THE BRIEF FOR THE MAINTENANCE AND/OR INSTALLATION AND/OR PROVISION OF HYDRODYNAMIC EQUIPMENT

Scheme Title	Anglian Regional Coastal Monitoring Programme
Employer	The Employer is the Environment Agency
Employer's Address	Environment Agency, Kingfisher House, Goldhay Way, Orton Goldhay, Peterborough, PE2 5ZR
Nominated *Employer's* Representative	Mr Philip Staley
Survey Title	Anglian Coastal Monitoring programme, Phase 9 (2016 – 2021): Hydrodynamics Services [Ref. no.]
Purpose of Survey	The hydrodynamic network is used as a part of a long-term programme of coastal monitoring, to analyse coastal processes and provide data for operational and strategic shoreline management
Specification	Regional Coastal Monitoring Programmes Specification for maintenance and/or installation and/or provision of hydrodynamic equipment v1.0
Delivery Schedule	The delivery schedule for assumption of full responsibility for the network of existing instrumentation is 01 April 2016 or within 3 calendar months of award of contract, whichever is the later. The newly appointed *Consultant* will be required to liaise with and co-operate with the *Employer*'s incumbent supplier in Great Yarmouth to arrange a phased hand-over.
Tender Submission Date	See the invitation to tender letter
Contract Completion Date	31 March 2021
Known Hazards	The *Employer* is unaware of any special hazards other than those normally associated with offshore and onshore instrumentation deployment and maintenance. The *Consultant* shall carry out a full Risk Assessment before each deployment/maintenance visit and shall prepare a Safe System of Working based on the Assessment. A copy shall be forwarded to the *Employer*'s Representative. The *Consultant*'s attention is drawn to the desirability, among other things, of monitoring weather conditions and of notifying the Coastguard of the deployment/maintenance activities.
Site Conditions/ Restrictions, Access and Public Relations	A letter of introduction will be provided which should be presented as a matter of course, and without it being demanded, at all meetings with landowners or the public. The *Consultant* shall notify all relevant authorities of the programme of work and shall adhere to the requirements of such authorities. The *Consultant* shall liaise with the relevant authorities throughout the contract period and obtain permissions if required. The *Consultant* is responsible for obtaining permissions if accessing areas of designated status or MOD property,

	and to understand and adhere to relevant restrictions this may involve.

This Brief provides details specific to instrumentation which shall be maintained (including unscheduled maintenance) and/or deployed and/or provided according to the Specification.

The deployment lengths of the existing wavebuoys and the deployment of a new buoy at Lowestoft are dependent on budgetary approvals. There is no guarantee of work in the five year contract.

1. Variations to Specification

The following sections and clauses in the Specification are excluded from this Contract:

N/A

The following clauses in the Specification are replaced by:

Clause	Subject	Variation
2.1.3	Licencing and consultations	Applications for MMO licences (formerly known as Food and Environmental Protection Act 1985 [FEPA] licence) for all new deployments at sea will be made by the *Consultant*. Copies of the application and licences will be provided to the *Employer*. Copies of existing licences will be provided to the *Consultant*. All other licences will be the responsibility of the *Consultant*. Consultation with, and service of notice upon, mariners and other interested parties will be the responsibility of the *Consultant*.
2.1.4	Insurance of equipment	The *Employer* is self insured in all instances where equipment is deployed and installed in accordance with the Specification and this Brief. If a buoy is deployed off site and presents a risk to navigation, liability will be with the *Consultant*.
2.2.2	Wave parameters	The following wave parameters are to be provided, using Datawell's rfbuoy software: <u>Group 1</u> • Significant wave height (m) (H_s) • Spectrally-derived zero-crossing wave period (s) (T_z) • Peak wave period (s) (T_p) • Wave direction (°) θ_p • Maximum observed wave height (m) (H_{max}) • Sea surface temperature (°C) (SST) <u>Group 2</u> All other wave parameters calculated by the DWR rfbuoy software The following Iridium SBD data packages are to be provided: <u>Compressed spectrum</u> • Significant wave height (m) (H_s) • Spectrally-derived zero-crossing wave period (s) (T_z)

		• Peak wave period (s) (kmax) • Wave direction (°) θ_p • Wave spread (Sp) <u>Other information</u> • GPS position • Offsets • Battery status • Sea surface temperature (°C)	

2. Phased assumption of responsibility for continuity of data and of unscheduled maintenance

There will be a phased programme of transfer of responsibility from the *Employer*'s representative to the *Consultant* during the 3 months prior to the Delivery Schedule. It is crucial that continuity of data is maintained during this period and that any data losses are kept to a minimum. If required, the *Employer*'s representative will be available to accompany the *Consultant* to a half day's visit to each shore station, to aid the transfer of responsibility.

