Chapter 4

Approach to Environmental Impact Assessment

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4. Approach to Environmental Impact Assessment

4.1 Introduction

4.1.1 The purpose of this chapter is to provide a more detailed description of the EIA process, as well as outlining the methodology and relevant guidance used to undertake the preliminary EIA and the structure of the remainder of this PEIR.

4.2 EIA Regulations

4.2.1 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (the 'EIA Regulations') require an EIA to be carried out in respect of any development listed in Schedule 1 to the EIA Regulations ('Schedule 1 development'). The Project is a Schedule 1 development as it is a thermal generating station with a heat output[1] of 300 MW or more as listed in Schedule 1, paragraph 2(1) of the EIA Regulations.

4.2.2 The Project falls under the EIA Regulations and not the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (EIA Regulations 2017). This is because a scoping opinion was requested from the Secretary of State under the EIA Regulations before the commencement of the EIA Regulations 2017. This means that, in accordance with the transitional arrangements at Regulation 37 of the EIA Regulations 2017, the EIA Regulations will continue to apply to the Project.

a) Compliance with EIA Regulations

4.2.3 The information to be included in an ES is set out in Schedule 4 of the EIA Regulations. Part 1 of the Schedule details the information that the applicant can reasonably be required to provide, whilst Part 2 identifies the information that the applicant must provide. This information is highlighted in Table 4-1 below, which also provides confirmation of where the information is provided within this PEIR.

Table 4-1: Compliance with EIA Regulations

Required Content of Environmental Statements	Relevant Chapter of this ES
Part 1	
1. Description of the development, including in particular (a) a description of the physical characteristics of the whole development and the land-use requirements during the construction and operational phases;	Chapter 3: Project Site and Description
(b) a description of the main characteristics of the production processes, for instance, nature and quantity of the materials used;	Chapter 3: Project Site and Description
(c) an estimate, by type and quantity, of expected residues and emissions (water, air and soil pollution, noise, vibration, light,	Detail provided in Technical Chapters 6 –

[1] Thermal output is commonly defined as the amount of 'useable heat' which is produced as part of the process of the combustion of fuel. Only a part of this useable heat can be converted to electrical energy, which is why this is a larger value than electrical output.

Required Content of Environmental Statements	Relevant Chapter of this ES
heat, radiation, etc.) resulting from the operation of the proposed development.	15
2. An outline of the main alternatives studied by the applicant and an indication of the main reasons for the applicant's choice, taking into account the environmental effects.	Chapter 5: Alternatives Considered.
3. A description of the aspects of the environment likely to be significantly affected by the development, including, in particular, population, fauna, flora, soil, water, air, climatic factors, material assets, including the architectural and archaeological heritage, landscape and the inter-relationship between the above factors.	Detail provided in the Technical Chapters 6 – 15
4. A description of the likely significant effects of the development on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the development, resulting from: (a) the existence of the development; (b) the use of natural resources; (c) the emission of pollutants, the creation of nuisances and the elimination of waste, and the description by the applicant of the forecasting methods used to assess the effects on the environment.	Detail provided in Technical Chapters 6 – 15
5. A description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment.	Detail provided in Chapter 3, Technical Chapters 6 – 15 and Chapter 16 (including Mitigation Schedule – Appendix 3.1)
6. A non-technical summary of the information provided under Paragraphs 1 to 5 of this Part.	Separate Non-Technical Summary Report
7. An indication of any difficulties (technical deficiencies or lack of know-how) encountered by the applicant in compiling the required information.	Detail provided in Chapter 4 and Technical Chapters 6 – 15 and Mitigation Schedule (Appendix 3.1)
Part 2	
1. A description of the development comprising information on the site, design and size of the development.	Chapter 3: Project and Site Description
2. A description of the measures envisaged in order to avoid, reduce and, if possible, remedy significant adverse effects	Mitigation detailed in Chapter 3, Technical Chapters 6 – 15 and Chapter 16
3. The data required to identify and assess the main effects which	Baseline data provided in Technical Chapters 6

Required Content of Environmental Statements	Relevant Chapter of this ES
the development is likely to have on the environment.	– 15
4. An outline of the main alternatives studied by the applicant and an indication of the main reasons for the applicant's choice, taking into account the environmental effects.	Chapter 5: Alternatives Considered
5. A non-technical summary of the information provided under paragraphs 1 to 4 of this Part.	Separate Non-Technical Summary Report

4.3 Environmental Impact Assessment

4.3.1 EIA is the process of identifying, evaluating and, where possible, mitigating the likely significant environmental effects of a proposed development. It promotes the early identification and evaluation of the potentially significant environmental effects of a proposed development and enables appropriate mitigation (that is measures to avoid, reduce or offset significant adverse effects) to be identified and incorporated into the design of a development, or commitments to be made to environmentally sensitive construction methods and practices.

4.3.2 The results of the EIA also ensure that decision makers such as the SoS and statutory consultees such as planning authorities, in this case CCS, as well as other interested parties, including local communities, are aware of a Project's environmental effects. These are then taken into account by the decision-maker prior to determination of an application for planning approval.

