Rampion Offshore Wind Farm

ES Section 31 – Cumulative and Secondary Impacts and Impact Interactions

RSK Environmental Ltd

Document 6.1.31

December 2012

APFP Regulation 5(2)(a)

Revision A

E.ON Climate & Renewables UK Rampion Offshore Wind Limited

CONTENTS

Tables

Figures

31 CUMULATIVE AND SECONDARY IMPACTS AND IMPACT INTERACTIONS

31.1 Introduction

31.1.1 This section of the Environmental Statement (ES) considers the cumulative impacts that may arise during construction, operation and decommissioning of the Rampion Offshore Wind Farm (the Project) owing to interaction with other developments (that are not part of the existing baseline) in the area. It also considers the interaction of impacts from individual environmental topic areas on a given receptor or resource associated with the Project.

31.1.2 Cumulative impacts are those that may result from the combined or incremental effects of future activities (i.e. those developments currently in planning and not included as part of the baseline). While a single activity may itself result in an insignificant impact, it may, when combined with other impacts (significant or insignificant) in the same geographical area and occurring at the same time, result in a cumulative impact that is significant.

31.1.3 In addition, impacts to one receptor can result in impacts to a second receptor, for example a development changes the water table and thus affects a nearby wetland causing an impact on the ecology of that wetland. These type of impacts are termed indirect or “secondary” impacts.

31.1.4 With any development, there is the potential for two or more environmental topic areas associated with the Project to impact on a given receptor or resource. For example, a sensitive receptor being affected by both noise and dust nuisance during construction could potentially experience a cumulative effect greater than the individual impacts in isolation (these are termed impact interactions).

31.1.5 This section includes details of relevant legislation and policy context, relevant scoping responses, the adopted methodology, a list of identified cumulative projects assessed, and a summary of key impact interactions.

31.1.6 Cumulative impacts and impact interactions (together with direct and indirect impacts) arising from the Project have largely been addressed in the individual topic sections of this ES. Accordingly, this section provides a summary of the key outcomes of the cumulative assessment, and identifies the key interactions that could potentially occur as a consequence of the Project. Reference should be made to Sections 6 to 29 of this ES for full details of direct, indirect and secondary impacts and effects on identified environmental interests.

31.2 Legislation and Policy Context

31.2.1 National Policy Statements (NPS) provide the primary basis on which the Secretary of State is required to make its decisions. The specific requirements for the assessment of cumulative impacts and impact interactions, as detailed within the NPSs are set out below.

31.2.2 The overarching NPS for energy, EN-1 sets out national policy for energy infrastructure. In relation to cumulative assessment, Section 4.1.3 of EN-1 states that 'In considering any proposed development, and in particular when weighing its adverse impacts against its benefits, the Infrastructure Planning Commission (IPC) should take into account its potential adverse impacts, including any long-term and cumulative adverse impacts, as well as any measures to avoid, reduce or compensate for any adverse impacts'.

31.2.3 Section 4.2.6 of EN-1 states that 'The IPC should consider how the accumulation of, and interrelationship between, effects might affect the environment, economy or community as a whole, even though they may be acceptable when considered on an individual basis with mitigation measures in place'.

31.2.4 Further advice is provided in Advice note nine: Rochdale Envelope (The Planning Inspectorate, 2012) which states that 'The potential cumulative impacts with other major developments will also need to be carefully identified such that the likely significant impacts can be shown to have been identified and assessed against the baseline position'.

31.2.5 Concerning impact interactions, Advice note nine states that 'The ES should not be a series of separate unrelated topic reports. The inter-relationship between aspects of the proposed development should be assessed and careful consideration should be given by the developer to explain how inter-relationships have been assessed in order to address the environmental impacts of the proposal as a whole'.

31.2.6 Schedule 4 of The Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (as amended) sets out the information to be included in an ES. That information includes a description of the likely significant effects of the development on the environment, including the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the development.

31.2.7 The Regulations also require 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 interrelationship between the above factors.

31.3 Scoping

31.3.1 As part of the scoping phase of the EIA, a Scoping Report (E.ON/RSK, September 2010) was prepared to set out the proposed approach to EIA in respect of the proposed development, including the identification of assessment methodologies for each of the EIA topic areas to be assessed. The Scoping Report was submitted to the IPC in September 2010. A Scoping Opinion (IPC, October 2010) was received from the IPC in October 2010 incorporating comments from a wide range of consultees. A copy of the Scoping Report and Scoping Opinion including consultee comments are included in Appendices 5.1 and 5.2 respectively.

31.3.2 The information and advice received during the scoping process with regard to cumulative assessment and assessment interactions is summarised in Table 31-1**.**

Table 31-1: Relevant Scoping Responses

Date	Consultee	Summary scoping response	Where addressed
October 2010	IPC	Suggests that a clear terminology should be applied such that impacts resulting from a number of impacts on one receptor can be addressed in the ES and that these are clearly differentiated from any impacts associated with other proposals in the area. The ES should not be a series of separate reports collated into one document, but rather a comprehensive assessment drawing together the environmental impacts of the proposed development as a whole.	Considered throughout this ES.
18/01/2012	Maritime and Coastguard Agency	Cumulative should include adjacent dredging licences;	Sections 14, 18 and 19.
29/10/2010	Royal Society for the Protection of Birds (RSPB)	Section 4.7: other offshore wind farms should be mentioned in cumulative, even just to say there will be no cumulative impacts. Also, The COWRIE report (2009) Developing guidance on ornithological cumulative impact assessment for offshore wind farm developers should be referred to.	Section 11.
	East Sussex County Council	Cumulative impacts should include the displacement of industries such as fishing and aggregate extraction, as well as Marine Conservation Zones (MCZ's)	Sections 9, 18 and 19.
11/10/2010	English Heritage	Cumulative impacts should take into account guidance from the COWRIE (2008)	Sections 6 to 29.

