Lessons Learnt Report 1

Lead organisation: Wave Swell Energy Ltd			
Project name: Wave Swell Energy – UniWave200 King Island Project			
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Lessons Learnt

Lesson Learnt 1 - Learn from the Past Experiences of Others

Category: Technical / Commercial

- This is not a lesson learned from this project but, rather, a lesson previously learned that has been confirmed and reinforced through the experience provided by this project so far.
- The reality is, WSE embarked on a comprehensive survey of the international wave energy community prior to commencing the King Island project.
- The purpose of this survey, which encompassed the gathering of knowledge and experience from variety of sources in industry, academia, and government, was to ensure WSE understood the common pitfalls that have befallen past wave energy projects, thereby allowing WSE to avoid similar issues.
- The exercise has been and continues to be invaluable, with the recommendations taken on board ensuring the same mistakes have not been made again.
- As an example of the type of advice received, the following was provided by the European Union's former Independent Adviser on Wave Energy, based in Oxford, UK:
    - Many devices originated from academia where the intellectual challenge and ingenuity were more important that the practical prospects, contributing to the failure of many devices at the prototype stage and resulting in negative perceptions by sources of potential funding.
    - Many of the technologies that were successful in getting research funding had poor technological and economic prospects, wasting the limited amounts of funding and contributing to a negative view about wave energy.
    - Key elements include:
        - Build on proven concepts (e.g. OWCs etc.), which have been successfully deployed at sea.
        - Build on *proven technologies* in the mechanical and electrical plant rather than completely new technologies.
        - Ensure enough R&D has been undertaken (in the words of Professor Salter – make all your mistakes in the lab, not at sea).
        - Have a clear path through from research to development to prototype deployment and the funds to cover this.
        - Thorough due diligence.
- With no major issues encountered so far, the evidence suggests this global survey of past wave energy project experience has served WSE well.

Lessons Learnt 2 - Optimising Interdisciplinary Relationships

Category: Technical

- Notwithstanding the points made above, WSE has, of course, learned some lessons from the King Island project so far.
- The main lesson directly learned from the project has been the need to engage strongly in coordinating the interdisciplinary relationships between the electrical and turbine experts.
- This became apparent when modelling the turbine in terms of how it interacted with the electrical system, and then applying these to the constraints imposed by Hydro Tasmania.
- While this is a broad lesson that has been learned, a specific aspect that has emerged from it is that, in hindsight, a higher inertia turbine is likely to have resulted in the need for less electrical control and, therefore, lower costs.
- An offshoot of this lesson has been that it is necessary to devote more attention, than one might initially think should be necessary, to making sure communication channels be- tween interdisciplinary suppliers are open and operating. Although somewhat frustrating, it is vital to ensure these project partners and suppliers are talking to each other, ultimately saving time.

Lessons Learnt 3 – Process Lessons

Category: Assorted

- Allow more time for third party due diligence to take place.
- Work closely with third parties to have a clear understanding of what is expected and therefore streamline the process.
- Allow more time for the regulatory processes to be finalised and permits to be issued. If possible, commence this process earlier in the project.