4.3.3 The main steps outlined in the PA 2008 and the EIA Regulations are as follows:

- Production of a Scoping Report to identify the likely significant effects (scoped in) and the proposed methodology for their assessment in line with relevant legislation, guidance and methods, and justification for any significant effects that are not likely (scoped out). The Scoping Report will also seek agreement of study areas, data sources, survey methodologies and terminology;
- Baseline surveys are undertaken to identify and describe the environmental character of the area that could potentially be affected by the Project. Where baseline data indicates major constraints to the Project, this information is to be provided to the design team immediately;
- Relevant natural and manmade processes that may change the character of the site are identified;
- Consideration is then given to the possible interactions between the Development and both existing and future site conditions. These interactions or impacts are assessed using set criteria based on accepted guidance and good practice;
- Using the initial designs of the Project, the likely significant environmental effects, both direct and indirect, can be established;
- Production of a Preliminary Environmental Information report for consultation purposes;

- Recommendations are made to avoid, minimise or mitigate adverse effects and enhance positive effects. Alterations to the design will then be reassessed and the significance of likely residual environmental impacts ascertained; and
- Following statutory consultation, the results of the EIA in combination with the responses to the Scoping Opinion will be set out in an ES that will accompany the proposed DCO Application.

4.3.4 This PEIR summarises the environmental impact assessment undertaken to date and has sought to address comments that were raised by consultees and stakeholders during statutory consultation carried out under s42 and s47 of the PA 2008. These comments are addressed within each individual technical chapter as necessary.

a) Scoping

4.3.5 Scoping involves focusing the EIA on those issues of greatest potential significance. It is an important tool for identifying the likely significant environmental effects of a project through its design, construction and operation and decommissioning phases and ensures that appropriate mitigation options are considered, where necessary.

4.3.6 APL requested a Scoping Opinion from the SoS in July 2014. The request was supported by a Scoping Report that described the anticipated likely significant environmental issues requiring detailed evaluation as part of the EIA process. The formal Scoping Opinion was received in August 2014. It has allowed for agreement on the potential likely significant environmental effects of the Project and, therefore, the aspects of the environment on which the EIA should focus.

4.3.7 The Scoping Report and Opinion can be found on the Planning Inspectorate's website[2] and APL's website[3] as well as at Appendix 4.1 and 4.2. APL's responses to the matters raised in the Scoping Opinion and later consultation and engagement are set out in Appendix 4.3.

4.3.8 Further consultation with those organisations that commented on the Scoping Report, as well as the Community Councils, was also carried out between August 2014 and January 2015 including:

- Natural Resources Wales (NRW);
- South and West Wales Wildlife Trust (SWWWT);
- Abertawe Bro Morgannwy;
- Civil Aviation Authority (CAA);
- Ministry of Defence (MoD);
- Cadw;
- Brecon Beacons National Park Authority;
- City and County of Swansea Council (CCS);
- Network Rail; and

[2] https://infrastructure.planninginspectorate.gov.uk/
[3] http://www.abergellipower.co.uk

- The Coal Authority.

4.3.9 Regular meetings were held with CCS to discuss the progress of the application for development consent and to consult with the different departments within CCS including Environmental Health and ecology.

4.3.10 The consultation process has led to the general agreement with all organisations that the preliminary EIA reported on in this PEIR will consider the following environmental topics:

- Air Quality;
- Noise;
- Ecology;
- Landscape;
- Water Quality and Resources;
- Geology and Hydrogeology;
- Traffic, Transport and Access;
- Archaeology and Cultural Heritage; and
- Socio-economics.

4.3.11 **Chapter 15: Other Effects** has also been included in the PEIR and covers issues which are not covered within the standard topic chapters but which have emerged, through the consultation process, as matters that need to be addressed.

4.3.12 Table 4-2 discusses the items that have been scoped out of the assessment, but fall under the above topic areas.

Table 4-2: Items Scoped out of the EIA

Topic / Scope	Justification
Transboundary Effects	Due to the design, proposed mitigation and implementation of best practice measures, it is considered that there will be no significant transboundary effects caused by the Project that will affect any other European Economic Area State. A Transboundary Screening assessment has been undertaken by the SoS which confirms this approach.
Air Quality [Electrical or Gas Connections]	No impacts on local air quality are anticipated from the operation of the Electrical or Gas Connections and therefore this has not been assessed. The SoS agreed with this approach in the Scoping Opinion (paragraph 3.8, Appendix 4.3).
Vibration	The identified plant/equipment items to be used are not recognised as sources of high levels of vibration and therefore operation and decommissioning vibration has not been assessed. The SoS did not disagree with this approach in the Scoping Opinion (Appendix 4.3).
Noise [Electrical or Gas Connections]	The Gas and Electrical Connections will be buried underground and therefore it is not anticipated that they will generate any noise or vibration during operation. Therefore, these elements have not been assessed. The SoS partly agreed with this approach in the Scoping