Date	Consultee	Summary scoping response	Where addressed
	Marine Management Organisation (MMO)	Section 5.2.3.4 agree that hydrodynamic cumulative impact can be scoped out.	N/A.
12/10/2010	Natural England	Due to the high level of anthropogenic activity in this region of the English Channel it is important that the impacts of the proposed windfarm are cumulatively assessed with those of other projects and activities on land and at sea. This should include: • Existing completed projects • Approved but uncompleted projects • Ongoing activities • Plans or projects for which an application has been made and which are under consideration by the consenting authorities • Plans and projects which are reasonably foreseeable, i.e. projects for which an application has not yet been submitted, but which are likely to progress before completion of the development and for which sufficient information is available to assess the likelihood of cumulative and in combination effects.	Cumulative developments considered in the EIA are detailed in this section. The assessment of cumulative effects is detailed in Sections 6 to 29.
10/11/2010	Natural England Ornithologist	Section 5.7.3.3 Potential Cumulative and in combination impacts - The statement that discussions with Natural England led to an agreement that there are unlikely to be cumulative impacts due to the distance between the Rampion site and the West of Wight zone is incorrect. NE were of the view that West of Wight needed to be included in any cumulative impact assessment and that there was a need to consider how much further afield it would be appropriate to search for possible cumulative and in-combination assessments.	Sections 11 and 31.

31.3.3 The scope of the assessment was modified accordingly to take account of the above consultee responses and the opinions of the IPC, the findings of which were reported in the Draft ES.

Formal Pre-application Consultation

31.3.4 As detailed in Section 5 (EIA Methodology), an extensive programme of engagement has been undertaken with regard to the Project, details of which are provided in the Consultation Report (which accompanies the Development Consent Order (DCO) application) Document 5.1. This included publication of the Draft ES as part of the Section 42 and Section 48 consultation in June 2012.

31.3.5 Following a review of consultee feedback on the Draft ES the following modifications have been made to the Project and overall assessment scope:

- Inclusion of the proposed England-France HVDC interconnector (Interconnexion France-Angleterre, IFA2) cable and a number of proposed French Offshore wind farms as cumulative projects; and

- A change to the cable routing in the vicinity of Teville Stream has been made to account for the Environment Agency's proposal for realignment of this watercourse.

31.3.6 In addition, through ongoing discussions with National Grid, details of proposed modifications to the existing Bolney substation have now been included in this section.

31.4 Assessment Methodology

Cumulative Impacts

31.4.1 There are a number of approaches to the assessment of cumulative effects. These are described in detail in the 'Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions', prepared for the European Commission (DG X1) (Hyder, 1999), which form the basis for the cumulative assessment undertaken as part of this EIA.

31.4.2 Reference has also been made to topic and/or development specific cumulative guidance (e.g. landscape and visual impact), the full details of which are provided in the methodology sub-sections of Sections 6 to 29 where relevant.

31.4.3 Research and consultation identified a number of offshore development proposals with the potential to generate cumulative effects when considered together with the offshore Project components; these are described in Section 31.5 below.

31.4.4 Relevant local authorities were contacted in November 2010 and September 2011 to identify development proposals within their respective areas that could potentially generate cumulative effects with the onshore Project components. Information was requested on consented and submitted planning applications (accompanied by an EIA or considered to have potentially significant environmental impacts) within the local vicinity of the proposed onshore works. Discussions with the Environment Agency also identified a project (pre-planning application stage) with the potential for cumulative effects in combination with the onshore elements of the proposed wind farm. Onshore cumulative developments are listed in Table 31.2 below.

31.4.5 The content of Scoping responses were also considered in the identification of cumulative developments to be included in the assessment.

31.4.6 The significance of impacts and effects from other proposed developments has been identified using relevant environmental reporting evidence (published ESs, non-technical summaries, etc.), where available.

31.4.7 Information on the timescales for the other proposed developments have been identified, where obtainable. Where such information is unavailable, professional judgement has been applied as to the likelihood of construction or operation being concurrent with the construction of the Project. A precautionary worst-case approach has been taken in such cases, whereby the assessment has been predicated on the assumption that that construction of other development(s) will be concurrent with the construction of the Project.

31.4.8 The cumulative assessment has been undertaken on a spatial scale relevant to the EIA topic being considered. Professional judgment has been used in assessing and predicting the nature and extent of cumulative effects between the Project and other development proposals, the significance of which follows criteria set out in the relevant technical sections of this ES.

Impact Interactions

31.4.9 There is no established EIA methodology for assessing and quantifying the combined effects of individual impacts. Accordingly, it has been necessary to undertake a qualitative assessment of potential interactions using professional judgement and experience, in order to identify key impact interactions on onshore and offshore environmental receptors and resources that may occur.

31.4.10 The assessment commenced with a review of the findings and conclusions of the EIA, focusing on where adverse and beneficial effects of minor significance or above were recorded in individual environmental topic areas for the construction, operational and decommissioning phases of both the offshore and onshore components of the Project.

31.4.11 Residual effects declared throughout this ES – and the environmental resources, receptors or receptor groupings predicted to be affected - were subsequently carried forward for consideration in the interactions assessment, the purpose being to identify those which could be significant and material to the decision-making process rather than every conceivable interaction or permutation that could occur.

