

## THE BRIEF FOR AERIAL PHOTOGRAPHY AND PHOTOGRAMMETRY

Scheme Title	Southeast Regional Coastal Monitoring Programme
Employer's Address	Appletree Court, Beaulieu Road, Lyndhurst, Hampshire SO43 7PA
Nominated Employer's Representative	Mr Steve Cook
Survey Title	Provision of aerial survey data for Work Packages ASE03 – Isle of Grain to Selsey Bill and ASE04 – Selsey Bill to Portland Bill
Purpose of Survey	The digital images will be used alongside other data to determine coastal evolutionary trends and morphological change. The ortho-rectified imagery will be used to define the geographical extent and change of coastal erosion and coastal maritime habitats along the coastal fringe and intertidal areas.
Specification	RICS Vertical aerial photography and digital imagery 5 <sup>th</sup> ed. GN2010 or as amended herein.
Delivery Schedule	The delivery schedule (subject to date of award) is XX XX XXXX
Tender Submission Date	See the invitation to tender letter
Contract Completion Date	XX XX XXXX
Known Hazards	The Employer is unaware of any special hazards other than those normally associated with aerial surveying.
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.

### 1. LOCATION AND EXTENT OF SURVEY

The location of the two Work Packages, each of which is sub-divided further into a number of survey polygons for the purpose of data capture, illustrated in in [Figure 1](#) and [Figure 2](#). The extents of the Work Packages and survey polygons for aerial survey are given in the accompanying shape file ASE.shp. The landward and lateral extents of the survey area are defined by the polygons. The seaward extent, however, is defined as the XY position of the elevation above which the data shall not contain seawater *i.e.* the tide level at time of data capture must be to seaward of the seaward limit. In most cases, the minimum elevation to be achieved is MLWS. The seaward limit shown in the polygons is the position of MLWS from the most recent survey and is included for planning purposes, but the over-riding requirement for the seaward boundary is the elevation given in [Table 1](#).

