effects predicted from the development. Any possible cumulative effects are considered unlikely to arise in combination with the developments already undertaken around the site within the wider allocation.

Landscape and Visual Impact

16.20 The landscape and visual impacts associated with the site have been assessed in Chapter 10 of the ES.

16.21 In terms of the cumulative impact of the site in landscape and visibility terms, the site sits amid major construction projects, with recently completed housing to the south, housing construction work to the east, site preparation work for housing construction to the north, and housing nearing completion of construction to the west. There is existing housing, all detached properties set on curtilages with mature vegetation, to the north-east, north-west and south-west of the site. Bridge Road (B4562) abuts the western site boundary, while the driveway to St Julian's Manor, which is also a public footpath, abuts the northern site boundary.

16.22 Due to a combination of the screening effect of the site boundary vegetation and the context of the setting of the site within new development on all sides, all other effects identified are either negligible or none. Therefore, landscape and visual impacts are considered to be insignificant in both the construction period and in the long term.

Other Impacts

16.23 The ES covers a wide range of other impacts in order to identify and assess other possible impacts. These include:

- Ground conditions;
- Drainage;
- Heritage; and
- Agricultural land and soil resource.

16.24 Given that the assessment and outcome of these impacts was 'negligible', these have not been considered fully within this chapter. These are however, fully covered in the relevant chapters of the ES.

Conclusion

16.25 The potential for effects of the proposed development to combine with the effects from other proposed development projects and lead to significant impacts has been assessed. The potential cumulative effects of the proposed development when assessed in combination with Strategic Site 'G' indicate that, based on the information currently available and subject to successful mitigation measures, there will be no significant adverse cumulative impacts.

CHAPTER 17
Summary and Conclusions

Introduction

17.1 This chapter draws the ES to a conclusion. It provides a brief overview of the main mitigation measures identified within chapters 8 - 15 and the provides a summary of residual effects that have been identified in respect of each environmental topic.

Mitigation Measures

17.2 The proposed mitigation measures include those that have been incorporated within the scheme as it has been designed, and those that have been specifically identified in order to overcome a potentially adverse effect.

17.3 Those mitigation measures that have either been 'designed in' to the scheme, or can be incorporated as part of the detailed design stage, are known as 'inherent mitigation'. These measures have been identified where relevant within the ES, as they are intended to reduce or minimise the likelihood of an adverse environmental effect occurring.

17.4 Examples of proposed mitigation within the scheme are as follows:

Transportation Impacts

17.5 In order to mitigate any impacts from construction traffic, a Construction Management Plan (CMP) will be provided. This will likely be included within the CEMP.

17.6 Moreover, a Travel Plan will be prepared to mitigate against any possible impacts from the development in respect of transportation. This will include details on public transport with a contribution towards resident bus passes along with a focus on the internal site layout to encourage cycling provision (including cycle parking) and pedestrian safety (i.e. tactile paving and dropped kerbs).

Ecology

17.7 The following mitigation and compensation measures are proposed in order to reduce any potential ecological effects to insignificant levels:

- Ecological Construction Method Statement (ECMS) and Detailed Landscape Scheme; and
- Landscape and Ecology Management Plan (LEMP) and European Protected Species Mitigation Strategies (Including Derogation Licensing).

Landscape and Visual Impacts

17.8 The proposed screening effect of the site boundary vegetation will mitigate any impacts as part of the development. A Green Infrastructure Plan also submitted will ensure that all landscaping proposed can be conditioned as part of the permission.

Ground Condition Impacts

17.9 An Environmental Management Plan (EMP) will be prepared for the construction phase and followed at all times throughout the contract. The following measures will also be considered:

- A watching brief should be maintained during construction works and where contamination is identified or suspected, appropriate sampling, analysis and risk assessment should be undertaken and suitable measures put in place to prevent the creation of pollutant linkages;
- Construction activities may mobilise contaminants in the soil, which would be potentially harmful to the workforce. Risk assessments should be conducted to restrict exposure to potentially harmful substances to a safe level and CDM practices should be applied;
- Any encountered contaminated made ground should be re-used on site in areas beneath hard standings or capped beneath a suitable thickness (typically 600mm) of clean subsoil and topsoil in all garden and landscape areas;
- Dust suppression measures can be implemented at the site to prevent against excessive dust generation, for example impermeable covers spread over mounds of bare oil and wetting of bare soil during dry conditions. Implementation of these simple measures can reduce the impacts to construction workers and adjacent site users from potentially contaminated dusts;
- All vehicles leaving the site should go through a wheel wash to prevent spreading of detritus onto off-site roads. Furthermore, vehicles carrying soils off-site should only be loaded up to appropriate levels and be covered to prevent conditioned sediments dropping onto roads;
- Any potential ground gas at the site may be mitigated by incorporating gas protection measures into building designs;
- Any potential effects of ground contamination on building materials should be identified and taken into consideration at the building design stage, for example, the foundations of the buildings should be designed in accordance with BRE guidance Special Digest 1: 2005 'Concrete in Aggressive Ground';
- Water pipes placed at the site should be constructed from a suitable material to resist hydrocarbon attack from contaminants which may be present in the ground, if such contaminated ground is found to be present after completion of the site investigation works, in accordance with recommended guidance;
- All surface water and process water should be treated, for example, through the use of oil interceptors, lined sumps etc. before being discharged to the ground or surface.