31.4.12 For some topic areas, the review concluded there to be direct inter-relationships between effects that could potentially occur in conjunction (i.e. interactively) to generate a combined effect on sensitive environmental interests during specific stages of the Project. Examples include the combined effects of noise, dust and visual intrusion during construction of the substation.

31.4.13 The review also identified that for some environmental aspects, limited or no potential exists for combinations of effects to occur on environmental resources, receptors and receptor groups identified within the EIA. Such examples include topics where negligible or no residual effects were recorded (e.g. onshore archaeology), and/or where no clear inter-relationship exists between different topic areas (e.g. socio-economics and terrestrial ecology). In such instances, these aspects were not considered further in the interactions assessment.

31.4.14 Given that the EIA widely identified that decommissioning effects will be comparable to those experienced during construction of the Project, the assessment has been appropriately limited to identifying interactions in the construction and operational phases only.

31.4.15 Offshore interests considered in the EIA are largely receptor based; therefore key interactions have already been identified across Sections 6 to 19 of this ES. Examples include the interactive effect on marine ecology from a combination of noise, physical disturbance and habitat loss. Reference should be made to the residual effects recorded in these sections, as appropriate.

31.4.16 In relation to onshore interests, the review of Sections 20 to 29 revealed that key interactions will likely be confined to effects experienced on human receptors that have a direct relationship to the various Project components (i.e. residential receptors, recreational users of footpaths and the coast, and wider settlements and communities).

31.5 Cumulative Developments

Offshore

31.5.1 For the proposed offshore works, a number of developments for which an EIA has been undertaken – or that are considered to have potential significant environmental impacts – have been identified as cumulative developments. These projects are described in more detail in individual sections of the ES where impacts on sensitive receptors are discussed. A brief summary of the main offshore developments with a construction or operational schedule with the potential to generate cumulative impacts as a result of the Rampion Project are shown in **Error! Reference source not found.**2.

Table 31-2: Offshore developments that may result in cumulative impacts with the Rampion Project

Description of development	Timescale and application status	Approximate km distance from Rampion (direction)
Offshore wind farms (OWF)		
Navitus Bay OWF (300-400MW) covering an area of 199km^2. 180-240 turbines, 1 offshore transformer station, 2 export cables.	Concept/Early planning stage	94 (W)
Le Tréport OWF (705MW), covering an area of ~110km^2	Development Zone status	94 (ESE)
Fécamp OWF. 83 turbines, 1 offshore transformer station, 2 export cables	Concept/Early planning stage	82 (SE)
Courseulles-Sur-Mer OWF (450MW) covering an area of 78km^2. 75 turbines (monopile foundations) and 2 export cables.	Concept/Early planning stage	123 (SSW)
Cote d'Albatre OWF (105MW), covering an area of 12km^2. 21 turbines.	Consented (2004), project on hold pending court case outcome	89 (SSE)
Cote d'Albatre II OWF (400MW). 80 turbines	Concept/Early planning stage, tender expected 2013	84 (SSE)
Haute Normandie OWF, (280MW). 56 turbines	Concept/Early planning stage	92 (SSE)
3B (Brassure de Baas) OWF (210MW). 42 turbines	Concept/Early planning stage	98 (ESE)
Cherbourg OWF (400MW). 80 x 5MW turbines	Concept/early planning stage with a 6 year development timeframe	128 (SW)
Other coastal and offshore developments		
Proposed wind farm at Shepham Lane, Polegate. 5 turbines with a blade tip height off the ground of 126.5m	Submitted planning proposal	30 (NE)

Description of development	Timescale and application status	Approximate km distance from Rampion (direction)
Brighton Marina outer harbour development. The development will comprise ten 6-13 storey buildings and a single 40 storey residential tower within the existing marina context	Planning application approved 2006	13 (N)
Brighton i360 and West Pier Heritage Centre. The development will comprise a 183m high steel spire and glass observation pod, together with a two-level platform building at the landward end of the West Pier.	Planning application approved 2006	13 (N)
Aggregate extraction development areas in the Owers Bank offshore area from future licensing rounds		0+ (W & SW)
Aggregate extraction development areas in the Eastern English Channel area from future licensing rounds		45 (SE)
Proposed England-France HVDC interconnector (Interconnexion France-Angleterre, IFA2) cable connecting to landfalls in the areas of the Solent and near Caen.	Pre-planning stage, intended to be operational by 2020	40+ (W & SW)
Newhaven Port expansion. Development may comprise a new 300m heavy lift berth and 14 hectares of lay down and assembly areas. This is proposed for the southern end of the East Quay to accommodate offshore wind construction and supply vessels. Channel and berth depths would be dredged to between 7m and 8m below CD	MMO pre-application stage	25 (NE)
Recommended Marine Conservation Zones, rMCZ (and recommended Reference Areas. rRA)		
Kingmere (rMCZ 16)	Submitted as rMCZ to Natural England in September 2011	4.1 (NW)
East Meridian (rMCZ 29)	Submitted as rMCZ to Natural England in September 2011	6.4 (SE)
Beachy Head East & West (rMCZ 13). This rMCZ includes the draft reference area Belle Tout to Beachy Head to (just west of Eastbourne), (rRA 9).	Submitted as rMCZ/rRA to Natural England in September 2011	12.5 (NE)
Offshore Overfalls (rMCZ 17)	Submitted as rMCZ to Natural England in September 2011	12.5 (SW)
Offshore Brighton (rMCZ 14) This rMCZ includes the draft reference area at Dolphin Head (rRA 10), located 35km from the wind farm	Submitted as rMCZ/rRA to Natural England in September 2011	23.5 (SSW)
Mixon Hole (rRA 12)	Submitted as rRA to Natural England in September 2011	28 (W)

NB. Only those MCZs which could possibly have restrictions to fishery operations have are listed above.