The *Consultant* will provide in the method statement a procedure for how the transfer of responsibility will be achieved and a programme for assuming responsibility for all sites by the Delivery Schedule.

3. Equipment spares

A stock of equipment and instrumentation spares for the deployed equipment is held by the *Employer*, as listed in the schedule (Appendix I). The *Consultant* will be expected to liaise with and co-operate with the *Employer*'s incumbent supplier in Great Yarmouth to arrange a phased hand-over of the spares. This is to ensure that sufficient spares are available to both the *Consultant* and the *Employer*'s representative during the period prior to the *Consultant* assuming responsibility for the network.

4. Existing deployments

The locations listed in **Error! Reference source not found.** and Table 2, and shown in Figure 1 have instruments deployed, for which the *Consultant* will become fully responsible by the Delivery schedule date. Full details of the equipment at each site are given in the Schedule (Appendix 1). All existing equipment has been maintained annually and in accordance with the Specification. It can be assumed that all deployed equipment will be operational when the *Consultant* assumes responsibility for it.

The wave buoys are Datawell Directional Waverider Mk III, moored using Datawell's shallow water mooring and use both HF radio transmission to a shore station and Iridium SBD satellite communications. Satellite data will be transferred in real-time to WaveNet, HF and met data will be transferred in real-time to the Channel Coastal Observatory.

The .SBD messages are to be transmitted in accordance with section 5.7.2 of the Datawell DWR Mk III manual. Data logging must start on the hour/half hour. One of the addresses on the buoy's transmitter will be dedicated to Defra's WaveNet website to receive direct Iridium data, from where data are sent on to the Environment Agency's National Flood Forecasting System.

The shore stations will continue to host equipment and all have a phone line and broadband installed. Where indicated in Table 1, a display of/or remote access to real-time wave/tide/met/other parameters, customised to the shore station host's requirements, shall be provided and maintained. Broadband and phone lines are included in the *Consultant*'s cost.

