1. Dataset title (mandatory)

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| Complete Great Barrier Reef (GBR) Reef and Island Feature boundaries including Torres Strait (NESP TWQ 3.13, AIMS, TSRA, GBRMPA) |

1. Dataset Authors (mandatory)

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| Lawrey, Eric, Dr  Australian Institute of Marine Science  07 4753 4116  Townsville, Queensland, Australia  [e.lawrey@aims.gov.au](mailto:e.lawrey@aims.gov.au)  Stewart, Melanie  Torres Strait Regional Authority  07 40373781  Cairns, Queensland, Australia  [melanie.stewart@tsra.gov.au](mailto:melanie.stewart@tsra.gov.au) |

## Dataset documentation

1. Preview images (mandatory)

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| Image name | Attribution | Caption |
| Torres\_Strait\_Reef\_and\_Island\_Features\_Preview\_Map.png | Australian Institute of Marine Science | Preview map showing an extract of Southern and Western Torres Strait. |

1. Summary of what this dataset describes and where it is relevant? (mandatory)

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| This dataset consists of a shapefile of the reefs, islands, sand banks, cays and rocks of the whole Great Barrier Reef (GBR) including Torres Strait. This dataset is an extension of the mapping in the GBR Marine Park to include Torres Strait. The Torres Strait region was mapped at a scale of 1:50,000 (Lawrey, E. P., Stewart M., 2016) and these new features are referred to as the "Torres Strait Reef and Island Features" dataset.  The Complete GBR Reef and Island Features dataset integrates the "Torres Strait Reef and Island Features" dataset with the existing "GBR Features" (Great Barrier Reef Marine Park Authority, 2007) to create a single composite dataset of the whole Great Barrier Reef.  All new mapped features in Torres Strait have been allocated permanent IDs (such as 10-479 for Thursday Island and 09-246 for Mabuiag Reef). These IDs are for easy unambiguous communication of features, especially for unnamed features. |

1. Background information, purpose and lineage (optional)

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| This dataset was developed to extend the mapping of the Great Barrier Reef Marine Park (GBRMP) into Torres Strait to allow the creation of a single consistent dataset covering the entire GBR. It was initiated to allow the processing of data from coral reef surveys in Torres Strait by the Eye on the Reef database run by GBRMPA. |

1. Methods (mandatory)

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| This project mapped Torres Strait using a combination of existing island datasets as well as a semi-automated and manual digitising of marine features (reefs and sand banks) from the latest aerial and satellite imagery. No features were added to the dataset without confirmed evidence of their existence and position from at least two satellite image sources.  The Torres Strait Reef and Island Feature mapping was integrated with the existing "GBR Features" dataset by GBRMPA to ensure that there were no duplicate feature ID allocations and to create a single dataset of the whole GBR. The overall dataset development was as follows:  1. Dataset collation and image preparation:  - Collation of existing maps and datasets.  - Download and preparation of the Landsat 5, 7, and 8 satellite image archive for Torres Strait.  - Spatial position correction of Landsat imagery against a known reference image.  2. Sand Bank features:  - Manual digitisation of sand banks from Landsat 5 imagery.  - Conversion to a polygon shapefile for integration with the reef features.  3. Reef features:  - Semi-automated digitisation of the marine features from Landsat 5 imagery.  - Manual trimming, cleaning and checking of marine features against available aerial and satellite imagery.  4. Island features:  - Compilation of island features from existing datasets (DNRM 1:25k Queensland Coastline, and Geoscience Australia Geodata Coast 100k 2004)  - Correction of the island features from available aerial and Landsat imagery.  5. Merging: of marine and island features into one dataset.  6. Classification: of mapped features, including splitting fringing reefs based on changes in classification.  7. ID allocation:  - Clustering to make groups of related features (i.e. an island, plus its fringing reefs and related sand banks; a reef plus its neighbouring patch reefs, etc.).  - Merging with the GBR Features dataset. This was to ensure that there were no duplicate allocations of feature IDs. This involved removing any overlapping features above the Great Barrier Reef Marine Park from the GBR Feature dataset.  - Allocation of group IDs (i.e. 10-362) following the scheme used in the GBR Features dataset. Using R scripting.  - Allocation of subgroup IDs (10-362b) to each feature in the dataset. Using R scripting.  8. Allocation of names:  - Names of features were copied from some existing maps (Nautical Charts, 250k, 100k Topographic maps, CSIRO Torres Strait Atlas).  For more information about the methods used in the development of this dataset see the associated technical report (Lawrey, E. P., Stewart M., 2016) |