31.5.2 The projects summarised in **Error! Reference source not found.**2 above are also shown in Figure 31.1, which shows these projects in relation to the Rampion Project.

Onshore

31.5.3 For the proposed onshore works, seven developments for which an EIA has been undertaken – or that are considered to have potential significant environmental impacts – have been identified as cumulative developments.

31.5.4 Table 31.3 contains a brief description of the proposed developments and their development timescales.

Table 31-3: Onshore developments that may result in cumulative impacts with the Rampion Project

Development Name	Planning Ref	Description of Development	Timescale
St Giles Place (Former Southlands Hospital)	ADC/0287/09 Permitted	Crest Nicholson (South) Ltd are proposing to redevelop redundant land and derelict buildings at the former Southlands Hospital to provide 197 dwellings (including 57 'affordable'). A permanent and temporary vehicular access will be constructed from Upper Shoreham Road. Proposals include for the demolition of part of a former Refectory Block, Storrington House and other buildings and chimneys. The remaining part of the Refectory Block will be refurbished and converted into 12 apartments and 2 houses. The Entrance Block will be converted into 9 apartments and 6 houses There will also be new building to provide 51 apartments and 117 houses. Plans also allow for public open space, a children's play area and ancillary parking and landscaping.	Permission granted 2010 expires June 2015
Employment Units, Lancing Business Park	ADC/0191/08 Permitted Flood Risk Assessment & Transport Statement available only.	Manhattan Furniture is proposing to construct an industrial development on the eastern edge of the Lancing Business Park, Lancing, West Sussex. The proposals include for the development of new employment units on existing open space within the grounds of the Manhattan Furniture Store. These would comprise a mixture of 13 small B1, B2 and B8 units housed in four separate blocks. The total floor space for all units is 1783.5m^2 with individual floor sizes ranging from 63m^2 to 225m^2. The development proposes to provide a total of 55	Permission granted 2009 expires June 2014

Development Name	Planning Ref	Description of Development	Timescale
		parking spaces including 13 disabled spaces within the curtilage of the site. It is proposed that two sheltered cycle storage areas will be provided within the site capable of holding 10 cycles each. It is proposed that vehicular and pedestrian access would be achieved via two existing access points off Chartwell Road. The industrial units will be served via a new internal access named Manhattan Crescent from Manhattan Drive. It is anticipated that traffic entering or exiting the site would be controlled by means of a simple T-junction. A mini-roundabout is proposed within the site near the southern site entrance.	
Worthing College, Hill Barn Lane and Bolsover Road Sites (three linked planning applications): College Development, The Warren, Hill Barn Lane (AWDM/0364/11). Change of use of existing office building (Class B1) to education use (Class D1) and associated external alterations. Residential Development, The Warren, Hill Barn Lane (AWDM/0365/11). The erection of 36 dwellings, together with associated access and landscaping.	AWDM/0364/11, AWDM/0365/11 & AWDM/0363/11 Permitted In response to an Environmental Impact Assessment screening request, Worthing Borough Council confirmed that the proposals do not constitute EIA development, therefore an Environmental Statement is not available. However a series of environmental reports are available.	Three linked full planning applications (AWDM/0364/11, AWDM/0365/11 & AWDM/0363/11) have been submitted by Worthing College involving land at the Warren, Hill Barn Lane, Worthing and land at Worthing Sixth Form College, Bolsover Road, Worthing (Grid Ref: 514003, 105318 and 512149 103332). The aim of the proposals is to deliver new accommodation for Worthing College. The proposals include two enabling residential developments, which would fund the College development. The three applications comprise: <u>College Development, The Warren, Hill Barn Lane (AWDM/0364/11).</u> A single point of access for vehicular traffic, by remodelling an existing access	Permission granted 2012, expires May 2015

Development Name	Planning Ref	Description of Development	Timescale
Residential Development, Bolsover Road (AWDM/0363/11). Demolition of existing college buildings and the construction of 265 dwellings.		The provision of a mini round-a-bout access with other associated highway improvements Pedestrian crossings and a new pedestrian link providing direct access to the building from the Grove Lodge roundabout The provision of circa 227 car parking spaces, including provision for at least 10 disabled spaces, 200 cycle parking spaces and 28 motorcycle spaces. Provision of an area for bus turning, pick-up / drop off. The provision of an additional sports pitch, 5 tennis/ 4 netball courts that will be flood lit, to replace the two existing tennis courts (to be delivered at a later date, once the finances are available or a grant can be secured) Within the College buildings, a range of high quality facilities would be provided within spacious surroundings. An external nursery area, external seating area and landscaping. <u>Residential Development, The Warren, Hill Barn Lane (AWDM/0365/11)</u> Erection of 36 dwellings, together with associated access and landscaping: o 10 two-bedroom apartments o 15 four-bedroom houses o 11 five-bedroom houses o 94 car parking	

Development Name	Planning Ref	Description of Development	Timescale
		Access to the site via the new College development site, which incorporates a shared access from Hill Barn Lane. <u>Residential Development, Worthing College's existing campus, Bolsover Road (AWDM/0363/11)</u> The breakdown of market housing would be as follows: o 9 one-bedroom and 36 two-bedroom apartments. o 10 two-bedroom, 76 three-bedroom, and 81 four-bedroom houses. The affordable housing provision would equate to 53 homes (20% of the proposed dwellings) and comprises: o 11 one-bedroom and 18 two-bedroom apartments. o 14 two-bedroom and 10 three-bedroom houses. The total proposed car parking provision is 511 spaces. Vehicular access to the site would be gained via Bolsover Road, to the north west of the site. This is in the same position as the existing access. A secondary access to the north east side of the site would be retained for use by emergency vehicles and for pedestrian and cycle access. The access under Shaftsbury Avenue to Durrington-on-Sea railway station will be retained for pedestrian access. There is provision for a community building/	

