



Appendix

Table 1: Concerns identified at scoping stage by consultees

Organisation	Contact	Concerns raised
English Heritage	Ian Morrison	Visual impact
	Mark Dunkley	Impact on historic character of harbour within Conservation Area
Countryside Agency	Andrew Burns	Impact on landscape character and visual amenity of the area, and cumulative impact. Recommends that landscape character assessment uses 'Landscape Character Assessment Guidance for England and Wales'
	Alison Rood	Impact of sub station on surrounding landscape
Cornwall County Council	Mark Jones (planning)	Landscape impacts of cables onshore during operation
	Veryan Heal (historic environment)	Impacts on Historic Environment of Hayle & proposed Cornish Mining World Heritage Site
	Philippa Hoskin (natural environment)	Visual impact on the sea- one of the few remaining 'wild' horizons
Hayle Town Council	Eleanor Giggall (Town clerk)	Visual impact, given AGLV and proposed World Heritage Site
Cornwall AONB partnership (and joint comments with CCC Historic Environment Section)	Colette Holden (Cornwall AONB Assistant Officer)	Impacts on the integrity of the Cornwall AONB. Visual impact of cable laying/excavation on dunes and beach during construction. Secondary landscape effects of possible changes to coastal processes (following results of wave energy studies). Visual impacts of offshore lighting, including navigation buoys. Effects on enjoyment of ramblers on cliffs. Visual impacts of different wave energy devices. Visual effects of variations in sea conditions.
Cornwall Tourist Board	Deborah Smith (marketing head)	Possible effect on tourism from visual impact
Cornwall Commercial Tourist Federation	John James (Development manager)	Day and night-time visual impact if option other than wet hub is selected.

WAVE HUB LANDSCAPE AND VISUAL IMPACT ASSESSMENT

The list below records viewpoints that have been photographed. Those in bold type are the representative viewpoints that have been subject to further analysis. These have been selected to represent views from publicly accessible places at a range of different distances and elevations from the wave hub site. Comments from consultees are included.

TABLE 2: SCHEDULE OF VIEWPOINTS CONSIDERED FOR ASSESSMENT							
No.	Location	NGR SW:	Distance to site (km)	Elev AOD	Distance to horizon (km)	Reasons for selection	Comments
1(a)	St Ives Head	51968 E 41145 N	20.5	29m	20.72	<ul style="list-style-type: none"> • Nearest settlement • Popular viewpoint • On South West Coast Path 	Consultees prefer Clodgy Point to this viewpoint as it is closer and higher. However, Halcrow still propose this viewpoint as it represents the view from a very popular viewpoint in the nearest settlement, and shows the likely impact at lower elevation. The devices are potentially visible just on the horizon.

1(b)	St Ives Head	51957 E 41089 N	20.5	23m	18.46	<ul style="list-style-type: none"> As for 1 (a) 	As above. Tops of devices potentially visible on horizon
2 (a)	Clodgy Point	50333 E 40928 N	19.7	84m	35.27	<ul style="list-style-type: none"> Public footpath AONB Close to St Ives –well used 	<p>Consultees requested view from trig point above Clodgy Point. However, trig point is not publicly accessible, and is a similar distance and elevation to Vpt 4. Therefore Halcrow still favour St Ives Head viewpoint in preference.</p> <p>Devices potentially visible below horizon.</p>
2 (b)	Clodgy Point	50443 E 41039 N	19.5	67m	31.5	<ul style="list-style-type: none"> As for 2(a) Junction of paths 	
3 (a)	Zennor Head	44907 E 39106 N	19.0	89m	36.31	<ul style="list-style-type: none"> South West Coast Path AONB National Trust land Popular local walk from Zennor 	Discounted by consultees in favour of Carn Naun.

3 (b)	Zennor Head	44830 E 39215 N	19.0	87m	35.9	<ul style="list-style-type: none"> As for 3 (a) 	
4	Carn Naun	47752 E 40818 N	18.4	97m	37.9	<ul style="list-style-type: none"> South West Coast Path AONB Closest publicly accessible landfall 	<p>Consultees prefer this viewpoint to Zennor Head as it is slightly more elevated and closer. Wireframes of WEC layouts generated from 3D model have proved difficult to relate to photograph since there is no foreground context. Therefore not presented in assessment.</p>
5	Trendrine Hill	47882 E 38764 N	20.3	247m	60.48	<ul style="list-style-type: none"> AONB One of highest points within 20km radius of site 	<p>Difficult access- paths not clear-covered in gorse. Not on public footpath therefore not selected for further analysis. Rosewall Hill favoured as alternative.</p>