Topic / Scope	Justification
	Opinion (paragraph 3.8, Appendix 4.2) but requested further justification of the approach. Further justification is set out in **Chapter 7: Noise and Vibration**.
Landscape [Gower AONB]	The Gower AONB is physically remote from the Project Site, being 10 km away and visually separated from the Project Site by intervening topography, and views are diminished by distance. It has therefore been scoped out of the assessment due to the physical and visual separation and this is shown on Figure 11.8.
Landscape [Brecon Beacons National Park]	The Brecon Beacons National Park lies over 15 km to the north of the Project Site and, due to the intervening distance, is both physically and visually separate. Both protected landscapes have been scoped out of the assessment due to the physical and visual separation. This approach has been agreed with the Brecon Beacons National Park Authority at the request of the SoS (paragraph 3.66, Appendix 4.3).
Water Quality and Resources [Electrical or Gas Connections]	Effects on water quality and resources during operation and decommissioning of the Gas and Electrical Connections are unlikely to occur and have been scoped out of the chapter (**Chapter 9: Water Quality and Resources**). Ground levels along the route corridor of the Gas and Electrical Connections will be very similar to existing levels and any ongoing maintenance will be negligible, as described in Section 3.9. The impacts during the operation phase are therefore considered to be limited to the presence of the trench if it has different hydraulic properties to the surrounding natural ground. This can be mitigated through careful selection and placing of bedding and backfill material to try and match the natural ground as far as possible. Transport of pollutants associated with previous land uses is addressed in **Chapter 10: Geology, Ground Conditions, and Hydrogeology**.
Water Quality and Resources [AGI]	The AGI will have a small footprint and the design will include appropriate SuDS measures for control and treatment of surface water runoff in accordance with the drainage strategy for the Project Site. There will be no effluent discharges for the Gas Connection. The Gas Connection lies north of the Generating Equipment Site where flood risks are low, and will be mitigated through raised ground levels where necessary. No comments were received at Scoping stage therefore this has been scoped out of the assessment.
Carbon Capture Readiness	With a rated electrical output of less than 300MW, the Project will be below the threshold set out in Directive 2009/31/EC (as transposed by The Carbon Capture Readiness (Electricity Generating Stations) Regulations 2013) and NPS EN-1 and EN-2. Operators of combustion plants which are above this threshold are required to have assessed the feasibility of: a storage site, transport facilities and economic considerations of the capture of CO_2 produced as a result of the combustion process. As a result it is not necessary to assess the viability of CO_2 capture in this PEIR.

b) Preliminary Environmental Information Report

4.3.13 Under Regulation 10(b) of the EIA Regulations the applicant must consult on preliminary environmental information relating to the Project. In 2014, this information was compiled into a Preliminary Environmental Information Report (2014 PEIR) (Ref. 4.1), which provided the environment information collected part of the way through the EIA process as well as an assessment, on a preliminary basis, of the likely significant environmental effects of the Project.

4.3.14 The 2014 PEIR was compiled along with the 2014 PEIR NTS to accompany APL's statutory consultation with both the local community and prescribed consultees in advance of submitting its DCO Application.

4.3.15 Feedback received during the consultation process has helped further inform and refine the development of the design of the Project and the EIA process. More detailed analysis of this will be included within the Consultation Report to be submitted with the proposed DCO Application however a summary of a selection of the main themes is as follows:

- Site selection;
- Landscape;
- Transport and traffic;
- Socio-economics;
- Air quality and Noise; and
- Water.

4.3.16 This PEIR has evolved from the 2014 PEIR. This PEIR includes an updated preliminary environmental assessment and provides more information on how the Project has developed since the Phase 1 consultation in 2014.

4.3.17 In order to aid the reader, this PEIR highlights where the technical assessments have been updated, either as a result of the Project evolution and / or due to an update in environmental baseline information which has been collated since 2014. Within the Introduction section to each technical chapter, a short summary of any changes which have been undertaken has been included where necessary. Further detailed information on the design changes to the Project is included in **Chapter 5: Alternatives Considered**.

4.3.18 All chapters provide a technical conclusion to the impact assessment in this PEIR. However the following chapters provide a "Next Steps" section which identifies any further or outstanding works which will be undertaken between the publication of this PEIR and the DCO Application:

- Chapter 8: Ecology
- Chapter 11: Landscape & Visual;
- Chapter 12: Traffic, Transport and Access; and
- Chapter 13: Historic Environment.

4.4 Environmental Baseline

4.4.1 In undertaking an EIA for any project, it is important to identify the environmental baseline for the potential receptors which may be affected. This has allowed the effects of the Project to be compared and/or combined with the existing baseline in order to ensure an informed assessment of the potential effects of the Project and to allow the identification of the most appropriate mitigation which could be employed to minimise any identified likely significant adverse effects.

4.4.2 To establish the baseline, a study area that is appropriate for each assessment topic is identified which takes into consideration the surrounding context and the likely scale and range of potential significant effects. Next, a range of environmental data has been gathered from a combination of sources in respect of the study area in order to inform the preliminary assessment. This has included:

- Documentary information on the Project Site, Gas Connection and Electrical Connection, and their surroundings within each relevant study area, including information available from the previous EIA work for other projects;
- Field survey information, including: Phase 2 ecological surveys; landscape character assessments; background noise levels; ground conditions/contaminated land assessments, location of sensitive receptors and traffic levels on the road network; and
- Data held by both statutory and non-statutory consultees.

