6 CONSIDERATION OF ALTERNATIVES

6.1 Introduction

6.1.1 Schedule 4 of the EIA Regulations states that an Environmental Statement (ES) should include:

"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".

6.2 'Do Nothing' Scenario

6.2.1 The first alternative considered is the 'do nothing' scenario. This scenario assumes the Proposed Development would not be built and considers how the Site would evolve without the Proposed Development in place. The Site is currently in agricultural use and without the Proposed Development it is considered likely that the Site would remain in its current state. This option would eliminate the potential for adverse environmental impacts arising from the Proposed Development.

6.2.2 The benefits of the Green Manufacturing Hub, and the need for this to be located at the Site due to its close proximity to Convatec's manufacturing facility, is clearly set out in Chapter 5 – Project Description. The project is vital to decarbonising Convatec's operations, helping to sustain its long-term economic viability, and will contribute towards Welsh renewable energy targets.

6.2.3 Development of the Site would result in improvements to the local area including benefits to the local economy and reduction of CO_2 emissions through the provision of renewable energy. It is considered that the 'do nothing' scenario is not a suitable option given the economic credentials of the Proposed Development and the scheme has been designed to avoid or minimise any potential adverse environmental impacts.

6.3 Alternative Site Locations

6.3.1 The EIA Regulations only require that an ES sets out the 'reasonable' alternatives which have been considered by the Applicant. As such, it would not be reasonable to consider other sites outside of the Applicant's control.

6.3.2 The surrounding area is affected by numerous landscape and ecological designations, as well as several existing and proposed renewable energy projects (predominantly wind turbines), which constrain the potential for further renewable energy development in these locations due to the risk of harmful cumulative visual impacts. Proximity to residential areas and individual properties is a key consideration in the site finding exercise, as harmful noise, shadow flicker and visual impacts could occur if turbines are not sited appropriately.

6.3.3 The Site is therefore considered to be the most suitable in terms of meeting key considerations of the brief and the most suitable in terms of sustainability and environmental impact.

6.4 Alternative Site Design

6.4.1 The Proposed Development has evolved as the result of an ongoing and iterative design process, in which various design alternatives have emerged and been considered. The design has been influenced by factors including environmental constraints identified through the EIA process; and feedback from stakeholders.

6.4.2 The original proposals have been amended and improved through various iterations to reflect information pertaining to Site constraints identified during the EIA process. As far as possible, potential significant adverse environmental impacts have been 'designed out' of the Proposed Development.

6.4.3 Key elements of the design evolution of the Proposed Development are summarised as:

- The three wind turbines were originally located further north within the Site, closer to the ridgeline.
- The western-most turbine (T1) was originally closer to the western site boundary.
- The solar array was also originally located further to the north, amongst the turbines, again closer to the ridgeline.
- The preferred turbine model has changed due to availability. Originally a slightly smaller candidate turbine was proposed but the manufacturer has withdrawn the model from the market. This has resulted in a slightly larger turbine model with a greater installed capacity becoming the primary candidate turbine.

- The turbines are now located further to the south, which reduces their landscape and visual impact.
- T1 has moved to the east to maintain topple distance from the overhead 33kV power cable just beyond the option area.
- The solar array is now located towards the southern boundary to avoid steep slopes, reducing its visibility.

6.4.4 Mitigation measures have been identified and incorporated into the proposals in order to avoid, remove or reduce any adverse environmental effects that cannot be adequately addressed through design. Further information on the specific mitigation measures proposed are set out within the relevant technical chapters of this ES.

6.4.5 The Proposed Development, described in Chapter 5 (Project Description), is considered to be the optimum design alternative.

6.5 Alternative Technologies

6.5.1 There are no alternative renewable technologies that would be suitable for the Site and the requirements of Convatec.

6.5.2 In order to reach the same installed capacity as the Proposed Development using a single technology, such as wind or solar, a far greater site area would be required. If the solar array was to be replaced by an additional wind turbine, the separation distances for safety purposes would result in an unfeasible amount of space required to facilitate this, as the local topography and presence of the residential area of Rhymney would prevent any additional turbines of this scale being located on the Site.

6.5.3 A solar array with an installed capacity of 20MW would be roughly 4x the size of the current 5MW solar array, which would occupy the entire redline boundary. Whilst this would result in fewer landscape and visual impacts, the site would effectively be limited to grazing between the arrays throughout the lifetime of the development. In addition, solar has a much lower capacity factor than wind, such that it would represent a less efficient use of land than the Proposed Development and the total quantum of energy generated over the course of a year would be less for the same installed capacity.

6.5.4 The combination of wind and solar technologies complement each other well, with good potential for the solar to be generating on sunny still days when there is

insufficient wind for the wind turbines, and the turbines likely to experience their greatest generation on windy winter days when the solar output will be lower.

6.6 Conclusion

6.6.1 The Proposed Development is the result of a comprehensive, iterative design process incorporating the views of key stakeholders, as well as environmental constraints.

6.6.2 It is concluded that the Proposed Development constitutes the most sustainable alternative for development to meet the needs and objectives of the area, whilst minimising adverse impacts on the environment.