Development Name	Planning Ref	Description of Development	Timescale
		medical surgery of approximately 232 sqm. A large open space is proposed in the centre of the development.	
Brighton and Hove Albion Football Club New Training Ground	AWDM/0205/12- Request for Full Planning Permission Pending Consideration Environmental Assessment was not requested by the Council	Brighton and Hove Albion Football Club Ltd are proposing to construct a training ground and football academy for Brighton and Hove Albion Football Club on land off Mash Barn Lane (South West of New Monks Farm) in Lancing. The proposed development site (comprising 14.3ha) comprises grassland and scrub vegetation. The site is bounded by residential development to the west and a railway line to the south. The site is located on the eastern edge of Lancing to the south of the A27 and west of Shoreham Airport. The site is currently used as informal recreation. The application is for training facilities for Brighton and Hove Albion's First Team and all the facilities for the Club's Youth Academy and Development Squad, as well as administrative facilities. A breakdown of facilities includes: o 11 outdoor pitches (2 of which are floodlit), o a half sized indoor covered pitch; o external training grids, o a Y-shaped 2 storey building to house changing rooms, associated offices, medical facilities, gym, catering and leisure facilities, a grounds maintenance building, security lodge, half-sized indoor training pitch and small sub-station/boiler house/refuse and recycling structure,	Application validated Mar 2012 – note consultation period continuing until 25th September 2012

Development Name	Planning Ref	Description of Development	Timescale
		o a building to house site groundsmen, comprising garaging facilities for maintenance equipment stores and offices; o 303 car parking spaces, 25-30 cycle spaces and coach parking, o on-site access roads, o security fencing o landscaping around the site, and o a new access from Mash Barn Lane, which is connected to Grinstead Lane (A2025) and then the Old Shoreham Road (A27) via the North Lancing Roundabout.	
Teville Stream Restoration	Pre-application	The Environment Agency has completed an options appraisal study to investigate potential new alignments of the Teville Stream. Engineering works are proposed to help improve the status of the waterbody to Good Ecological Potential (under the Water Framework Directive) by 2015. E.ON has been in discussions with the Environment Agency's regarding the proposal for realignment of this watercourse.	Construction potentially scheduled for 2012/2013.
Bolney Substation Modifications (associated with Rampion connection	-	In order to accommodate the connection from the proposed Rampion substation, the existing Bolney substation will require modifications comprising extension of the reserve and main bars at both ends with four 400kV feeder bays and associated civil works within National Grid land required. Recent discussions between National Grid and E.ON have indicated that these works would fall	Initial discussions with LPA expected early 2013.

Development Name	Planning Ref	Description of Development	Timescale
		outside NGET's permitted development rights and therefore planning consent would be required. It is therefore intended to apply for planning permission from Mid Sussex District Council.	
Bolney Substation Modifications (not associated with Rampion)	-	National Grid have advised that there is the potential need for modifications to the existing Bolney substation comprising the addition of a Mechanically Switched Capacitor (MSC) compound and Static Var Compensator (SVC) compound to be located within National Grid land. These are specific types of equipment used by National Grid to regulate and stabilise transmission voltages. This equipment is potentially required at the site as a result of contracted background in the South East of England. These works will be completed by National Grid as Permitted Development.	Initial discussions with LPA expected 2013.

31.5.5 Figure 31.2 shows the location of the seven cumulative onshore developments in relation to the proposed Rampion onshore works.

Shoreham Harbour Regeneration

31.5.6 In addition to the above projects, Shoreham Harbour Regeneration was identified as a potential cumulative project in the scoping responses.

31.5.7 Shoreham Harbour Regeneration Partnership is currently preparing a Joint Area Action Plan (JAAP) for the Shoreham Harbour area. The planned strategic objectives include the sustainable development of the Harbour area. This includes the use of energy from renewable technologies and supporting the port in becoming an important location for renewable energy generation. As such the proposal for an offshore wind farm is broadly consistent with the objective of sustainable development at Shoreham Harbour.

31.5.8 It is expected that the JAAP will be adopted in August 2014. However, Shoreham Harbour Regeneration is also preparing Development Briefs for the key areas of change at the Harbour's Western Arm and the South Portslade / Aldrington Basin areas. These Briefs are expected to be complete by the end of 2012.

31.5.9 In the absence of any detailed technical studies/assessments at the time of writing, this cumulative project was not considered further in the assessment.

31.6 Assessment of Cumulative and Secondary Impacts

31.6.1 The findings of the offshore and onshore cumulative and secondary impact assessments are presented within the individual technical sections of this ES (see Section 6 to Section 29).

Offshore – Cumulative

31.6.2 **Error! Reference source not found.**2 lists various other projects that might be developed in the same time frame as Rampion. Several of these are offshore wind farms, all except one of which are off the French coastline. The exception is Navitus Bay, which will be located to the west of the Isle of Wight (Figure 31.1). The construction and operation of Navitus Bay is likely to generate impacts of a similar type and scale to those predicted for Rampion.

