

	(g) elevation NODATA_value used will be- 9999 by convention and refers to all pixels that do not contain any data (null values)	
2. Coverage - all products		
2.1	Natural colour ortho-rectified and false colour ortho-rectified digital aerial imagery data and DTM/DSM data provided by the Supplier to each Licensee shall cover 100% of Great Britain (England, Wales and Scotland) in terms of land area.	M
3. Reference framework - all products		
3.1	The data for GB provided by the supplier to each Licensee shall be supplied in the British National Grid (OSGB36®) The Contours Data and DTM/DSM data provided by the Supplier to each Licensee shall be supplied with the vertical datum based on the Mean Sea Level at Newlyn. Data will also be provided in WGS84.	M D
4. Data Representation		
A. Aerial Photography products		
4.A.1.	The digital aerial imagery data provided by the Supplier to each licensee shall be: - in Raster Format - Colour balanced Additionally, the supplier should provide the following to licensees on request: - Non colour balanced - Stereo scans The Air Height and Spot Height Features provided by the Supplier to each Licensee shall be provided as a Point Layer.	M HD
4.A.2	The MHW Line provided by the Supplier to each Licensee shall be: - In Vector Format; - A Line Layer	M
B. Height Data Products		

4.B.1	<p>The DTM Data provided by the Supplier to each Licensee shall be in raster Format of a 5m cell size</p> <p>The DSM Data provided by the Supplier to each Licensee shall be in raster Format of 2m cell size</p> <p>The DTM Data provided by the Supplier to each Licensee shall be in raster Format of a 2m cell size.</p> <p>The DSM Data provided by the Supplier to each Licensee shall be in raster Format of 2m cell size</p>	M HD
5. Spatial Accuracy		
A. Aerial Photography Products		
5.A.1	<p>The Supplier shall ensure that the resolution of the digital aerial imagery data supplied to each Licensee is:</p> <ul style="list-style-type: none"> - Natural Colour ortho-rectified digital aerial imagery is 25 cm on the ground for the full coverage. - Natural Colour ortho-rectified digital aerial imagery is 12.5 cm on the ground for the full coverage. - False Colour ortho-rectified digital aerial imagery supplied to each Licensee is 25 cm on the ground for coverage supplied for full coverage - Stereo pairs at capture scale for the full coverage 	M HD
5.A.2	<p>Optionally where available the supplier shall provide high resolution data to each Licensee:</p> <p>Natural Colour ortho-rectified digital imagery shall be equivalent to at least 5 cm on ground for urban areas</p>	D
5.A.3	<p>The supplier shall ensure that the data for Natural ortho-rectified digital aerial imagery has a Horizontal Positional Accuracy to deliver a confidence level of no less than 95% to deliver +/- 1.25 metre RMSE.</p> <p>The supplier shall ensure that the data for False Colour ortho-rectified digital aerial imagery has a Horizontal Positional Accuracy to deliver a confidence level of no less than 95% to deliver +/- 1.25 metre RMSE</p> <p>The RMSE should be included with the metadata for each image</p>	M
5.A.4	<p>Radiometric Quality - Prior to its compression into the delivery format, both the Natural and False Colour ortho-rectified digital aerial imagery derived from the photography shall be captured using full 24 bit colour or better with three colour bands (RGB)</p>	M
5.A.5	<p>Orthorectification accuracy shall be consistent throughout the imagery data product</p>	D
B. Height Data Products		

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5.B.1	<p>The Contours Data and DTM/DSM provided by the Supplier shall have:</p> <ul style="list-style-type: none"> - a Horizontal Positional Accuracy to deliver a confidence level of no less than 98% to deliver a +/- 2.5 RMSE from the sample mean or better - a Vertical Positional Accuracy to deliver a confidence level of no less than 98% to deliver a +/- 1.5 RMSE from the sample mean or better 	M
5.B.2	<p>The Contours Data and DTM/DSM provided by the Supplier to each Licensee shall be stored to a minimum coordinate Precision of a centimetre</p>	M
6. Data Currency		
6.1	<p>The Supplier shall ensure that the Natural Colour ortho-rectified digital aerial imagery. The False Colour ortho-rectified digital aerial imagery and the DTM/DSM covering the complete land area of Great Britain, including coastal structures such as bridges and piers, is maintained so that it shall be no more than 3 years old at the commencement of the agreement.</p> <p>The supplier shall ensure that all imagery is maintained so that it shall be no more than 2 years older by the start of the second year of the contract.</p>	M D
6.2	<p>The supplier shall ensure that False Colour ortho-rectified digital aerial imagery has 100% temporal compatibility with the true colour orthomosaics</p>	M
6.3	<p>All products will be temporally matched within one year of the contract start date.</p>	HD
6.4	<p>The Supplier must have in place and maintain a Data Capture Programme. The Data Capture Programme is to be provided to the Contract Manager at the start of the contract or within 1 month of the contract start date. The Supplier shall provide the Data Capture Programme for subsequent years no later than 3 months prior to the start of the flying year to the Contract Manager for agreement</p> <p>The supplier will publish progress against the Data Capture Programme on the website at least every 4 weeks.</p> <p>The supplier will ensure that a currency layer is included in data downloads/web services products showing the currency of each tile.</p>	M
6.5	<p>The supplier will prioritise certain areas for capture at any time at the Contract Authority's (Cabinet Office) request and ensure that data is made available no later than 2 months after capture.</p> <p>The supplier will capture areas at a higher resolution at the Authority's request.</p>	HD D
B. Height Products		
6.B.1	<p>The Supplier shall provide the Contract manager with a planned revision timetable for Contours Data and DTM/DSM at the start of the contract or within 1 month of the contract start date for the contours. The Supplier shall review, update and verify the contours in accordance with such Revision Timetable.</p>	M

