

Contents

EXECUTIVE SUMMARY	5
Report Structure	5
List of Abbreviations	6
CHAPTER 1: INTRODUCTION	7
CHAPTER 2: OVERVIEW OF THE TIDAL & WAVE ENERGY INDUSTRIES	8
2.1 Tidal Energy.....	8
2.1.1 Summary of Technologies.....	9
2.2 Wave Energy	12
2.2.1 Summary of Technologies.....	14
CHAPTER 3: CURRENT ISSUES IN THE WAVE & TIDAL ENERGY INDUSTRIES	19
3.1 Combining Technologies.....	19
3.2 Creating Arrays.....	21
3.3 Technological Challenges Facing the Industry	22
3.3.1 Biofouling	22
3.3.2 Stresses	23
3.3.3 Turbine Blades	24
3.3.4 Flow Phenomena	24
3.3.5 Certification.....	26
3.4 European Marine Energy Centre (EMEC) & Other Support	27
3.5 Niche Markets & Novel Uses	30
3.6 Summary of the Technology Outlook	30
CHAPTER 4: PROSPECTS OF THE SECTOR.....	32
4.1 Potential of the Resource	32
4.1.1 Tidal.....	33
4.1.2 Wave	36
4.1.3 Regional Difficulties	41
4.2 Road Map for Commercial Deployment	42
4.2.1 Grid Connection	42
4.2.2 Consent	44
4.2.3 Risk Management	44
4.2.4 Project Costs	46
4.3 Investment Outlook	50
4.3.1 Government Policy Relating to Wave & Tidal Energy.....	50
4.3.2 Electricity Market Reform (EMR) in the UK	52
4.4 Projected Industry Size	54

The Tidal and Wave Energy Outlook: Opportunities and Challenges

4.5 Summary of the Investment Outlook	62
CHAPTER 5: TECHNOLOGY CASE STUDIES	64
5.1 Tidal.....	65
5.1.1 SeaGen, Marine Current Turbines	65
5.1.2 Flumill, Energy Project Management (EPM)	67
5.1.3 SR-2000, Scotrenewables Tidal Power Ltd.....	69
5.1.4 Tocardo Turbines, Tocardo	72
5.1.5 DeltaStream, Tidal Energy Ltd.....	74
5.1.6 Kepler Energy Turbines	77
5.1.7 BlueTEC, Bluewater.....	78
5.2 Wave	79
5.2.1 Oyster 800, Aquamarine Power Ltd.....	80
5.2.2 Pelamis, Pelamis Wave Power	82
5.2.3 Wave Energy Converter, Offshore Wave Energy Ltd.....	85
5.2.4 40South Energy	88
5.2.5 WaveNET, Albatern.....	90
CHAPTER 6: CONCLUSIONS.....	93
6.1 Technology Conclusions.....	93
6.2 Commercial Viability	93
6.3 Investment Conclusions.....	94
GLOSSARY.....	96