1. Limitations of the data (optional)

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| This dataset has mapped features from remote sensing and thus in some parts of Torres Strait where it is very turbid this may result in an underestimate of boundary of features. It also means that some features may be missing from the dataset.  This dataset is NOT SUITABLE FOR NAVIGATION.  The classification of features in this dataset was determined from remote sensing and not in-situ surveys. Each feature has a confidence rating associated with this classification. Features with a 'Low' confidence should be considered only as guidance.  This project only digitised reefs in Torres Strait, no modifications were made to the features from the integrated GBR Features dataset. |

1. Format of the data (mandatory)

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| This dataset is available as a shapefile, a set of associated A1 preview maps of the Torres Strait region, ArcMap MXD file with map styling and ArcMap map layer file. The shapefile is also available in KMZ format suitable for viewing in Google Earth.  TS\_AIMS\_NESP\_Torres\_Strait\_Features\_V1b\_with\_GBR\_Features.shp (26 MB),  TS\_AIMS\_NESP\_Torres\_Strait\_Features\_V1b\_with\_GBR\_Features.kmz (15 MB):  Torres Strait features (3927 polygon features) integrated with the (GBRMPA) GBR Features dataset (5685 polygon features). This dataset covers the entire GBR.  TS\_AIMS\_NESP\_Torres\_Strait\_Features\_V1b.kmz (4 MB):  Only the Torres Strait features (3927 polygon features). Use this if your Google Earth is struggling with the full dataset. |