4.4.3 It is anticipated that the construction of the Project will commence in early 2020. The assessment has therefore used a '2020 baseline' to provide a future baseline against which the assessment is undertaken. As such a number of developments are considered in the assessment of effects, where those already have planning permission and are expected to be constructed in the next three years. Cumulative Projects have been agreed with CCS and are listed in Table 4-6.

4.5 Realistic Worst Case Scenario for Assessment

4.5.1 In accordance with PINS Advice Note 9 (Rochdale Envelope) (Ref. 4.2), the assessments presented in the PEIR are based on an assessment of the realistic 'worst case' scenario arising from the Project parameters described in Table 3-3. This allows flexibility for APL whilst ensuring that the likely significant environmental effects are identified and adequately assessed. The realistic worst case scenario is set out in each topic chapter for clarity and transparency.

4.5.2 Taking the above into consideration, it has been determined that for all topic areas to be addressed in the EIA except air quality, the highest stack height (45 m) represents the 'worst case'. For air quality the minimum stack heights of 35 m represent the 'worst case' due to lower dispersion. The PEIR contains an explanation in each chapter of why the scenario assessed represents the worst case for that topic.

4.5.3 For the assessment, it has been assumed that the Generating Equipment will operate for a worst case of 2,250 hours per year in the noise and air quality assessments, although actually running for 1,500 hours over an average of 5 years In the noise assessment, it is assumed that the Generating Equipment will operate at night to represent the worst case scenario. Where there is the possibility that intermittent operation could give rise to more significant effects than continuous operation (for example start-up noise) this has been considered in the noise and air quality assessments, as well as disturbance to ecological receptors in the ecological assessment. This issue is not relevant to any other topic chapters.

4.6 Assessment Methodology

4.6.1 Methodologies for each subject area are presented within each of the technical chapters. These methodologies are based upon recognised good practice and guidelines specific to each subject area, and take into account any consultation responses relating to the methods used in the 2014 PEIR, the SoS Scoping Opinion and any additional requirements that have been identified in connection with the Project.

a) Assessment of Effects

4.6.2 The approach is broadly the same for all specialist topic areas with some variation in the descriptions of assessment criteria. For each topic, the assessment of significance will be informed by the sensitivity of the existing or baseline environmental conditions or character, and the magnitude of the change to the existing conditions or baseline character which occur as a result.

4.6.3 The determination of the significance of the likely environmental effects arising from development is a key stage in the EIA process. To assess the overall significance of an effect it is necessary to establish the magnitude of the effect occurring (i.e. the change to the existing baseline conditions as a result of the Project) and the sensitivity or importance of the receiving environment or receptor. Assessment of significance for environmental topics will combine professional judgement with the consideration of a number of factors including:

- The probability of the effect occurring based on the scale of certain, likely or unlikely;
- The sensitivity and value of the resource or receptor under consideration;
- The magnitude of the impact in relation to the degree of change which occurs as result (which includes the duration of the effect – short medium or long term);
- Reversibility of the effect;
- Comparison with legal requirements, policies and standards; and
- Comparison with applicable environmental thresholds.

4.6.4 The value of the receptors is assessed according to the relative importance of existing environmental features on or near to the site, or by the sensitivity of receptors i.e. whether they are likely to be robust enough to be unaffected by the

Project or alternatively are highly susceptible to the type of effects likely to occur. Criteria for the determination of sensitivity or value of receptors are established based on approved guidance, legislation, statutory designation and/or professional judgment.

i. Sensitivity or value of Receptors

4.6.5 Table 4-3 provides general definitions of the sensitivity criteria used within the assessment. In each specialist chapter of the PEIR, criteria will be explained with reference to that particular discipline.

Table 4-3: Generic Guidelines for the assessment of value/ sensitivity

Value/ sensitivity	Guidelines
Very High	The receptor has little or no ability to absorb change without fundamentally altering its present character, is of very high environmental value, or of international importance.
High	The receptor has low ability to absorb change without fundamentally altering its present character, is of high environmental value, or of national importance.
Medium	The receptor has moderate capacity to absorb change without significantly altering its present character, has some environmental value, or is of regional importance.
Low	The receptor is tolerant of change without detriment to its character, is low environmental value, or local importance.
Negligible	The receptor is resistant to change and is of little environmental value.

ii. Magnitude of Effect

4.6.6 The magnitude of potential effects on environmental baseline conditions is identified through consideration of the Project taking into account the scale or degree of change from the existing situation as a result of the effect; and the duration and reversibility of the effect, as well as consideration of relevant legislative or policy standards or guidelines.

4.6.7 Table 4-4 provides general definitions of effect magnitude criteria. In each specialist chapter of the PEIR, effect magnitude criteria will be explained with reference to that particular discipline.

Table 4-4: Generic Guidelines for the assessment of magnitude

Magnitude	Guidelines
High	Total loss or major alteration to key elements/features of the baseline conditions such that post development character/composition of baseline conditions will be fundamentally changed.
Medium	Loss or alteration to one or more key elements/features of the baseline conditions such that post development character/composition of the baseline conditions will be materially changed.
Low	Minor shift away from baseline conditions. Changes arising from the alteration will be detectable but not material; the underlying character/composition of the baseline conditions will be similar to the pre-development situation.
Negligible	Very little change from baseline conditions. Change is barely distinguishable, approximating to a “no change” situation.

iii. Assessment of Significance of Effects

4.6.8 The approach to the assessment of significance is outlined in Table 4-5. A combination of the magnitude of the effect under consideration and the sensitivity of the receiving environment determines the significance of effect.