6	Rosewall Hill	48799 E 39182 N	20.4	227m	57.98	<ul style="list-style-type: none"> • AONB • Public footpath • One of highest points within 20km radius of site 	Although 20m lower than Trendrine Hil, this viewpoint is favoured by Halcrow for further analysis due to its much greater public accessibility.
7	Navax point	59164 E 43432 N	24.1	76m	33.55	<ul style="list-style-type: none"> • AONB • Public footpath near SW Coast Path • National Trust land 	Agreed with consultees
8	Godrevy Point	58436 E 43238 N	23.8	38m	23.72	<ul style="list-style-type: none"> • AONB • SW Coast Path • National Trust land 	Dramatic coastal scenery in foreground. Devices potentially only just visible on horizon.
9	St Agnes Beacon	71075 E 50225 N	32.4	192m	53.33	<ul style="list-style-type: none"> • AONB • Public footpath • Popular viewpoint • National Trust land 	Requested by consultees. However wireframes not generated due to negligible visual impact predicted from closer viewpoints

Table 3: Met Office data on visibility to sea from land

0PERCENTAGE FREQUENCIES REQUESTED. FREQUENCIES OF VISIBILITY (DECAMETRES)
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FREQUENCIES FOR: 50.5N 50.0N 006.5W 005.5W

PERIOD OF DATA: 1/1976 TO 12/2005

VISIBILITY (DECAMETRES)													
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN- DEC
0 TO 4	1	5	16	6	7	6	9	6	1	1	58
5 TO 19	198	55	6	13	20	12	19	18	13	15	113	192	674
20 TO 49	5	10	8	12	28	40	26	27	19	19	4	3	201
50 TO 99	14	21	22	29	33	60	30	24	29	35	12	12	321
100 TO 199	14	24	24	19	28	35	23	24	17	27	16	19	270
200 TO 399	61	77	97	72	93	93	98	94	74	95	67	88	1009
400 TO 999	355	315	458	336	417	355	318	291	341	395	238	306	4125
1000 TO 1999	941	1096	944	874	1049	836	926	718	965	962	668	861	10840
2000 TO 4999	2036	1741	1810	1901	1799	2119	2452	2481	2335	1981	2077	2030	24762
5000 OR MORE	97	83	294	410	396	388	223	290	279	222	230	176	3088
TOTAL	3722	3427	3663	3666	3879	3944	4122	3973	4081	3757	3426	3688	45348

NOTE: 0.0 INDICATES LESS THAN 0.0

PERCENTAGE FREQUENCIES FOR: 50.5N 50.0N 006.5W 005.5W

PERIOD OF DATA: 1/1976 TO 12/2005

VISIBILITY (DECAMETRES)													
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN- DEC
0 TO 4	0.0	0.1	0.4	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.1
5 TO 19	5.3	1.6	0.2	0.4	0.5	0.3	0.5	0.5	0.3	0.4	3.3	5.2	1.5
20 TO 49	0.1	0.3	0.2	0.3	0.7	1.0	0.6	0.7	0.5	0.5	0.1	0.1	0.4
50 TO 99	0.4	0.6	0.6	0.8	0.9	1.5	0.7	0.6	0.7	0.9	0.4	0.3	0.7
100 TO 199	0.4	0.7	0.7	0.5	0.7	0.9	0.6	0.6	0.4	0.7	0.5	0.5	0.6
200 TO 399	1.6	2.2	2.6	2.0	2.4	2.4	2.4	2.4	1.8	2.5	2.0	2.4	2.2
400 TO 999	9.5	9.2	12.5	9.2	10.8	9.0	7.7	7.3	8.4	10.5	6.9	8.3	9.1



1000 TO 1999		25.3	32.0	25.8	23.8	27.0	21.2	22.5	18.1	23.6	25.6	19.5	23.3	23.9
2000 TO 4999		54.7	50.8	49.4	51.9	46.4	53.7	59.5	62.4	57.2	52.7	60.6	55.0	54.6
5000 OR MORE		2.6	2.4	8.0	11.2	10.2	9.8	5.4	7.3	6.8	5.9	6.7	4.8	6.8

TOTAL		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
NOTE: 0.0 INDICATES LESS THAN 0.05 PER CENT														