7.Data Quality		
A. Aerial Photography Products		
7.A.1	The supplier shall ensure that Natural Ortho-rectified aerial imagery and False Ortho-rectified aerial imagery is created using full stereoscopic coverage of the source photography.	M
7.A.2	The Supplier shall ensure that the Aerial Photography Data supplied to each Licensee complies with RICS 2001 or better specification for vertical air photography or equivalent	M
7.A.3	<p>The Supplier shall ensure that the Aerial Photography Data product supplied to each Licensee is of a consistently high aesthetic quality across the full extent of the Aerial Photography Data in terms of:</p> <ul style="list-style-type: none"> a) radiometric consistency b) Brightness - Rainbow effects are caused by image processing and can be visible at the border of bright areas, this must be kept to a minimum. c) Shadows - Obscuring shadows must be kept to a minimum. d) Contrast- Contrast must be consistent across the image. e) Absence of cut lines f) Foreign artefacts - Any images with artefacts that obscure objects/features should be rejected g) Radial displacement of elevated features h) Colour balance - Colour misregistration and bleeding must be kept to a minimum i) Absence of snow cover j) Absence of cloud cover k) Data capture for Scotland is only attempted between April and October and complies with all other quality requirements <p>l) Trees in leaf</p>	<p>M</p> <p>HD</p>

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7.A.4	<p>The Supplier shall ensure that the Aerial Photography Data supplied to each Licensee is of a consistently high aesthetic quality across the full extent of the Aerial Photography Data in terms of:</p> <p>a) Shadows- Obscuring shadows must be kept to a minimum, such as in mountainous areas where shadowing must be less than 3% per square km.</p> <p>b) Snow cover must be less than 1% per 5 km by 5 km block, and less than 1% per 1 km image</p> <p>c) Cloud cover - Cloud cover must be less than 1% per 5 km by 5 km block, and less than 1% per 1 km image.</p>	<p>HD</p> <p>HD</p> <p>HD</p>
7.A.5	<p>The Supplier shall ensure that the source photography used to create the Natural ortho-rectified digital aerial imagery and False colour ortho-rectified digital aerial imagery supplied to each Licensee is flown to RICS specifications</p>	M
7.A.6	<p>Natural colour ortho-rectified digital aerial imagery must cover all areas of the coast out to Mean Low Water, including intertidal areas. If requested by a Licensee and where reasonably practicable, photography covering large intertidal areas such as significant areas of mudflat or large estuaries shall be taken at low tide.</p>	M
7.A.7	<p>Compressed Aerial Photography formats shall be sourced from a previously uncompressed TIFF, with a maximum target compression ratio of 10:1. The Aerial Photography Data should also be available in original uncompressed format if required by a Licensee</p>	M
7.A.8	<p>Within one month of the start of the contract, the Supplier shall provide a draft plan to the Authority detailing how they will be quality assuring the data and products. The final plan will be agreed by the Supplier and the Authority.</p>	M
B. Height Data Products		
7.B.1	<p>The Supplier shall ensure that the Contours Data and DTM/DSM provided to each Licensee contains each and every land features in Great Britain.</p> <p>The Contours Data provided by the Supplier to each Licensee shall have no less than 100% of all Attributes/metadata correctly assigned to each Feature. The Supplier shall maintain the Contours Data to this level of accuracy.</p> <p>No less than 100% of the Contours Data provided by the Supplier to each Licensee shall be Topologically Correct. The Supplier shall maintain the Contours Data to this level of accuracy.</p> <p>The Contours Data provided by the Supplier to each Licensee shall originate from a DTM(Digital Terrain Model). The supplier to provide details of methodology of how the DTM/DSM data has been and will be generated.</p>	M
7.B.2	<p>The DTM/DSM provided by the Supplier to each Licensee shall have no less than 100% of all Metadata information correctly assigned to each DTM/DSM and be Morphologically correct. The</p>	M