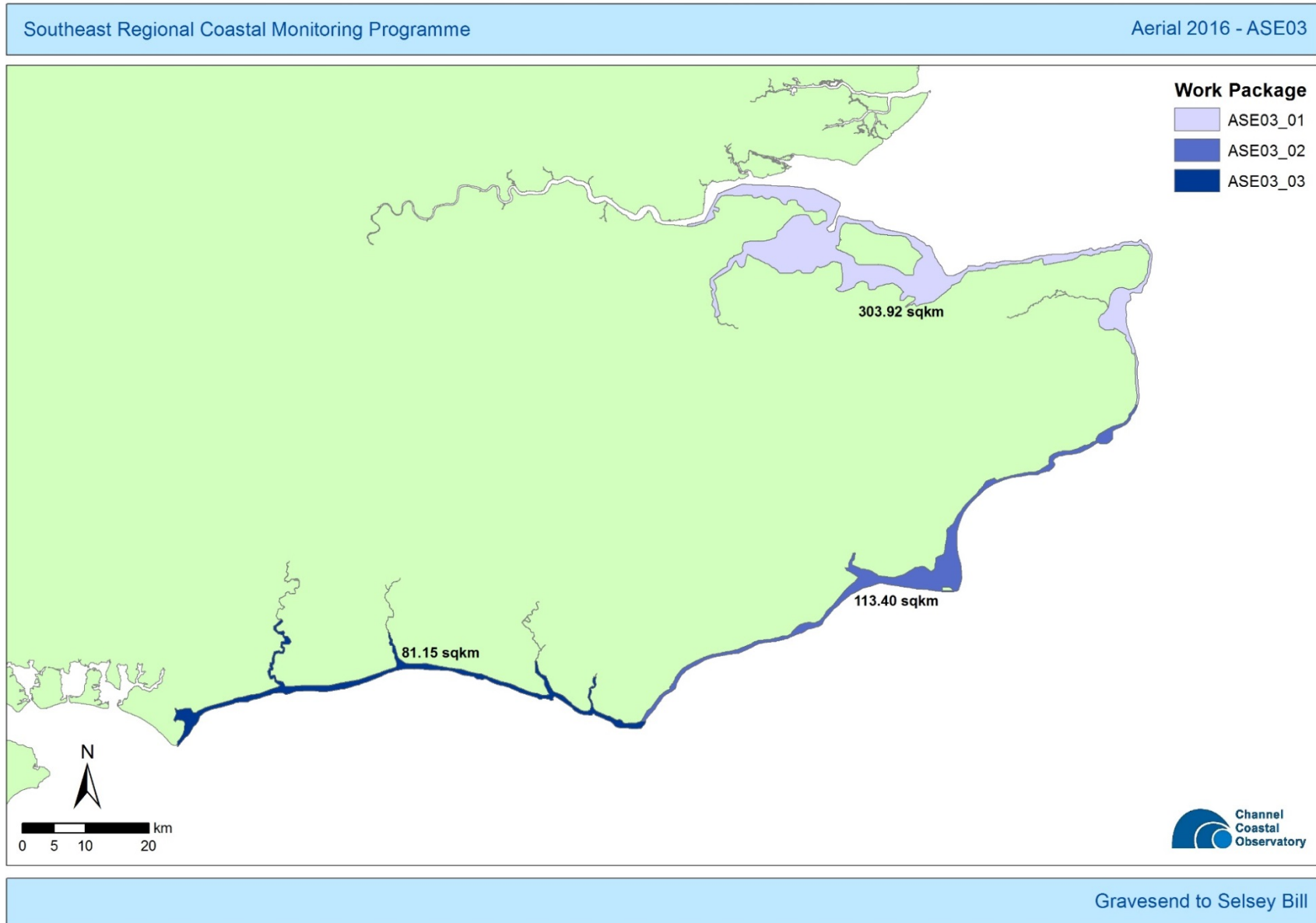


Figure 1: ASE03 – Gravesend to Selsey Bill survey polygons

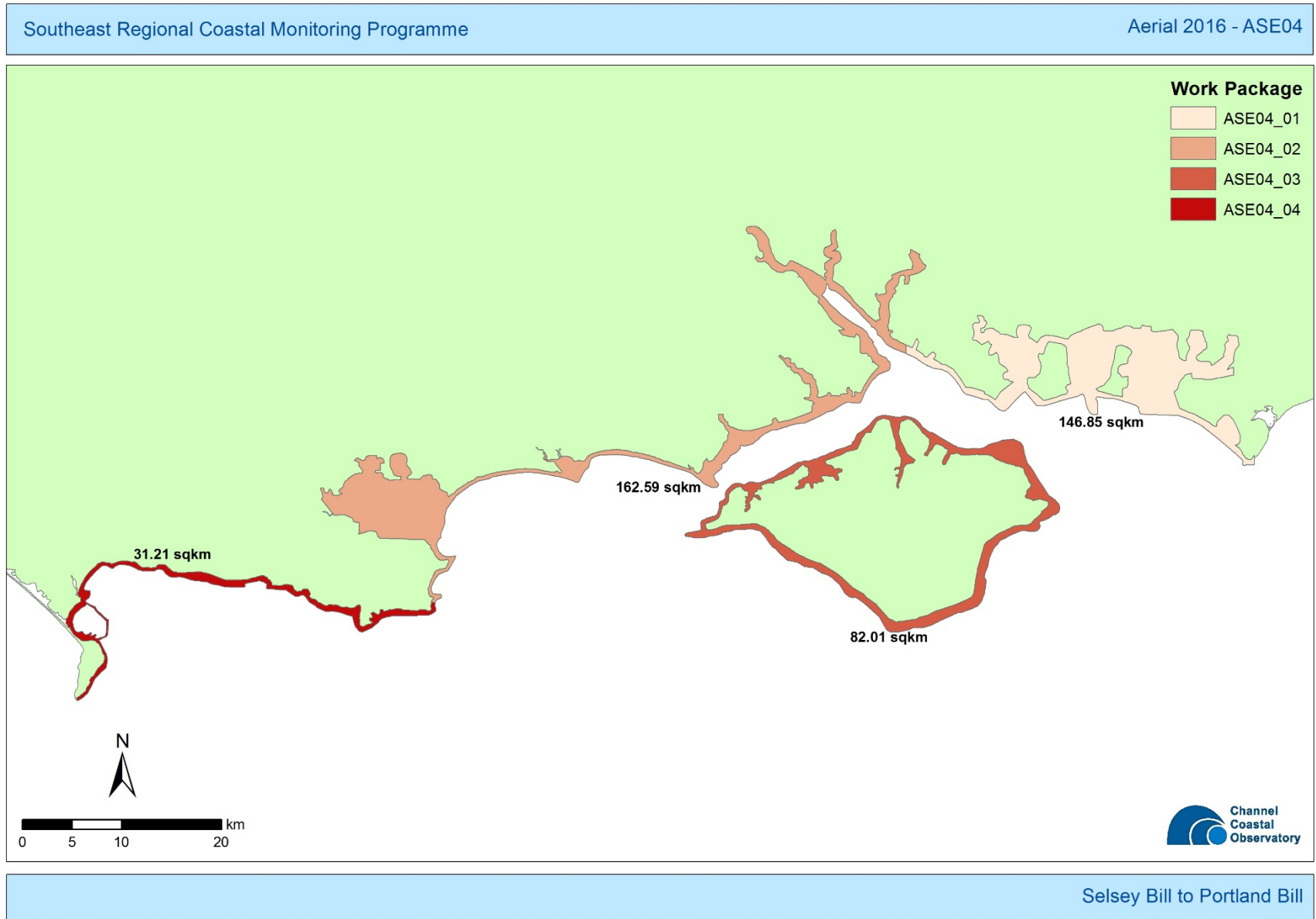


Figure 2: ASE04 - Selsey Bill to Portland Bill survey polygons

Polygon No.	Port	Seaward boundary	
		MLWS CD	MLWS OD
<b>Work Package ASE01 – Isle of Grain to Selsey Bill</b>			
03-01 Gravesend to Kingsdown	TILBURY	0.5	-2.6
	SHEERNESS	0.6	-2.3
	Upnor	0.5	-2.3
	Grovehurst Jetty	0.5	-2.4
	Whitstable	0.5	-2.2
	Herne Bay	0.5	-2.2
	MARGATE	0.5	-2.0
	Broadstairs	0.4	-2.0
	Ramsgate	0.6	-2.0
	Richborough	0.1	-1.2
	Deal	0.8	-2.6
03-02 Kingsdown to Beachy Head	Deal	0.8	-2.6
	DOVER	0.8	-2.9
	Folkestone	0.7	-3.1
	Dungeness	0.9	-3.2
	Hastings	0.7	-3.1
	Eastbourne	0.7	-3.0
03_03 Beachy Head to Selsey Bill	Newhaven	0.4	-3.1
	Brighton Marina	0.7	-2.7
	SHOREHAM	0.6	-2.7
	Worthing	0.6	-2.6
	Littlehampton Entrance	0.4	-2.7
	Bognor Regis	0.5	-2.6
	Pagham	0.5	-2.6