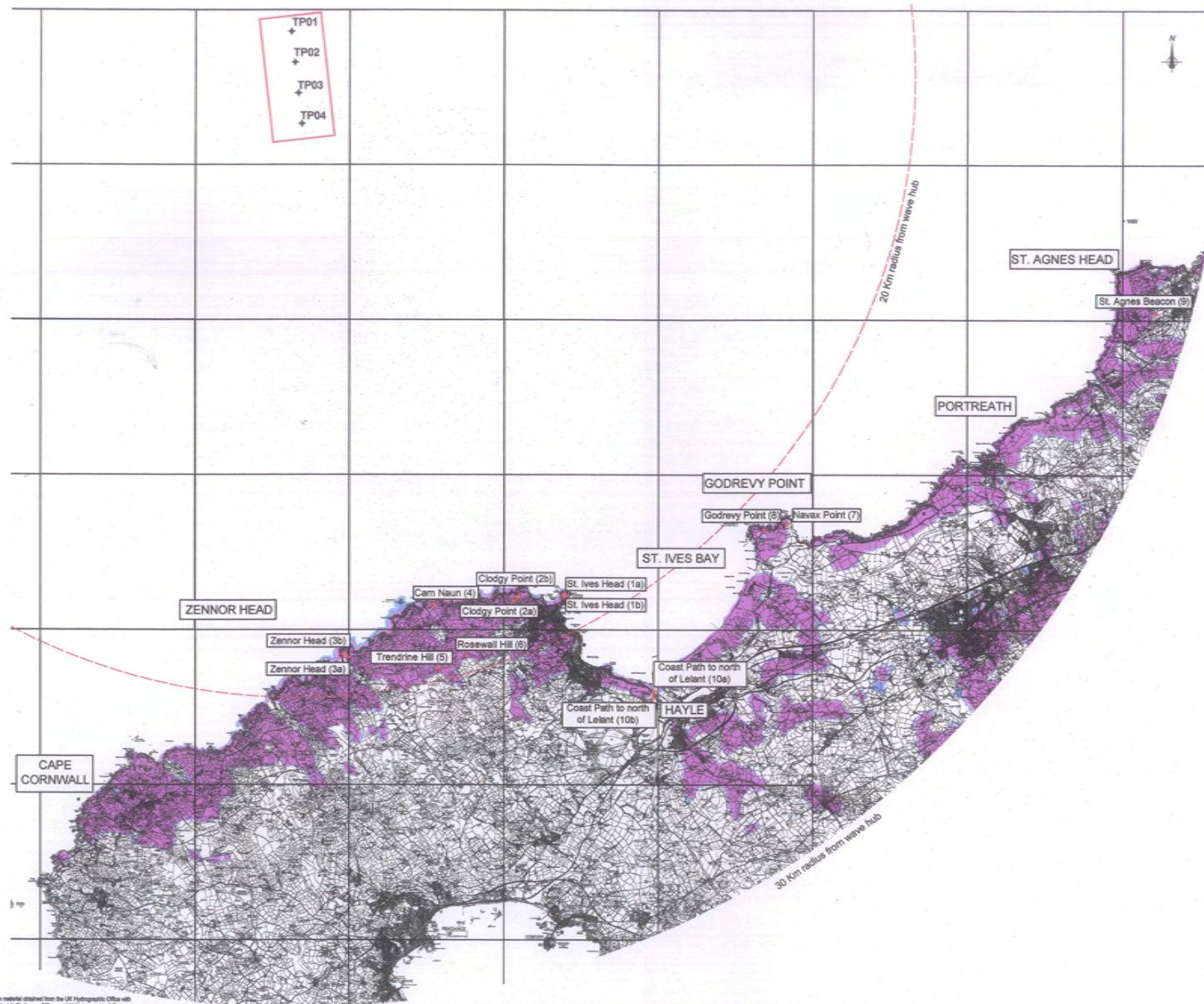
SUMMARY OF VISIBILITY TABLES.

<div>VIS</div> <div>MONTH</div>	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
0 to 19.9km	42.6	46.7	42.6	37.0	43.0	36.5	35.2	30.4	35.9	41.3	32.7	40.1	38.5
20km or more	57.4	53.3	57.4	63.0	57.0	63.5	64.8	69.6	64.1	58.7	66.3	59.9	61.5





FIGURE 1



LEGEND

- Wave hub site
- St. Ives Head (1a)
- Viewpoints considered for visual analysis
- Zone of Theoretical Visibility
- TP01 Target point (see note 1)
- Very limited part of WEC layout potentially visible (single target point)
- Majority of the WEC layout potentially visible (4 target points)

Notes:
1. This ZTV takes the curvature of the earth into consideration. The Ordnance Datum for sea level is + 3.2m to equate to Mean Spring High Water. Four points were used to represent the worst case hypothetical layout of wave energy converters shown on Figure 5. The heights of the targets are as follows: Targets 1 to 4: 13m above sea level.