31.6.3 E.ON and Eneco/EDF Energy (the Joint Venture developing of the Navitus Bay project) have had limited discussions regarding cumulative impacts from the two projects and there is a limited amount of publicly available information on Navitus Bay. It has therefore not been possible to carry out a detailed cumulative assessment as part of the Rampion ES. However, assumptions have been made (based on the extent of impacts from the Rampion Project) to allow an assessment of cumulative impacts to take place. These assessments are made within the relevant environmental impact sections (Sections 6-19) of this ES.

31.6.4 It is expected that the construction schedules for the two projects will not result in plans for foundation work to take place at the same time. However, if during the detailed design stage concurrent piling becomes a possibility, E.ON and the developers of Navitus Bay will work jointly to mitigate possible cumulative effects.

31.6.5 A limited number of receptors may experience cumulative effects during the operational phase of the wind farm. These receptors are likely to be limited to those who may be affected by aggregates dredging work, or limitations on the permitted operations within any rMCZs which are designated in the area. Where such cumulative effects may arise, they are discussed in the appropriate impact sections.

31.6.6 Proposals for some of these rMCZ sites may result in fishing activities being restricted, which in combination with the various wind farm projects as well as Rampion may have a cumulative impact on commercial fishing activities. Further details regarding the cumulative impacts of fishing restrictions from developments and rMCZs are discussed in Section 18 (Commercial Fisheries).

31.6.7 The rMCZs to be designated under the Balanced Seas project in the vicinity of the Rampion Project are also shown in Figure 9.2.

Offshore - Secondary

31.6.8 Section 8 (Fish and Shellfish), identifies impacts to fish species likely to arise as a result of piling noise generated during foundation installation.

31.6.9 As impacts to certain fish could potentially impact on other receptors (such as seabirds, marine mammals, nature conservation and fisheries), impacts on fish ecology are considered in each of the relevant sections when assessing the potential for impacts.

31.6.10 In discussion with regulators, E.ON will impose restrictions to some types of piling in particular seasons, to avoid disturbance during peak spawning activity of the most sensitive species. These restrictions are expected to limit the impacts on other receptors to a temporary period.

31.6.11 Other examples of secondary impacts include increases in suspended solids (assessed in Section 6 – Physical Environment), which can affect benthic invertebrates and bathing water quality are also discussed in the respective impact sections (7 – Benthos and Sediment Quality, and 19 – Other Marine Users).

Onshore Cumulative

31.6.12 **Error! Reference source not found.**3 lists various other projects that might be developed in the same time frame as Rampion. Cumulative assessments taking these projects into account are made within the relevant environmental impact sections (Sections 20-29) of this ES.

Onshore Secondary

31.6.13 The assessment of secondary impacts is covered within the relevant environmental impact sections (Sections 20-29) of this ES.

31.7 Assessment of Impact Interactions

31.7.1 Impact interactions arise where more than one impact source from the Project acts upon the same receptor.

Operational Phase Interactions

Offshore

31.7.2 The findings of the offshore interactions assessments are presented within the individual technical sections of this ES (see Section 6 to Section 19). A review of the impacts assessed has concluded that the most significant impact identified for any particular receptor would not be greater if other impacts to the same receptor from different aspects of the Project were to act incrementally.

Onshore

31.7.3 The assessment has identified that properties in close proximity to the proposed onshore substation site, cable route corridor and landfall location will potentially experience a combination of temporary effects associated with increased noise, localised dust generation, visual intrusion and traffic generation on local roads during the construction phase of the onshore Project components.

31.7.4 Similar temporary interactions will also occur for users of public rights of way, national trails, the National Park, and recreational and coastal areas. Those in the vicinity of construction areas may experience marked reductions in overall amenity, user experience and accessibility.

31.7.5 Landowners and tenants of affected landholdings may be subject to a combination of localised disruption to their current agricultural regimes and construction effects of the type described above.

31.7.6 Given the temporary nature of construction works, and the fact that works along the onshore cable route will progress in a linear manner, any such effects will be short term, the significance of which will vary depending on the timing, extent and nature of operations undertaken and the effectiveness of construction best practice mitigation employed.

Operational Phase Interactions

Offshore

31.7.7 There would be few impact interactions during the operational phase of the wind farm, however, one example that could arise is related to commercial fishing. Deviations to currently used routes for fishing vessels could be required once the wind farm is operational, and trawling will be excluded from a small area around each turbine. However, route deviations for fishing vessels are not expected to be notable, hence overall impacts to commercial fishing during the operational phase will be no greater than those from loss of fishing area alone.

Onshore

31.7.8 Any onshore operational interactive effects are likely to be confined to built infrastructure, principally residential occupants and recreational user groups in proximity to the proposed substation. Such receptors may experience a combination of perceptible increases in audible noise over background levels, and visual intrusion from the presence of the operational facility (the latter effect reducing over time as landscaping proposals establish and mature over time).

Decommissioning

31.7.9 When decommissioning of the Project is at the early planning stage an Environmental Statement will be produced that will include an assessment of cumulative impacts. Making an assessment of potential cumulative impacts from the decommissioning phase of the Rampion Project would not be productive at the current stage of the Project.

31.8 Mitigation

31.8.1 In order to counter the significance of construction phase interactions, mitigation commitments detailed in Sections 6-29 of this ES will be implemented.

31.8.2 In respect of operational phase interactions, mitigation incorporated into the design of the Project (e.g. landscaping) and long term management plans will assist in reducing the significance of these effects.

31.9 References

Institute of Environmental Management and Assessment. (2004). Guidelines for Environmental Impact Assessment.

Hyder. (1999) Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions. May 1999. Prepared for the European Commission (DG X1).