	Selsey Bill	0.8	-2.1
<b>Work Package ASE02 – Selsey Bill to Portland Bill</b>			
04_01 Selsey Bill to Titchfield	Selsey Bill	0.8	-2.1
	CHICHESTER HARBOUR ENTRANCE	0.9	-1.8
	PORTSMOUTH	0.8	-1.9
	Lee-on-the-Solent	1.0	
04_02 Titchfield to Peverill Point	SOUTHAMPTON	0.5	-2.2
	Calshot Castle	0.8	-1.9
	Stansore Point	0.7	-1.7
	Lymington	0.7	-1.3
	Hurst Point	0.7	-1.1
	Christchurch Entrance	0.6	-0.3
	Bournemouth	0.5	-0.9
	Poole Entrance	0.6	-0.8
	Swanage	0.5	-0.9
04_03 Isle of Wight	COWES	0.8	-1.8
	Foreland	0.9	-1.8
	Ryde	0.9	-1.8
	Yarmouth	0.8	-1.2
	Totland Bay	0.7	-1.1

Polygon No.	Port	Seaward boundary	
		MLWS CD	MLWS OD
	Freshwater	0.8	-1.0
	Ventnor	1.0	-1.4
	Sandown	0.8	-1.6
04_04 Peveirill Point to Portland Bill	Swanage	0.5	-0.9
	PORTLAND	0.1	-0.8

Table 1: Elevation of seaward boundary

**2. FLYING WINDOW**

Photography shall be captured between 01 April XXXX and 30 September XXXX.