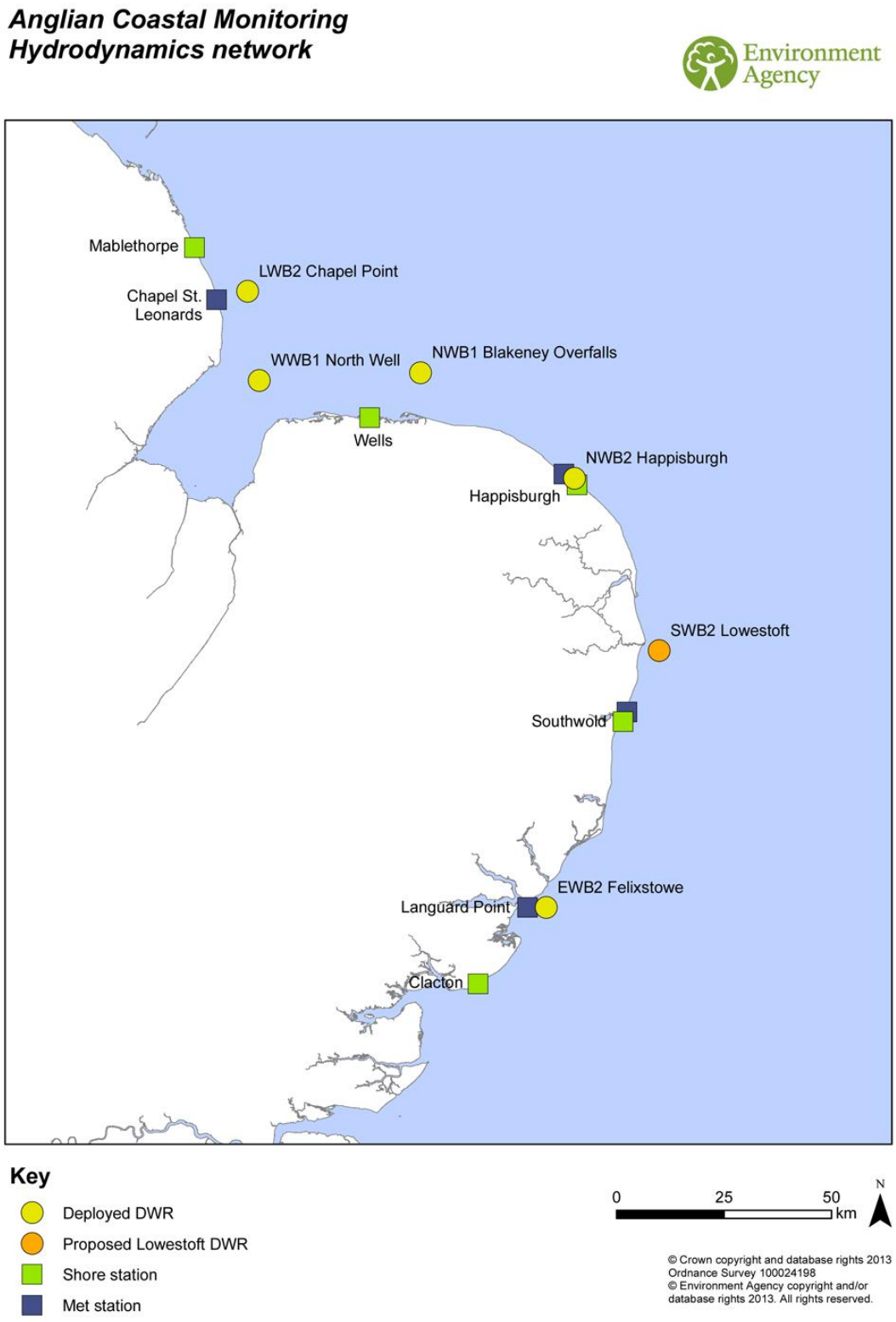

Figure 1: Location of existing and planned deployments

Site name	Approximate Location	Instrument	Depth (m CD)	Shore station	Approx. service intervals/due	Comments
Chapel Point	53°14.7609'N 00°26.8930'E	Datawell Directional Waverider Mk III	10	Mablethorpe RNLI station	12 months Feb 2017	RNLI host has access to view data. AIS at shore station
North Well	53°03.384'N 000°28.368'E		31			
Blakeney Overfalls	53° 03.203'N 001°06.421'E		18	Wells-next-the-Sea RNLI station	12 months Jul 2016	RNLI host has access to view data. AIS at shore station
Happisburgh	53° 49.557'N 001°32.989'E		9	Happisburgh RNLI station	12 months Jun 2016	Met station at RNLI boat house. Shore station at RNLI office. RNLI host has access to view data.
Felixstowe	51°56.295'N 001°23.632'E		8	Clacton RNLI station	12 months Aug 2016	RNLI host has access to view data. AIS at shore station
Chapel St Leonards	53°13'50.4"N 0° 20'11.66"E	Met		EA Pumping station	12 months July 2016	
Happisburgh	52° 48'47.8"N 1° 33' 22.2"E	Met		Happisburgh RNLI station	12 months February 2017	Instrumentation is deployed on boat house, shore station is in RNLI office. Also shore station for DWR.
Southwold	51° 18'54"N 1° 40' 21" E	Met		Southwold RNLI station	12 months March 2017	RNLI host has access to view data. AIS at shore station
Felixstowe	51°56'5.07"N 1°19'6.41"E	Met		Harwich Harbour Authority, Languard Point	12 months September 2016	HHA host has access to view data.