1. Data Dictionary (optional)

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| - DATASET: (TS Features, GBR Features) Which dataset this feature belongs to. This attribute is used when the Torres Strait Reef and Island Features dataset is merged with the GBRMPA GBR Features dataset.  - LOC\_NAME\_S: (e.g. Tobin (Zagarsum) Island (10-147a)) Location Name: Name of the feature and its ID  - GBR\_NAME: (e.g. Tobin (Zagarsum) Island) Name of the features with no ID  - CHART\_NAME: (e.g. Tobin Island) Name of the feature on the Australian Nautical Charts  - TRAD\_NAME: (Zagarsum) Traditional name. From various sources.  - UN\_FEATURE: (TRUE, FALSE) Unnamed Feature: If TRUE then the feature is unnamed. Useful for limiting labels in maps to features with names.  - LABEL\_ID: (10-147a) ID of the feature  - SORT\_GBR\_I: (10147) ID of each feature cluster made up from the Latitude ID and Group ID. Used for sorting the features.  - FEAT\_NAME: (Island, Rock, Reef, Cay, Mainland, Bank, Terrestrial Reef, Other ) Classification of the feature that is used in the GBR Features dataset. See 3.6 Classification scheme for more information.  - LEVEL\_1, LEVEL\_2, LEVEL\_3: Hierarchical classification of the features. See Appendix 3: Feature Classification Descriptions.  - Checked: (T, F) Flag to record if the feature was reviewed in detail (at a scale of approximately 1:5000) after the initial digitisation (T - True, F - False). Unchecked features were only reviewed at a coarser scale (1:25000) to spot significant problems.  - IMG\_SOURCE: (Aerial, AGRI, Landsat, ESRI) Imagery type used for the final digitisation checking and correction. (AGRI - AGRI PRISM by GA, Landsat is Landsat 8 or Landsat 5, ESRI - ArcMap satellite basemap)  - CLASS\_SRC: (Aerial, AGRI, Landsat, Google, Marine Chart) Imagery type used to determine the classification of the feature. Often the classification will be an aggregation of information from multiple image sources. This field will record the highest resolution source used. For some small features the classification was obtained from the Marine Chart, generally for Rocky Reefs.  - CLASS\_CONF: (High, Medium, Low) Confidence of the classification applied to the feature. The confidence is dependent on the clarity and range of the imagery available for classification.  High - Clear high resolution imagery available (Aerial, Google) with good water visibility. Key characteristics of the classification clear visible. Feature classification fits the context for the neighbouring region.  For unconsolidated features (such as sand banks) a High confidence classification would be applied if the shape, colour and context fit and in particular if movement is visible over time-lapse Landsat imagery.  Medium - Moderate imagery available (Landsat 8 pan sharpened, some high resolution imagery) that shows key characteristics of the feature and the classification fits the context for the neighbouring region.  Low - Only Landsat 5 imagery is available, the feature is small and its origin is unclear from the neighbouring context. This is the default confidence rating for any features that were not individually checked.  - POLY\_ORIG: (QLD\_DNRM\_Coastline\_25k, New, GBR\_Features, AU\_GA\_Coast100k\_2004) Original source of the polygon prior to any modifications. New features correspond to all the mapped marine features. Most features from the other source would have been modified as part of the checking and trimming of the dataset.  - SUB\_NO: (100, 101, …) Subgroup number. Numeric count, starting at 100 of each feature in a group. Matches the subgroup ID i.e. 100 -> blank, 101 -> a, 102 -> b, etc.  - CODE: (e.g. 10-147-102-101) Unique code made from the various IDs. This is a GBR Feature attribute.  - UNIQUE\_ID: (10147102101) Same as the CODE but without the hyphens, This is a GBR Feature attribute.  - FEATURE\_C: (100 - 110) Code applied to each of the FEAT\_NAMEs.  - QLD\_NAME: (Tobin Island) Same as the GBR\_NAME  - X\_COORD: Longitude in decimal degrees east, in GDA94.  - Y\_COORD: Latitude in decimal degrees north, in GDA94.  - SHAPE\_AREA: Shape Area in km2  - SHAPE\_LEN: Shape perimeter length in km  - CHECKED: (TRUE, FALSE) Whether the features was carefully checked (at a scale of better than ~1:5000) and manually corrected to this level of precision. If FALSE then the feature was only checked to approximately a1:25000 scale.  - PriorityLn: (TRUE, FALSE) Priority Label - If TRUE then this feature's label should be included in a map. Usually correspond to features with names. Use to reduce near duplicate labels of the islands and their surrounding fringing reefs.  - COUNTRY: (Australia, Papua-New Guinea) Sovereignty of the feature. This is based on a spatial join with the Australian Maritime Boundaries 2014a. The Territorial Sea and the Exclusive Economic Zones were merged to create a mask of the Australian maritime boundary. Note this should not be considered authoritative. |

1. Temporal extent (When) (mandatory)

When was the data collected for this dataset? If this dataset is not based on time dependent data (like zoning, bathymetry, etc.) then when was this dataset created?

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| Start date: | 31/10/1988 | End date: | 1/08/2015 |

1. Spatial Extent (Where) (mandatory)

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| How is the spatial information supplied? | Torres Strait |

1. References (optional)

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| Lawrey, E. P., Stewart M. (2016) *Mapping the Torres Strait Reef and Island Features - Extending the GBR Features (GBRMPA) dataset.* Report to the National Environmental Science Programme. Reef and Rainforest Research Centre Limited, Cairns (117pp.).  Great Barrier Reef Marine Park Authority (2007). *Great Barrier Reef (GBR) Features (Reef boundaries, QLD Mainland, Islands, Cays, Rocks and Dry Reefs) (GBRMPA)*, [Dataset]. Queensland, Australia: eAtlas Repository. <http://eatlas.org.au/data/uuid/ac8e8e4f-fc0e-4a01-9c3d-f27e4a8fac3c> |

1. Declaration (mandatory)

I certify that I am the owner or creator of the submitted dataset and understand that the submitted dataset will be released publically under a [creative commons attribution 3.0 Australian license](http://creativecommons.org/licenses/by/3.0/au/) (contingent on restrictions applied in Question 13).