**3. NUCLEAR POWER STATIONS**

Nuclear power station sites where data removal is required:

- Dungeness

**4. EXISTING SURVEY CONTROL**

The Regional Coastal Monitoring Programmes' control network of E1 and E2 stations may be used for ground control. Full witness diagrams of the points can be found on [www.coastalmonitoring.org](http://www.coastalmonitoring.org).

**5. DATA MANAGEMENT**

Ortho-rectified imagery shall be delivered in 1km Ordnance Survey tiles. Imagery shall also be supplied as mosaics. Each tile will have three or four associated files (as defined in Final Deliverables section below):

- Enhanced Compressed Wavelet image file with the extension \*.ecw
- Supporting \*eww file
- MapInfo table with the extension \*.tab
- \*tif with associated \*.tfw file

**5.1 FILE NAMES AND CONTENTS**

Filenames shall not contain spaces. Filenames for the imagery are based on Ordnance Survey 1km tiles and the date of capture. If imagery was captured within 2 or 3 consecutive days, the filename should use the last day of data capture. If flights more than 4 or 5 days separated batches data capture, each batch should be named separately. For example, for orthophotography:

OSOSOS\_YYYYMMDDortho.\*

where: OSOSOS is the Ordnance Survey 1km grid square name  
 YYYY is the year of the flight (4 digits)  
 MM and DD are the month and day of the flight respectively (2 digits)  
 Ortho is a suffix representing the data type

Examples: [SU4700\\_20100813ortho.ecw](#)  
[ST1234\\_20110513ortho.eww](#)  
[TQ1289\\_20090813ortho.tab](#)

Filenames for the FCIR orthophotography shall be the same as for the orthophotography, with the file suffix "FCIR" replacing "ortho":

*Example:*        [SU4700\\_20100813FCIR.ecw](#)

Filenames for image mosaics shall be based on the Work Package, survey polygon and the date flown:

WP\_xx\_YYYYMMDDortho.\*

where:            WP is the Work Package name (variable number of letters and digits)  
                      xx is the survey polygon

*Examples:*        [ASE03\\_01\\_20100813ortho.ecw](#)

[ASE04\\_02\\_20100813FCIR.ecw](#)

The image tile index (\*.shp) will contain the extent of each orthorectified image tile of the relevant flight. The file is named according to the Work Package/survey polygon and the date:

*Example:*        [Index\\_ortho\\_ASE01\\_02\\_20111027.shp](#)

Each tile will have the following attribute data associated:

- Ordnance Survey tile reference
- Date of data collection
- ground sample resolution
- Bounding co-ordinates (Xmin, Ymin, Xmax, Ymax)

The Report of Survey (\*.pdf) is named according to the Work Package/survey polygon and the date:

*Example:*        [Report\\_ortho\\_ASE01\\_02\\_20111027.pdf](#)

## 5.2 FILE FORMATS

### ECW files (\*.ecw)

ECW orthophotography files shall contain 3-band (RGB). FCIR orthophotography files shall contain adjusted 3 band false colour imagery.

The ECW files must contain all the information required to georeference them, comprising the actual transformation parameters and the coordinate system. The coordinate system as referenced by the EPSG (European Petroleum Survey Group) id 27700 must be embedded in the ECW files:

```
PROJCS["OSGB 1936 / British National Grid",
  GEOGCS["OSGB 1936",
    DATUM["OSGB_1936",
      SPHEROID["Airy 1830",6377563.396,299.3249646,
        AUTHORITY["EPSG","7001"]],
      AUTHORITY["EPSG","6277"]],
    PRIMEM["Greenwich",0,
      AUTHORITY["EPSG","8901"]],
```

```
UNIT["degree",0.01745329251994328,  
  AUTHORITY["EPSG","9122"]],  
  AUTHORITY["EPSG","4277"]],  
PROJECTION["Transverse_Mercator"],  
PARAMETER["latitude_of_origin",49],  
PARAMETER["central_meridian",-2],  
PARAMETER["scale_factor",0.9996012717],  
PARAMETER["false_easting",400000],  
PARAMETER["false_northing",-100000],  
UNIT["metre",1,  
  AUTHORITY["EPSG","9001"]],  
  AUTHORITY["EPSG","27700"]]
```

#### EWV files (\*.eww)

The associated EWW files must contain the X and Y pixel size and the coordinates of the upper left corner of the image.