0 1 2 3 4 5
SCALE 1:125,000 (A3) Km

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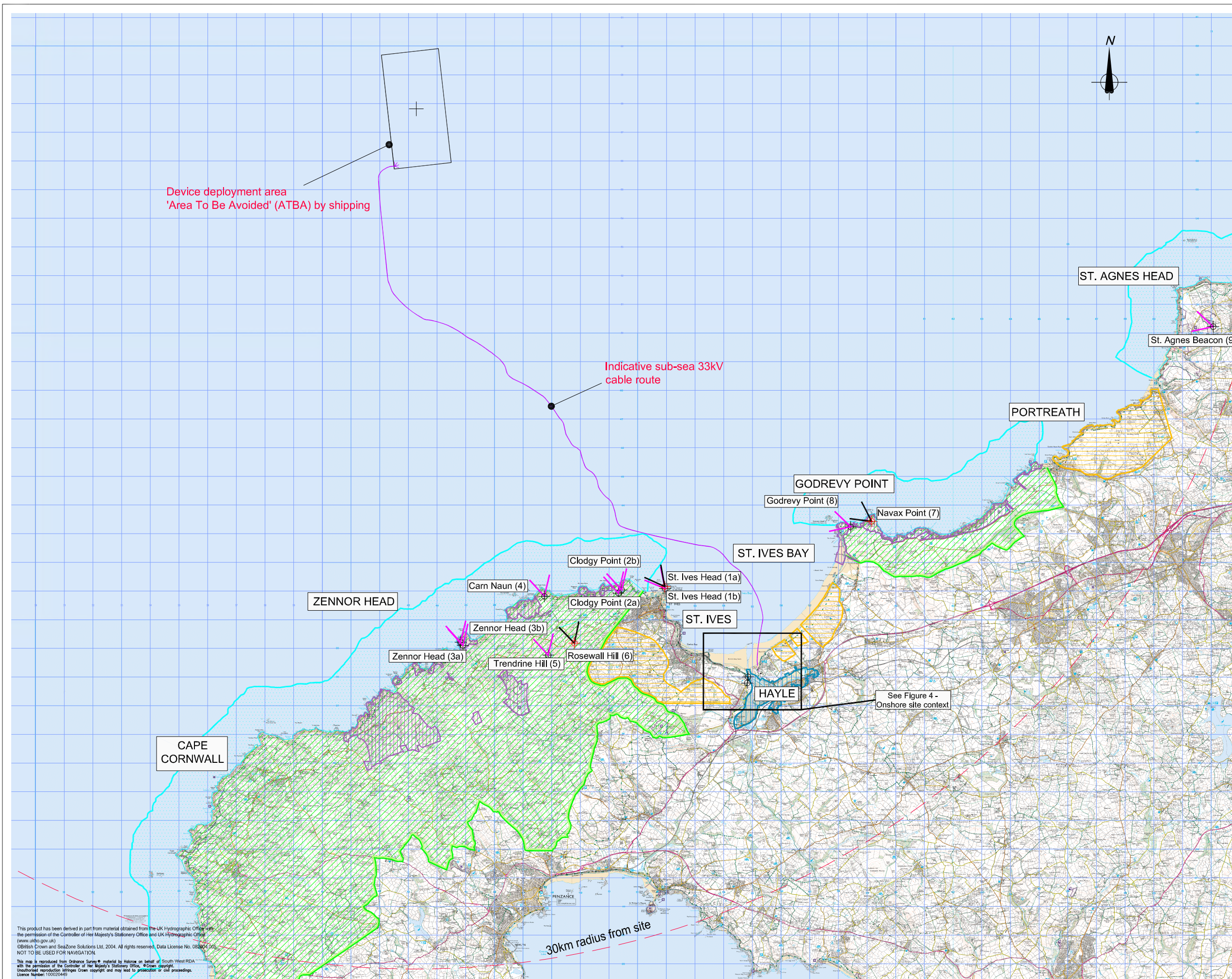


WAVE HUB DESIGN & DEVELOPMENT

LANDSCAPE AND VISUAL IMPACT ASSESSMENT

Zone of Theoretical Visibility
Worst case WEC layout

FIGURE 2



- LEGEND**
- Area of Outstanding Natural Beauty
 - Area of Great Landscape Value
 - National Trust Land
 - Nominated World Heritage Site Area 2 - Port of Hayle
 - Heritage Coasts
 - 30 Km radius from offshore site
 - Representative viewpoint
 - Other viewpoints considered for analysis (see appendix)

0 1 2 3 4 5
SCALE 1:125,000 (A3) Km

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Project
WAVE HUB
DESIGN AND DEVELOPMENT

Drawing
LANDSCAPE DESIGNATIONS
AND VIEWPOINTS
-WIDER CONTEXT

Drawing No.
FIGURE 3

Drawing Scale: 1:125,000 @ A3

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