Table 1: Existing deployments

Site name	Pressure	Wind	Temperature	Other	Communications
Chapel St Leonards	CS106 PTB100	Gill Windsonic 1	107 Thermistor and Radiation Shield	Mains powered	COM110 GSM/GPRS
Happisburgh				Mains powered	NL200 Ethernet
Southwold				Mains powered	NL200 Ethernet
Felixstowe				ARG100 Rain Gauge, 20W Solar Panel	COM110 GSM/GPRS

Table 2: Deployed met stations

The *Consultant* will be required to use the Environment Agency's Estuarine and Coastal Monitoring and Assessment Service's (ECMAS) vessels and 2 crew members (1 skipper and 1 mate) for routine maintenance. Therefore, no costs for vessel use should be included in the prices quoted for scheduled maintenance. Vessel and staff are available for 12 hour days and over weekends if required. The *Humber Guardian* is based in Grimsby and the *Thames Guardian* is based in Chatham. However, the vessels operate along the east coast and can be flexible regarding port locations for mobilisation and de-mobilisation.

The *Consultant* will be required to liaise with the ECMAS team to arrange service visits and to check vessel locations and availability. The *Consultant* will submit a maintenance schedule at the start of each financial year for planning purposes. Several days' provision will be made for deployment of the wave buoys to account for weather risk and the possibility of down days.

For unscheduled maintenance or buoy recovery the *Consultant* will check availability of Environment Agency vessels before considering alternative vessels. Unscheduled maintenance services are expected to be carried out in a cost effective manner and will be reviewed with the *Consultant*.

An Emergency Response Plan (ERP) is required to be submitted at the start of the contract, and is to be regularly reviewed to amend changes in procedures and personnel. In the occurrence of an adrift DWR or the need for an unscheduled service, the ERP contains the relevant parties and personnel who need to be notified, and is required to be completed and circulated to the *Employer*, Cefas and *Consultant* contacts listed on the plan. The target for an unscheduled maintenance service to recovery and re-deploy a DWR is 24 hours.

In order to minimise the spread of potentially harmful non-native marine life, all equipment including the DWR hull, mooring, floats and anchor weights should be washed down on site or safely transported back to the *Consultant*'s yard for cleaning. Equipment must not be washed down on deck once the vessel has moved away from the deployment site or at the port/marina to prevent marine life being transferred to the nearshore environment. The *Consultant* must be able to demonstrate that all encrusted life and marine debris following the cleaning of equipment is suitably disposed of.

5. New deployments

A new DWR deployment is planned at Lowestoft in 2016 (see Figure 1) and it is anticipated that the existing Southwold shore station will be suitable to act as the shore station. In accordance with

section 2.3.7 of the Specification, the *Consultant* shall confirm the suitability of the shore station or recommend an alternative shore station. The *Employer* will require the *Consultant* to procure the instrumentation and associated equipment for this deployment.

6. Instrument/buoy lettering

No wording is required to be painted onto the DWR hull; instead an Environment Agency decal will be attached to the hull and radar reflector, as shown in Figure 2. The *Employer* will provide the decals.