4.6.9 It should be noted that this general approach is a framework and should not be treated as a matrix. In each specialist chapter of the PEIR, significance of effects will be explained with reference to that particular discipline.

Table 4-5: Classification of effects

Magnitude	Value and sensitivity of receptor				
	Very High	High	Medium	Low	Negligible
High	Major	Major	Moderate	Moderate	Minor
Medium	Major	Moderate	Moderate	Minor	Negligible
Low	Moderate	Moderate	Minor	Negligible	Negligible
Negligible	Minor	Minor	Negligible	Negligible	Negligible

4.6.10 The significance of the effects arising from the Project will be reported using a seven-point scale, as follows:

- Major Adverse;
- Moderate Adverse;
- Minor Adverse;
- Negligible;
- Minor Beneficial;
- Moderate Beneficial; and
- Major Beneficial.

4.6.11 For some specialist topics, additional categories have been added where a greater level of definition is required.

4.6.12 Effects predicted to be Minor Adverse or Negligible are considered to be manageable and are therefore 'Not Significant'. Effects assessed as Moderate Adverse or Major Adverse are considered to be 'Significant'.

4.6.13 These classifications may differ between the specialist topic chapters, but where this occurs, the variation will be explained clearly and fully.

iv. Types of Effect

4.6.14 Potential effects have been separated into three types based on the different phases of development:

- **Construction Effects**: These are effects that begin and end during the construction phase of the Project. This covers the likes of the potential effects of construction traffic, noise and vibration from construction, dust generation, site runoff, mud on roads, risk of fuel/oil spillage, visual intrusion of machinery on site for example.
- **Operational Effects**: Operational effects are those long-term effects that would occur as a result of the Project such as the land take associated with permanent physical infrastructure as well as effects which occur as a result of its operation.
- **Decommissioning Effects**: Decommissioning effects are temporary, short term effects that will occur during the removal of the Project at the end of its 25 year operational life time.

b) Mitigation and Monitoring

4.6.15 Full consideration has been given to the potential mitigation measures which could be used to ensure that any potentially adverse significant environmental effects of the Project are minimised. In the hierarchy of mitigation, likely significant adverse effects should, in the first instance, be avoided altogether; where this is not possible such effects should then reduce and, finally, be off-set.

4.6.16 Two broad types of potential mitigation measures have been applied in this preliminary EIA and are described in the PEIR.

- **Embedded mitigation**: This includes modifications to the location or design of the Project made during the pre-application phase that are an inherent part of the Project, become a fundamental part of the design for which consent is sought, and do not require additional action to be taken (e.g. architectural treatment of proposed facilities to be in keeping with similar adjacent buildings in its external appearance; reduction in the height of a building to reduce visual impact; identifying a key habitat that should remain unaffected by the Project's layout and operation e.g. retaining a hedgerows as bat foraging routes;

developing a transport strategy that reduces trips, avoiding the need for junction improvements).

- **Additional mitigation**: This is often referred to as 'additional mitigation' and includes actions that will require further activity in order to achieve the anticipated outcome. These may be imposed as part of the planning consent or through inclusion in the PEIR topic chapters (e.g. describing certain lighting limits, which will be subject to the submission of a detailed lighting layout as a condition of approval; commitment to the implementation of an archaeological watching brief).

4.6.17 These measures are described in the **Chapter 3: Project and Site Description**, and a summary is provided in the topic chapters, where relevant to the topic.

4.7 Assumptions and Limitations

4.7.1 The following assumptions have been made in each of the topic chapters when assessing the Project.

a) Construction/ Decommissioning

- The total construction programme will be approximately 22 months, with a start date of early 2020.
- The Generating Equipment will be decommissioned and removed at the end of its operational life;
- The decommissioning phase will be around 22 months;
- The underground elements of the Gas and Electrical Connections will be capped and left in situ at the end of their operational life to avoid any adverse environmental effects associated with their removal;
- The design, construction and decommissioning phases of the Project will satisfy minimum environmental standards, consistent with contemporary legislation, practice and knowledge.

b) Operation

- To ensure decommissioning is assessed in principle, the operational life of the Power Generation Plant has been assumed to be 25 years;
- The Generating Equipment will operate intermittently for up to 2,250 hours per annum (1,500 running hours rolling average over 5 years). This could be at any time during the year, at any time of day and for any length of time up to but not exceeding 2,250 hours;
- The Generating Equipment will have a rated electrical output of up to 299 MW;
- Existing (2017) surrounding land uses will not change, with the exception of the developments to be cumulatively assessed with the Project, which have been identified below;
- Assessments are based on published sources of information and primary data collection;

- Assessments are based on the description of the Project as set out in **Chapter 3: Project and Site Description**; and
- Any future development of the Project Site will be determined through separate planning or application or application for development consent and has not been assessed as part of the assessment presented in this PEIR.