Rampion Offshore Wind Farm

ES Section 31 – Cumulative, Secondary Impacts and Impact Interactions Figures

RSK Environmental Ltd

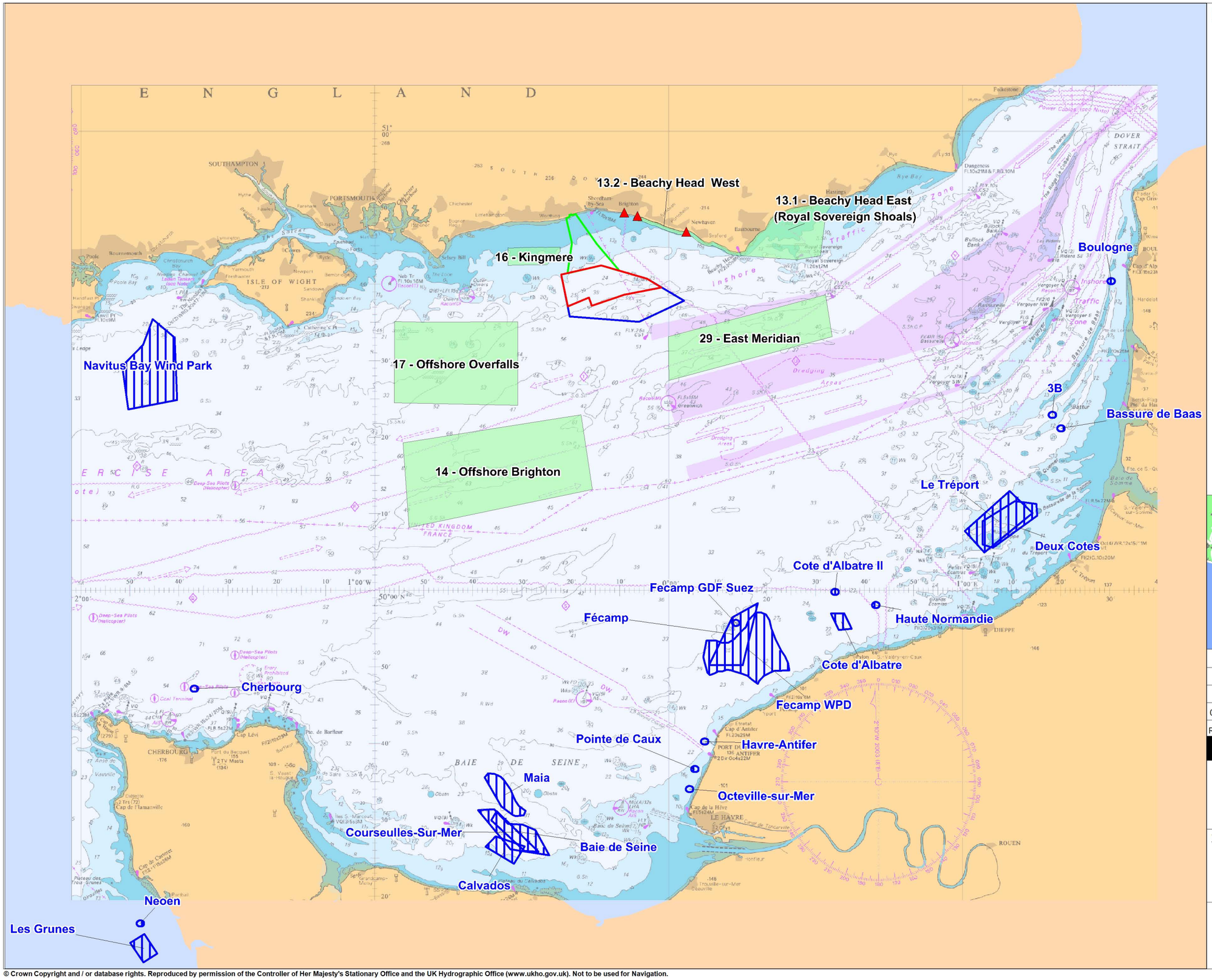
December 2012

Document 6.2.31

APFP Regulation 5(2)(a)

Revision A

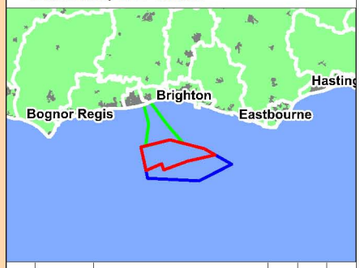
E.ON Climate & Renewables UK Rampion Offshore Wind Limited



Legend

- The Crown Estate Zone 6
- Rampion Offshore Wind Farm Site
- Export Cable Corridor
- rMCZ
- Other Wind Farm Projects*
- Proposed Coastal Developments

* Data courtesy of 4C Offshore



Rev	Date	Description	Drn	Chk	App
00	28-11-12	First Draft	LH	AB	DW

Rampion Offshore Wind Farm

RSK e·on

Title :

Figure 31.1 - Cumulative Wind Farms

0 15 30
kilometres

Scale = 1:900,000 @ A3

N W E S

REV 00

FILE NAME: P413\18 - Rampion Offshore Wind Farm\05 - GIS\ES_Cumulative Windfarms.wor

© Crown Copyright and / or database rights. Reproduced by permission of the Controller of Her Majesty's Stationary Office and the UK Hydrographic Office (www.ukho.gov.uk). Not to be used for Navigation.