*Example:*

```
0.10  
0.00  
0.00  
-0.10  
561500.05  
100999.95
```

#### Tab files (\*.tab)

The associated tab files must be a MapInfo-compatible version of the ecw files, containing an image and any information necessary for the image to be displayed in the correct geographic location.

#### Tiff files (\*.tif)

TIF orthophotography files shall contain 3-band (RGB). FCIR orthophotography files shall contain adjusted 3 band false colour imagery.

The TIFF files must contain all the information required to georeference them, comprising the actual transformation parameters and the coordinate system. The coordinate system as referenced by the EPSG (European Petroleum Survey Group) id 27700 must be embedded in the TIFF header files using tags and GeoKeys:

Tag 33550 (model pixel scale tag)  
Tag 33922 (model tie point tag)  
Tag 34735 (GeoKey directory tag)

TFW files (\*.tfw)

The associated TIFF world files must contain the X and Y pixel size and the coordinates of the upper left corner of the image.

*Example:*                   0.10  
                                   0.00  
                                   0.00  
                                  -0.10  
                                 561500.05  
                                 100999.95

**5.3 METADATA**

Metadata information shall be supplied with the data files; a template metadata \*.xlsx will be supplied by the Employer (see example below). One metadata form is required per survey polygon, providing the information is appropriate for all survey files submitted. If multiple instruments were used to capture a polygon, multiple metadata forms are required.

<b>METADATA FORM FOR ORTHORECTIFIED AERIAL PHOTOGRAPHY</b>		
<b>General Information</b>		
Name of the camera manufacturer		
Camera model		
Serial number of lens		
Date of calibration (dd/mm/yyyy)		
Focal length (mm)		
Offset from focal point (mm)		
Average flight height		
Specify DTM used for rectification		
Scale of photography		
Start date (dd/mm/yyyy)		
End date (dd/mm/yyyy)		
<b>Quality Information</b>		
Ground sampling size (pixel size)		
Estimated accuracy of dataset	positional accuracy	+/- ?m
	elevational accuracy	+/- ?m
Explanation of accuracy estimate		
Name of survey report		Report_ortho_*.pdf
<b>Metadata Information</b>		
Data has been collected by		<i>Name of Consultant</i>
Comments		

Filename:           Meta\_ortho\_WP\_xx\_YYYYMMDD.xls  
*Example:*        Meta\_ortho\_ASE03\_02\_20160517.xls



**Note:** The medium on which the data is delivered is to be labelled as follows:

Label: Orthophotos  
SurveyAreaName or Work Package No.  
YYYYMMDD  
No. of medium  
Consultant  
Delivery reference no.

*Example:* Orthophotos  
Christchurch Bay – ASE04  
20160813  
Hard Drive 1 of 3  
Consultant  
Delivery Ref. no. 12345

## 6. FINAL DELIVERABLES

### Per survey polygon

- 3-band (RGB) orthorectified photography tiles (\*.ecw, \*.eww, \*.tab)
- 3-band adjusted FCIR orthorectified photography tiles (\*.ecw, \*.eww, \*.tab)
- Flight index (\*.shp)
- Survey report (\*.pdf)
- Metadata (\*.xlsx)

Final deliverables shall be sent to the Employer (Clause 1.2.3) within 6 weeks of completion of all flying for a survey polygon.

## 7. PAYMENT SCHEDULE

Preliminary data (Clause 1.1.5) data will be assessed by the Employer, within 15 days of receipt, as a trigger for Payment Stage 1. Note that the assessment will be merely a preliminary check that the approximate extent of the survey area has been flown; acceptance of preliminary data will *not* imply that the seaward limit has been successfully achieved – full checks that the inter-tidal beach above the required elevation has been captured will be carried out as part of the Employer's checks on the final deliverables.

For each Work Package:

- Payment Stage 1 35% on acceptance by the Employer of preliminary data
- Payment Stage 2 35% on delivery of processed data, survey report and metadata
- Payment Stage 3 30% on final acceptance of data by the Employer

## **8. METHOD STATEMENT**

As part of the method statement, the Consultant will provide full details to show that the technical requirements of the Specification and Brief can be met. The method statement shall make reference to:

- The method to be used to obtain the position of the aircraft
- Instrumentation to be used
- Instrument calibration certification
- Methodology for flight planning, including how to meet seaward boundaries
- Methodology for orthorectification
- Quality control procedures
- Outline programme for achieving survey within the given time frame