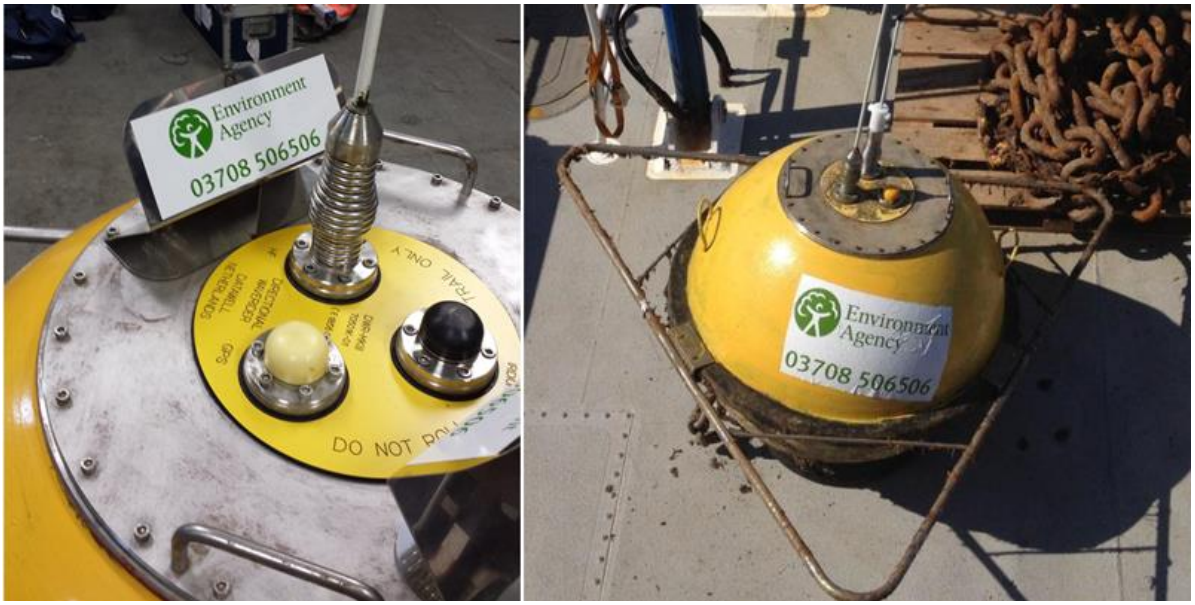

Figure 2: Environment Agency decals

On award of contract, however, the telephone number can be amended to that of the *Consultant*'s 24-hour contact number. The revised telephone number need only be applied to new deployments or following a service visit.

7. Additional tasks

The shore stations will require a suitable method to archive and transmit received data, including AIS where specified, and where stated in Table 1 ensure these data are accessible to the shore station host. The *Employer* is open to the option of a web server, PCs on site or suitable alternatives. The options should be cost effective, robust to ensure no loss of data, and be secure.

The shore stations listed in Table 1 are host to AIS receivers. The *Consultant* will assume responsibility for the maintenance of the AIS equipment, data logging and display. The AIS data for vessels within range is displayed at the shore station and the data logged for a rolling 2 month period. These four stations will require new loggers (PCs or suitable alternative).

Where receiving/logging/data transfer systems for the DWR's are integrated with those for other wave/tide/met/ARGUS/other data, any changes to the shore station must maintain the service to the other equipment.

8. Vessel costs for unscheduled maintenance

For unscheduled maintenance or buoy recovery the *Consultant* will check availability of Environment Agency vessels before considering alternative vessels. If Environment Agency vessels are used for unscheduled maintenance, no vessel costs can be charged to the *Employer*. Vessel costs for unscheduled maintenance visits are expected to be kept to a minimum, and not to exceed £1,500 per (12 hour) day. Only in exceptional circumstances will the *Employer* agree to vessel costs exceeding this sum, which must be authorised in advance by the *Employer*.

9. Technical Requirement

Required data shall be delivered within 4 weeks of the activity. Deployment/service reports shall be delivered quarterly.

10. Additional information

The Environment Agency is committed to open government and to meeting its responsibilities under the Freedom of Information Act 2000. Accordingly, all information submitted to The Environment Agency may need to be disclosed in response to a request under the Act. Material marked 'confidential' or equivalent should not be taken to mean that The Environment Agency accept any duty of confidence by virtue of that marking. If a request is received, The Environment Agency may also be required to disclose details of unsuccessful tenders.

The Environment Agency's position as a regulatory authority and as *Employer* under the contract are separate and distinct. Actions taken in one capacity are deemed not to be taken in the other.

Where statutory consents must be obtained from the Environment Agency in its capacity as a regulatory authority, the *Consultant* is responsible for obtaining these and paying fees. The Environment Agency's acceptance of a tender or its instructing or varying work does not constitute statutory approval or consent. An action by the Environment Agency as regulatory authority is not in its capacity as *Employer* and is not a compensation event.

APPENDIX I - SCHEDULE OF HYDRODYNAMIC EQUIPMENT

The schedule of deployed and spare equipment is correct at the time of issue of the tender documents.