4.7.2 Each topic chapter sets out any specific additional limitations and assumptions relevant to that topic.

4.8 Cumulative and In-Combination Effects

4.8.1 Schedule 4, Part 1 (paragraph 20) of the EIA Regulations requires an ES to include '*…a description of the likely significant effects of the development on the environment, which should cover….cumulative effects*'.

4.8.2 Cumulative and in-combination effects on specific resources or receptors are described, where relevant, in each of the specialist chapters of this PEIR.

4.8.3 Cumulative effects may occur where, for example, landscape and visual resources, land use or ecological receptors are affected by other developments in addition to the Project i.e. two effects which are not significant could combine to result in a potential cumulative effect which is significant.

4.8.4 In consultation with CCS, it has been confirmed that there are 34 projects with the potential to cause cumulative effects. Discussions with CCS have been undertaken to determine the potential for any inter-project cumulative effects. Cumulative and in-combination effects have been defined and considered within this preliminary EIA and are assessed in **Chapter 17: Cumulative Effects**.

4.8.5 Developments which may need to be considered within the cumulative assessment (in accordance with paragraph 86 of DCLG guidance and PINS Advice Note 17 (AN17) (Version 1, December 2015) include those that are:

- In the process of being built;
- Permitted application(s) but not yet implemented;
- Submitted application(s) not yet determined;
- Projects on the National Infrastructure's programme of projects;
- Projects identified in the relevant development plan (and emerging development plants – with appropriate weight being given as they move closer to adoption) recognising that information on the relevant proposals will be limited; and
- Projects identified in other plans and programmes (as appropriate) which set the framework for future DCOs/approvals, where such development is reasonably likely to come forward.

4.8.6 Using this approach, the developments listed in Table 4-6 have been identified (see Figure 4.1), with a cut-off date of 14th November 2017, and have been agreed with CCS.

Table 4-6: Projects considered with the cumulative assessment

Planning Application		Name	Description
Under Construction			
1	2006/0773 (varied by 2009/1520 and 2011/1143) and consecutive temporary planning permissions 2007/2513, 2009/0062, 2009/1585, 2011/1311 and 2014/0913 (varied by 2016/1270)	Felindre Business Park	Strategic business park for B1 and B2 uses to accommodate emerging industries, high tech manufacturing, high level services, ancillary uses, associated car parking, landscaping and access roads (outline). The site has been laid out and is effectively a serviced site, however no buildings have been constructed. Park and ride schemes also operate on match days to the Liberty football stadium; and for car parking for the Driver and Vehicle Licensing Agency (DVLA) site in Longview Road, Morriston.
2	2013/0135	Abergelli Solar Farm	Installation of ground mounted array of solar panels, inverter substations and 2.4 m high fencing on land at Abergelli Farm. This development will be located adjacent to the Gas Connection.
3	2013/0865	Cefn Betingau Phase 1, Morriston	Construction of 9MW solar park consisting of installation of up to 135,000 photovoltaic panels and 9 inverter/transformer cabins and a single control building
4	2014/0739	Gelliwern Isaf solar park	6MWe solar park at Gelliwern Isaf Farm -installation of a solar PV array, construction of a storage room, invertor cabin, a substation, switchgear building and fencing
5	2014/1022	Brynwhilach Solar Park	Construction of 12.69MWe solar park consisting of installation of up to 47,000 photovoltaic panels and 8 inverter/transformer stations, 2 substations, storage container, new access tracks, security fencing/cctv and associated equipment and infrastructure work.

Planning Application		Name	Description
6	2007/1250 (varied by 2017/0325/S73)	Former J R Steelworks, Bryntywod	Retention of use of land as timber recycling centre including processing of wood, wooden materials, associated plant and machinery and previously tipped inert material together with on-site storage of wood chip material, construction of building for the dry storage of recycled wood waste and the creation of a 1m high clay bund around southern, western and northern boundaries of the site without complying with conditions 2, 3, 5, 9, 10, 11, 14 and 16 of planning permission 2007/1250 granted 11th December.
7	2012/1221	Mynydd y Gwair Wind Farm	Installation of 16 wind turbines (maximum height to blade tip of 127 m with a hub height of 80 metres), with a maximum generating capacity of 48MWe, associated tracks and ancillary infrastructure.
Permitted but not implemented			
8	2013/0795	Tyle Coch Mawr Wind Farm	Installation of four 5 kW wind turbines 20.7 m to tip and associated infrastructure.
9	2013/1835	Felindre Business Park	Construction of park and ride/share car park (approximately 480 spaces) with new vehicular access, security office, toilet, engineering and associated works, including lighting, fencing, drainage attenuation and landscaping.
10	2015/1529 (appeal ref 4369653)	Llettyr Morfil Farm	Construction of a 4.9 MW solar park (approx. 8.8 ha) including photovoltaic panels, four inverter stations, centre station, new access tracks, security fencing, security cameras and associated equipment and infrastructure works. Allowed on appeal in June 2016
11	2015/0308	Plot 8 Felindre Strategic Business Park	Two/three storey private hospital development with associated landscaping, site roads and car parking
12	2016/1522	Griffiths Waste Management Site, Bryntywod Llangyfelach Swansea SA5 7LP	Demolition of existing waste management facility buildings and construction of replacement buildings and associated infrastructure