	Supplier shall maintain the DTM/DSM to the same level of accuracy.	
Supply Options		
A. Aerial Photography Format		
8.A.1	The Supplier shall provide the data with the appropriate geo- referencing files (a) JPEG (b) ECW (c) Uncompressed TIFF for individual frames (d) GEOTIFF (e) JPEG2000	M D
8.A.2	The Supplier shall provide the data with the appropriate geo-referencing files a) ERDAS Imagine b) MrSID	HD D
B. Height Data Format		
8.B.1	The Supplier shall provide the Contours Data to each Licensee in such of the following Formats as the Licensee may from time to time specify: a) GML; b) DXF; c) ESRI Shapefile; d) Mapinfo MID/MIF & TAB e) ESRI FileGeoDatabase	M
8.B.2	The Supplier shall provide the DTM/DSM Data to each Licensee one or more of the following media: (a) ESRI Binary Grid (b) ESRI ASCII Grid (c) GEOTIFF	M
C. All products data delivery		
8.C.1	The Supplier shall provide the Data to each Licensee on one or more of the following media: (a) CD and/or DVD (b) portable hard drive; (c) Download; as the Licensee may specify within 15 working days of receipt of a Data Request from a Licensee. The Supplier shall also provide each Licensee with online access to a history of Data Requests for that Licensee	M

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	<p>The Supplier shall at all times have and maintain a strategy for supplying Datasets in any new Format which is introduced during the term of the Contract. The Supplier shall on receipt of reasonable written notice from the Authority provide the strategies to meet new format requirements</p> <p>Additional media to be provided by supplier to Licensee on request</p>	<p>M</p> <p>HD</p>
8.C.2	<p>The Supplier shall label each CD, DVD or portable hard drive with:</p> <p>(a) order number; (b) relevant filenames; (c) Data Format; and (d) Date of supply.</p>	M
8.C.3	<p>The supplier shall name each download file with:</p> <p>(a) Order number (b) Date of capture</p>	M
8.C.4	<p>The Supplier shall provide the data to each Licensee:</p> <p>(a) for Great Britain as a whole; (b) for one or more of the following countries: (i) England; (ii) Wales; (iii) Scotland,</p> <p>as the Licensee may specify.</p>	M
8.C.5	<p>The Supplier shall provide the digital aerial imagery Data, contours data and DTM/DSM to each Licensee according to a specific User Defined Area.</p> <p>The Licensee shall define the User Defined Area as a Tile, Bounding Box or Irregular Shaped Polygon.</p>	M
8.C.6	<p>The Supplier shall provide the Data to each Licensee as a series of predefined Tiles</p> <p>The Aerial Imagery Tiles shall be of a 1km x1km size. The Contours Data and DTM/DSM tiles shall be 5km x 5km size</p>	M
8.C.7	<p>Data provided by the Supplier to each Licensee in the form of Tiles shall have each Tile Edge Matched.</p>	M
8.C.8	<p>The Data provided by the Supplier to each Licensee shall be supplied as individual frames, for project specific areas as requested by Licensees.</p>	M
8.C.9	<p>The Supplier shall resupply a Licensee with the Data on such date as the Licensee may from time to time specify.</p>	M

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	<p>The Supplier shall resupply a Licensee with the Data it has recaptured where the Licensee has specified a particular area that they will require updates for.</p> <p>The supplier shall ensure that the entire Natural Colour ortho-rectified digital aerial imagery Data is replaced over a three year cycle.</p> <p>The Licensee may request a complete annual resupply of DTM/DSM at any time.</p>	
8.C.10	<p>The Supplier shall provide each Licensee that has expressed an interest in the GB wide data set with Full Supply of Digital Aerial Imagery, DTM, DSM and Contours Data:</p> <p>(a) Annually</p> <p>The Supplier shall provide each Licensee with Change Only Updates:</p> <p>(a) 6 months for Digital aerial imagery (b) Annual for contours data and DTM/DSM</p>	<p>M</p> <p>M</p>
8.C.11	<p>The Supplier shall provide each Licensee with Full Supply of the Data at the following intervals:</p> <p>a) every 6 months; or b) every 3 months.</p> <p>The Supplier shall provide each Licensee with Change Only Updates Data at the following intervals:</p> <p>(a) Every 3 months; or (b) Continuously throughout the contract as new data becomes available.</p>	<p>HD</p> <p>D</p> <p>HD</p> <p>HD</p>
8.C.12	<p>The supplier shall provide semi processed versions of the products to Licensees on request.</p>	M
8.C.13	<p>The supplier shall provide a processing plan to the Contract Authority 1 month prior to the end of the capture season in each contract year. This plan will be published on the website within 2 weeks of the start of the processing schedule. The plan will also be made available as a scaled layer within the data products.</p> <p>All data captured in a given calendar year will be made available by no later than the end of that calendar year.</p> <p>All data captured in a given calendar year will be made available no later than 3 months after the capture date.</p>	<p>M</p> <p>M</p> <p>HD</p>
9. Metadata - All Products		
9.1.	<p>The Data provided by the Supplier to each Licensee shall be accompanied by the mandatory Elements of Discovery Level Metadata conforming to the UK Gemini 2.2 standard (and future updates to this standard).</p> <p>Metadata will conform to the standards required for imagery data to be used for legal reasons.</p>	M

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10.3	All web services will include metadata as specified at 9.2.	M
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