Equipment	No.	Comments
Datawell Directional Waverider buoy Mk III	1	**Chapel Point DWR** deployed at: 53°14.7609'N 00°26.8930'E. Iridium antenna, HF antenna, GPS antenna, anti-spin triangle, buoy chain attachment
Datawell shallow water mooring using Dyneema rope by English Braids	1	
Datawell Directional Waverider buoy Mk III	1	**North Well DWR**, deployed at: 53°03.384'N 000°28.368'E. Iridium antenna, HF antenna, GPS antenna, anti-spin triangle, buoy chain attachment
Datawell shallow water mooring using Dyneema rope	1	
RX-CE system	2	Located at Mablethorpe shore station. Shared omni-directional antenna and cables. AIS antenna and cables.
RX-C Y Splitter	1	
NASA AIS Receiver	1	
BT broadband	1	
BT phone line	1	
Campbell Scientific Met Station	1	**Chapel St Leonards met station** installed at: 53°13'50.4"N 0° 20'11.66"E. GSM/GPRS Modem, 107 Temperature Sensor, Gill Windsonic 1, PTB100, mains powered
Datawell Directional Waverider buoy Mk III	1	**Blakeney Overfalls DWR**, deployed at: 53° 03.203'N 001°06.421'E. Iridium antenna, HF antenna, GPS antenna, anti-spin triangle, buoy chain attachment
Datawell shallow water mooring using Dyneema rope	1	
RX-C system	1	Located at Wells shore station. Omni-directional antenna and cables. AIS antenna and cables
NASA AIS Receiver	1	
BT broadband	1	
BT phone line	1	
Datawell Directional Waverider buoy Mk III	1	**Happisburgh DWR**, deployed at: 53° 49.557'N 001°32.989'E. Iridium antenna, HF antenna, GPS antenna, anti-spin triangle, buoy chain attachment
Datawell shallow water mooring using Dyneema rope	1	
RX-C system	1	Located at Happisburgh shore station. Omni-directional antenna and cables
BT broadband	1	
BT phone line	1	
Campbell Scientific Met Station	1	**Happisburgh met station** installed at: 52° 48'47.8"N 1° 33' 22.2"E. Ethernet Modem, 107 Temperature Sensor, Gill Windsonic 1, PTB100, mains powered

Equipment	No.	Comments
RX-C system	1	**Southwold met station** installed at: 51° 18'54"N 1° 40' 21" E and shore station. Ethernet Modem, 107 Temperature sensor, Gill Windsonic 1, PTB100, mains powered. AIS antenna and cables
NASA AIS Receiver	1	
Campbell Scientific Met Station	1	
BT broadband	1	
BT phone line	1	
Datawell Directional Waverider buoy Mk III	1	**Felixstowe DWR**, deployed at: 51°56.295'N 001°23.632'E. Iridium antenna, HF antenna, GPS antenna, anti-spin triangle, buoy chain attachment
Datawell shallow water mooring using Dyneema rope	1	
Campbell Scientific Met Station	1	**Felixstowe met station** installed at: 51°56'5.07"N 1°19'6.41"E. GSM/GPRS Modem, 20W Solar Panel, 107 Temperature sensor, Gill Windsonic 1, PTB100
RX-C system	1	Located at Clacton shore station. Omni-directional antenna and cables. AIS antenna and cables
RX-C Y splitter	1	
NASA AIS Receiver	1	
BT broadband	1	
BT phone line	1	
Datawell Directional Waverider buoy Mk III	2	Held by *Employer*'s Representative in Great Yarmouth. Both complete with Iridium antenna, HF antenna, GPS antenna, anti-spin triangle, buoy chain attachments
RX-C system	1	Held by *Employer*'s Representative in Great Yarmouth. Complete with omni-directional antenna and cables
Directional HF antenna	1	Held by *Employer*'s Representative in Great Yarmouth.
HF antenna	2	Held by *Employer*'s Representative in Great Yarmouth. 1 good spare, 1 faulty (LED doesn't flash).
Anti-spin triangle	3	Held by *Employer*'s Representative in Great Yarmouth. 3 spare (2 of which are dented but useable)
Bungee (15 m)	4	Held by *Employer*'s Representative in Great Yarmouth
Buoy chain attachment	1	Held by *Employer*'s Representative in Great Yarmouth
Buoy anodes	1	Held by *Employer*'s Representative in Great Yarmouth. 1 new set
Transit frame	7	Held by *Employer*'s Representative in Great Yarmouth
Miscellaneous spares		Held by *Employer*'s Representative in Great Yarmouth. Small box of miscellaneous spares *e.g.* connectors, o-rings, nuts and bolts