Planning Application		Name	Description
13	2008/0912	Former Walters Yard Pontlliw Swansea	Construction of 67 dwellings with associated access, roads, parking, open space and demolition of existing buildings. Approved with S106 in March 2016.
Submitted but not determined			
14	2011/0345	Land at Llewellyn Road, Penllergaer	Construction of up to 200 residential units with associated access (outline).
15	2012/0721	Royal Fern Golf Resort	Application to vary Condition 8 of Outline Planning Permission 2008/0154 to extend the period for the submission of the reserved matters for a further three years in relation to the proposed development of 18 hole championship and 9 hole par 3 golf courses, golf club house including health facilities, sauna, swimming pool, gymnasium, golf school and academy, 80 golfing lodges, approximately 135 housing plots, green keepers flat, associated infrastructure, car parking and landscaping (outline).
16	2014/0977	Parc Ceirw, Cwmrhydyceirw Quarry, Swansea	Proposed cessation of landfill and other operations enabled by residential development of circa 300 dwellings, public open space and associated highway and ancillary works (outline)
17	2017/1822/OUT	Land West Of Llangyfelach Road Tirdeunaw	Outline planning application (with all matters reserved apart from strategic access junctions) for residential led mixed use development, to be developed in phases, including up to 1950 dwellings, link road, local centre provision of a primary school, community facilities, Public Open Space including facilities for children, and areas of landscaping (including sustainable drainage systems), outdoor sports provision including playing pitches, associated services, infrastructure and engineering works including new vehicular access, improvements to the existing highway network, new roads, footpaths / cycleways, and ancillary works.
18	2016/1478	Land North Of Garden Village Swansea	Hybrid planning application (with all matters reserved apart from strategic access) for residential-led mixed use development, to be developed in phases, including approximately 750 residential units; provision of 1 no. Primary school; circa 280m2 - 370m2 flexible A1-A3 / D1 floorspace; open space including

Planning Application		Name	Description
			parks; natural and semi natural green space; amenity green spaces; facilities for children and young people; outdoor sports provision including playing pitches; associated services, infrastructure and engineering works including new vehicular accesses, improvement works to the existing highway network, new roads, footpaths/cycleways; landscaping works (including sustainable drainage systems), ecological mitigation works and ancillary works. Submitted in July 2016 and currently pending determination. (The application would be referable to Welsh Ministers if the Council are minded to approve).
19	2017/0986/FUL	Former Civic Centre Penllergaer Swansea SA4 9GH	Construction of 80 no. residential units with associated access and landscaping
Identified / Allocated (and not referenced above)			
20	UDP Policy EC1(3)	Swansea Vale Strategic Mixed-Use Site	25 ha allocated employment land
21	UDP Policy EC1(10)	Land at Bryntywod, Felindre (Local Employment Site)	15.8 ha allocated employment land
22	UDP Policy EC1(12)	Penllergaer Business Park (Local Employment Site)	8.2 ha allocated employment land
23	UDP Policy HC13	West of Morriston Hospital	Hospital related activities
24	LDP Policy SD G	Northwest of M4 J46, Llangyfelach	Comprehensive mixed use development of up to 850 homes during the Plan period, incorporating a mix of low-medium and high density residential, a new district centre with commercial units, primary school, a mix of public realm, open space and play provision, new community buildings, and a strategic business park
25	LDP Policy SD A	South of Glanffrwd Road,	Comprehensive, residential led, development of up to 720 homes, incorporating a primary school, leisure and recreation facilities, public open space and

Planning Application		Name	Description
		Pontarddulais	appropriate community facilities, employment and commercial uses
26	LDP Policy SD C	South of A4240, Penllergaer	Comprehensive, residential led, mixed use development of up to 750 homes during the Plan period (and up to 1,000 homes beyond the Plan period), incorporating primary school, leisure and recreation facilities, public realm, public open space and appropriate community and commercial uses
27	LDP Policy SD E	North of Clasemont Road, Morriston	Comprehensive, residential led, mixed use development of up to 675 homes during the Plan period, incorporating primary school, leisure and recreation facilities, public realm, public open space and appropriate community and commercial uses
28	LDP Policy SI 4	Morriston Hospital	Land adjacent to Morrison Hospital is safeguarded solely for the future development and expansion of the Hospital. Development at this location is restricted to healthcare related uses in association with the beneficial use of Morriston Hospital. Proposals must be delivered alongside appropriate new and enhanced highway infrastructure that will significantly improve the existing substandard road access leading to the site. A new access road is proposed as part of this proposal (Strategic Transport Strategy Table 9.2) to resolve road capacity issues from the roundabout immediately north of M4 J46.
29	LDP Policies RP7 and RP8 , paragraph 2.14.28 (Preferred Locations)	Former Tip Site, Felindre	Preferred areas for new waste management facilities include the former Tip site at Felindre. The site at Felindre is identified specifically for the potential to accommodate a Combined Heat and Power (CHP) Facility which could provide heat or power for adjacent proposed developments.
30	LDP Policy H1.11	Land at Ramsey Road, Clydach	60 dwellings
31	LDP Policy H1.21	Land east of Pontarddulais Road, Gorseinon	90 dwellings