Drainage

17.10 In order to ensure that any impacts on drainage are mitigated, the proposed drainage works and overall strategy for sustainable drainage on the site will be approved by the Cardiff City Council Sustainable Drainage Approval Body (SAB). This SAB approval, when attained incorporates a legal agreement between the developer and CCC to ensure that works are completed in accordance with the approved final design.

17.11 Whilst it may be subject to change, the current Drainage Strategy includes detention basins and road-side rain-gardens to form linear green infrastructure routes through the site.

Heritage Impacts

17.12 A geophysical survey is recommended to be undertaken, in order to identify the below ground archaeological remains to the north and south of Site. The results of this survey will then be used to inform the need for further mitigation in the form of e.g. sensitive design to minimise impact, trial trench evaluation, a watching brief, or strip, map and record.

17.13 Any potential impact on setting will be partly mitigated through sensitive design or screening to minimise the impact on the immediate setting of St. Julian's Farmhouse and the wider setting of Bridge Farmhouse and Cefn Mably Park and Garden. The possible medieval hollow way to the north of Site will be retained and a watching brief implemented on any areas to be removed. Hedgerows will also be retained where practicable to provide screening and to preserve the ability to 'read' the landscape, especially those to the north of Site which could be contemporary with St, Julian's Farmhouse.

Noise

17.14 All habitable rooms, at first floor level on specified façades will be fitted with acoustic glazing with mechanical ventilation, to give residents the option to close windows while maintaining airflow levels. For remaining facades, standard thermal double glazing/trickle vents will be fitted. All habitable rooms on critical facades will also require a ventilation strategy.

17.15 In relation to construction noise, a Construction Environmental Management Plan (CEMP) will be prepared and will include the following information:

- An organisational structure setting out staff responsible for controlling environmental impact, including their respective roles,/responsibilities and identifying the nominated environmental manager.
- Environmental Audit programme eg. ISO 14001
- Environmental Risk register including procedures for controlling said risks.
- Environmental Training of Staff.
- Procedures for internal communication of Environmental matters to site including monitoring, recording and dissemination.
- Procedures for handling external communications and complaints including a clear audit trail.
- Procedures for addressing non-compliance.
- Procedures for dealing with major incidents, unexpected occurrences, or finds, especially that affect noise or vibration.

Soil Resource Impacts

17.1 The adoption of a Soil Management Plan which will detail:

- Depth and method of topsoil stripping and stockpiling;
- Identification of landscaping topsoil requirements and assessment of suitability and availability of on-site resources; and
- Means of subsoil protection from compaction damage and remedial measures to remove damage.

Residual Impacts

17.2 Subject to the implementation of mitigation measures, it should be possible to deliver the development in accordance with the residual effects outlined within the latter stages of each topic chapter within the ES (chapters 8 - 15). Residual effects are those that are likely to occur when the scheme is implemented, assuming that the proposed mitigation measures, as identified within each chapter, are undertaken.

17.3 On balance, the residual impacts identified as a result of the proposed development have been minimised, by a combination of scheme location, scheme design (including inherent mitigation), and the proposed additional mitigation measures. The residual impacts are summarised in the paragraphs below.

Conclusion

17.4 The above paragraphs demonstrate that careful consideration has been given, throughout the scheme design, to minimising potential effects upon the surrounding environment and sensitive receptors in particular.

17.5 In every technical aspect, any potential adverse impacts are capable of being minimised, where necessary though mitigation, such that residual effects are assessed as insignificant / negligible.

17.6 Furthermore, the scheme will also have several beneficial impacts, as detailed within the additional documents submitted with this planning application. The design of the proposed scheme has been carefully considered and has responded to the context of the site, in its layout, scale, design and use of materials. The scheme has responded to, and fulfils, the objectives of the forthcoming LDP, and the implementation of the proposals will allow for much needed housing in the area.

17.7 For these reasons, this ES concludes that the measured environmental consequences of the proposed development support a grant of outline planning permission.