Legend :

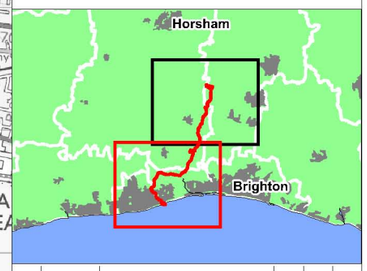
- Development Area
- Planned Development

Redevelopment of Redundant Land to Provide 197 Dwellings

College & Residential Development

Construction of a Training Ground & Football Academy

13 Employment Units in 4 Blocks



Rev	Date	Description	Drn	Chk	App
02	27.11.12	New Development Area	AJ	KH	KB
01	22.10.12	Development Area	DL	KH	KB
00	29.02.12	First Draft	AJ	KH	KB

Rampion Offshore Wind Farm

Title :

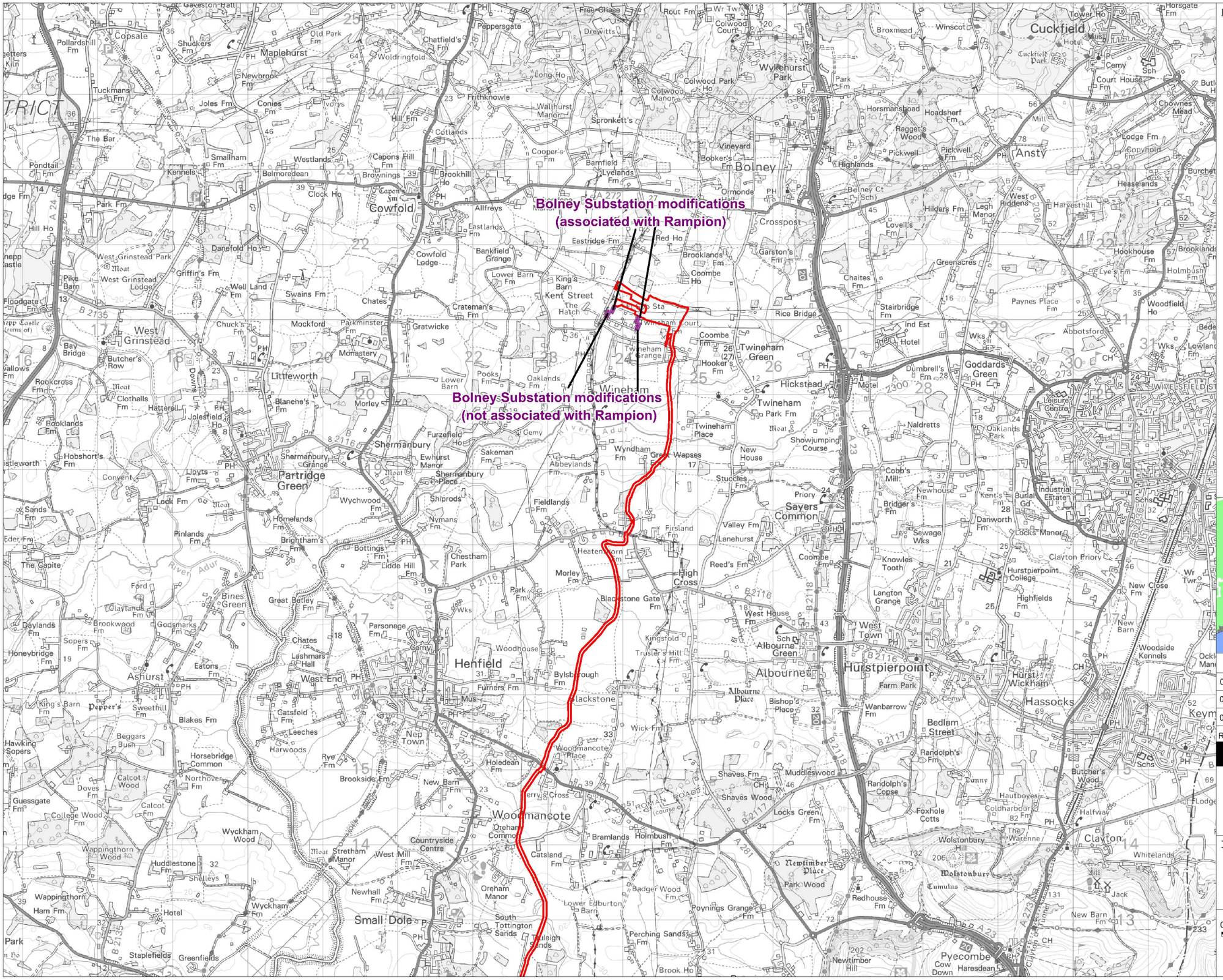
Figure 31.2 -
Cumulative Developments
1 of 2

0 1 2
Kilometres
Scale = 1:50,000 @ A3

REV 02

File Name : P:\04-EA-Landscape\P41318 - Rampion Offshore Wind Farm\05 - GIS\ES_Fig 31.1 Cumulative Developments.wor

© Crown copyright, All rights reserved. 2012 License number 0100031673



© Crown copyright, All rights reserved. 2012 License number 0100031673

Legend :

- Development Area
- Planned Development

Rev	Date	Description	Drn	Chk	App
02	27.11.12	New Development Area	AJ	KH	KB
01	22.10.12	Development Area	DL	KH	KB
00	29.02.12	First Draft	AJ	KH	KB

Rampion Offshore Wind Farm

RSK e·on

Title :

Figure 31.2 -
Cumulative Developments
2 of 2

0 1 2
Kilometres
Scale = 1:50,000 @ A3

N E S W

REV 02

File Name : P:\04-EA-Landscape\P41318 - Rampion Offshore Wind Farm\05 - GIS\ES_Fig 31-1 Cumulative Developments 2.wor