Planning Application		Name	Description
32	LDP Policy H1.26	Land at Carmel Road and Bryntirion Road, Pontlliw	100 dwellings
33	LDP Policy H1.30	Land north of Llewellyn Road, Penllergaer	50 dwellings
34	LDP Policy H1.31	Land at Bolgoed Road, Pontarddulais	50 dwellings

4.8.7 In addition, the Project is located within the Swansea Vale Development Area (UDP Policy EC1(3)) and this policy has also been considered for assessment of any significant cumulative effects. Swansea Vale is situated approximately 5 km from the Project Site and extends to some 190 ha south of a railway line and the M4. The assessment has also considered emerging LDP Proposals for settlements at the former tinplate works (also allocated for the Felindre Sustainable Urban Village) and Penllergaer, and the solar park at Lletty Morfil Farm (CCS Ref: MA0004).

4.8.8 The GIS building within the Substation will be extended at its eastern elevation (retaining the same height and width as the existing building) in order to facilitate the connection of the Project to the NETS. These works will be implemented by National Grid and are therefore not part of the DCO Application.

4.8.9 Approximately 300 m of 11 kV overhead line crosses the Generating Equipment Site from north west to south east at its western boundary. This section of line, owned by Western Power Distribution, will be diverted to avoid the Generating Equipment Site either above or below ground. This is not to be considered as part of the DCO Application, and will be assessment in the cumulative assessment.

4.8.10 Projects described in Table 4-6 have been considered in the cumulative assessment in each of the topic chapters where relevant.

4.8.11 Paragraph 87 of the DCLG guidance states '*It may not always be easy for applicants to assess potential impacts fully due to lack of available information. In such circumstances, applicants should take a pragmatic approach when determining what is reasonable and feasible. They should satisfy themselves that they have made all reasonable efforts to identify the main impacts and to include mitigation in the draft Order*.' The assessment of cumulative effects in each of the topic chapters has utilised information in relation to each of the above applications where publicly available.

4.8.12 See **Chapter 17: Cumulative Effects** for further detail and the assessment.

4.9 Residual Effects

4.9.1 Effects are concluded to be significant or not significant. In some chapters, guidance is used which specifies its own variation to this assessment matrix. This will be explained and justified as appropriate. Further detail is provided in each technical chapter.

4.9.2 Judgements of significance are made based on a combination of perceived value and sensitivity of the receptor and the magnitude of change, and will also include, where necessary, an element of professional judgement by each of the technical specialists. The final evaluation of significance considers the residual effects, assuming all mitigation measures are applied. The terminology for expressing significance has been outlined in Section 4.6. Where appropriate, any topic-specific deviation to this by guidance and best practice is described in the technical chapters.

4.10 Consultation and Engagement

a) Non-statutory Consultation

4.10.1 APL engaged with the local community and key stakeholders during an early phase of non-statutory consultation between June and September 2014, in advance of the commencement of the statutory consultation phase and at a point where the Project was still being actively refined. This was at the same time as seeking feedback from Statutory Consultees on the Scoping Report.

4.10.2 Local community representatives at the national, regional and local levels were consulted by APL and public exhibitions were held in Clydach, Felindre and Tircoed in June 2014. As part of this non- statutory phase of consultation, APL explained the rationale and key objectives of the Project, gave reasons why the Project Site had been chosen and presented opportunities for written and verbal feedback on the early, emerging project concepts.

4.10.3 Drawing on this early feedback on the proposals, APL was able to consider the consultation responses as part of the design development and environmental assessment processes. This phase of non-statutory consultation helped to shape the development of the Project. This process will be described in detail in the Consultation Report that will be submitted with the DCO Application.

b) Statutory Consultation

4.10.4 APL conducted a single phase of statutory consultation under s42, s47 and s48 of PA 2008 between 13th October 2014 and 16th November 2014. Published in September 2014, and agreed with CCS prior to publication, the Statement of Community Consultation (SoCC) Notice confirmed where and when the SoCC could be inspected by members of the public. Letters inviting comments on the Project, including the Preliminary Environmental Information, were sent to s42 consultees directly. Consultation notices were published in national and local newspapers under s48 of the PA 2008.

4.10.5 The statutory consultation phase also coincided with the publication of the 2014 PEIR. The 2014 PEIR provided the environmental information collected in the early stages of the EIA process as well as an assessment, on a preliminary basis, of the likely significant environmental effects of the Project. The 2014 PEIR, together with supporting information and a Non-Technical Summary (2014 PEIR NTS), was compiled to accompany APL's statutory consultation with both the local community and prescribed consultees in advance of submitting its DCO Application. The feedback received relating to the 2014 PEIR has further helped to inform and refine the EIA process as well as the design and development of the Project.

4.10.6 Since the 2014 PEIR there have been changes to the Project resulting from design progression, consultation and feasibility. The number of generation units, turbines, and stacks have been reduced. This is further described in **Chapter 5: Alternatives Considered**.

4.11 References

Ref. 4.1 Abergelli Power Ltd. Preliminary Environmental Report (September 2014).

Ref. 4.2 The Planning Inspectorate. Planning Advice Note Nine: Rochdale Envelope. (April 2012).