Example:

Project: NERP TE Project 3.4 - Monitoring of key vertebrate species

Submitted: David Westcott, Date: 28/01/2013

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| Project: | Project 3.13 eAtlas 2015 - NESP data management, Torres Strait NRM plan delivery platform and Torres Strait reef mapping | | |
| Submitted by: | Eric Lawrey | Date: | 19/04/2016 |

## Advanced options: Hosting, Publication and Licensing

This section contains questions that most projects do not need to consider. Please complete these if relevant.

1. Non eAtlas dataset hosting (optional)

Most projects can skip this question as their data will be made publically available via the eAtlas.

Where datasets are already maintained in an existing public institutional database or repository then provide the URL to where the data can be accessed and downloaded. If these systems don't provide public access then please provide a public extract to be hosted on the eAtlas and provide the name of the system where the authoritative data is held.

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| Is this dataset already hosted in an institutional repository? | | No |
| If yes: | What is the name of the repository and a URL to where the data is available from? |  |

1. Restrictions on raw data (optional)

Describe any restrictions on the supply of the raw data. Are there any privacy reasons or sensitive environmental reasons why the original raw data cannot be published? If so please describe the reason for the restriction. In these cases a public form of the data should be developed and made available, such as a spatial summary of the data, or a rounding of the spatial coordinates (introduced error) to protect the exact location of sites. This description should make it clear what aggregation or protection measure has been added to the public form of the data.

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1. Delayed data publication (optional)

Is this dataset currently under an embargo due to a pending publication as part of a journal article? If so please indicate when this dataset can be made public. For most datasets the maximum embargo is 18 months.

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| Is there a reason for delayed publication of this dataset? | No |
| If so why and what date can it be published? |  |

1. Additional licensing information (optional)

Data submitted to the eAtlas is made available publically under a creative commons open access license. This allows others to freely use the data and create derivative works, but they must attribute the original data source.

If this dataset has been created from other datasets that need additional attribution to be included in the data documentation then please provide that here.

Example: Atherton Tablelands photo mosaic (Catterall et al. 2012)

This mosaic work is a digital product based on the "Digital Aerial Photography Area CD, 8063 Bartle Frere 1978 Program" by the Department of Environment and Resource Management (DERM) under a Single Supply License.

Derivative products and copies of this work must display this acknowledgement:

"Based on or contains data provided by the State of Queensland (Department of Environment and resource Management) [2012]. In consideration of the state permitting use of this data you acknowledge and agree that the State gives no warranty in relation to the data (including accuracy, reliability, completeness, currency or suitability) and accepts no liability (including without limitation, liability in negligence) for any loss, damage or costs (including consequential damage) relating to any use of the data. Data must not be used for direct marketing or be used in breach of the privacy laws."

You must also include meta-data with the product(s) and include as a minimum the metadata provided with this supplied data.

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| This dataset integrates parts (everything south of Torres Strait) of the Great Barrier Reef (GBR) Features dataset by Great Barrier Reef Marine Park Authority.  The GBR Features dataset was licensed under a [Creative Commons - Attribution 3.0 Australia](http://creativecommons.org/licenses/by/3.0/au/) licence. Great Barrier Reef Marine Park Authority requests attribution in the following manner: © Great Barrier Reef Marine Park Authority 2014. Updated data available at <http://www.gbrmpa.gov.au/geoportal/>.  To cite this dataset use the following:  Lawrey, E. P., Stewart M. (2016) Complete Great Barrier Reef (GBR) Reef and Island Feature boundaries including Torres Strait (NESP TWQ 3.13, AIMS, TSRA, GBRMPA) [Dataset]. Australian Institute of Marine Science (AIMS), Torres Strait Regional Authority (TSRA), Great Barrier Reef Marine Park Authority [producer]. eAtlas Repository [distributor]. <http://eatlas.org.au/data/uuid/d2396b2c-68d4-4f4b-aab0-52f7bc4a81f5>  To refer to this dataset its name is the "Complete GBR Reef and Island Features" dataset. |