Reef Futures

SPATIAL DATA DICTIONARY

S. Kininmonth, S. Edgar and T. Donovan August 2003

Contents

Acronyms

ADC   - AIMS Data Centre
AIMS   - Australian Institute of Marine Science
CRC Reef   - CRC Reef Research Centre
DD   - Decimal Degrees
DPI   - Department of Primary Industries (QLD)
ESRI   - Environmental Systems Research Institute
GA   - Geoscience Australia
GBR   - Great Barrier Reef
GBRMPA   - Great Barrier Reef Marine Park Authority
GCS   - Geographic Coordinate System
GIS   - Geographical Information System
IMS   - Internet Mapping Service
JCU   - James Cook University
KMS   - Knowledge Management System
PDF   - Adobe's Portable Document Format
SDE   - Spatial Database Engine
WGS84   - World Geodetic System (1984) Datum
ABS   - Australian Bureau of Statistics
ANZLIC   - Australian and New Zealand Land Information Council
EPA   - Environment Protection Authority
UQ   - University of Queensland

Conversions

1DD = 111.11 Km

1DD² = 1234543 ha = 12345.4 Km²

Background

The management of Australia's valuable marine resources are based on decisions that have high consequences for future economic, environmental, social and cultural considerations. Informed decision making is optimised with access to knowledge on all aspects of the marine environment yet many datasets are distributed widely across federal, state and local agencies and community organisations. To integrate the data a variety of tools are required that permit a wide array of managers, researchers and marine users to access the data in a suitable format.

To address these issues the CRC Reef established a task under the Reef Futures program called D4.1 Knowledge Management System. This task has the objectives:
- To develop an information management system that serves the needs of the CRC Reef Centre, its partners and stakeholders in disseminating the synthesis of key research issues.
- To construct a geospatial data warehouse with appropriate metadata structures that will underpin the functionality of the information management system.
- To develop geospatial tools and methods for the analysis and synthesis of geospatial data by supporting the exploration of key CRC Reef research priorities.

This document provides a description of the geospatial data warehouse and the data contained within. The warehouse is located within the Australian Institute of Marine Science where sufficient computing resources are available.

The website (www.reeffutures.org) is designed to provide a portal into the data warehouse and importantly the research being conducted by CRC Reef and AIMS. The webmaps available at the Reef Futures site are dynamically constructed from the same data that is being used by the scientific community. With linkages to publications this site can provide a valuable information management system that serves the needs of the stakeholders of CRC Reef. This web server is located at JCU for maximum bandwidth.

Geospatial tools and methods for the analysis of the integrated data can be demonstrated and the results displayed through the website. Using geostatistical methods the trends and patterns present in the data can be unravelled and used to explore complicated phenomenon. Close collaboration and links with the other Reef Futures program elements provides a wide array of the latest analysis methods. For example the use of Bayesian Belief Networks, classification trees, principal components analysis and kriging provide insights into the patterns of coral bleaching. Coral bleaching is the first issue to be explored using these new techniques.

Development of a Knowledge Management System

A KMS is under construction and consists of three integrated elements:

- an Enterprise Geographic Information System,
- a data centre and
- knowledge transfer servers.

Enterprise GIS

As an active federally funded institution, AIMS is a leading research organisation, with particular expertise in tropical marine ecosystems. Through the CRC Reef Research Centre, AIMS has a large number of partner organisations with whom collaborative research is undertaken. Much of this research is site-specific or, at a minimum, there is a spatial component to the measurements or sampling that is done. Consequently there is a large volume of spatial data that is generated by AIMS, or available to AIMS through its

collaboration with other organisations (e.g. CRC Reef, CSIRO, GBRMPA, JCU). Much of this data has been acquired at a high financial cost, in terms of equipment and personnel alone. Furthermore much of the data records physical or environmental conditions, and will continue to have value in future research and management applications.

Adequate management of these spatial data resources is required to ensure that the data is in a readily available and usable format, and will continue to be available in the future. As part of this strategy, it is important that data is quality controlled, adequately documented, and appropriately stored. To achieve this end effectively requires the implementation of a Geographical Information System (GIS) at an enterprise level. A GIS provides the tools necessary to work with spatial data effectively. Specialised software is required in all aspects of this process, from management of the underlying spatial data, analysis of the data, through to the output of high-quality cartographic and visualization products. A GIS provides many of the tools required, and enables data processing and delivery to be performed in an efficient and coherent manner.

Data Centre

Given the large amount of data collected over thirty years at AIMS, as well as additional data sourced from outside agencies or obtained during collaborative research projects, there is an obvious need for its efficient storage, documentation and management. The Data Centre at AIMS was created in 2001 to undertake this management, and to facilitate data exchange between other projects and organisations. The goal is to extend and enhance the scientific work of CRC Reef Research Centre.

Web Servers

Web servers allow access to spatial data without the cost of specialised GIS software. The main advantage is that users who may not have been exposed to traditional GIS packages can browse and query spatial data using their web browser, in an environment familiar to them. Furthermore it is an efficient mechanism to provide data browsing and viewing capabilities to the general public.

The main application of this technology to date has been the development of the Reef Futures website (www.reeffutures.com), which wias launched in August, 2003. The rationale and implementation of this knowledge transfer tool is discussed in detail in Kininmonth et al (2003). Briefly, web-servers can be viewed as knowledge transfer tools, which have an important role to play in translating research data into information and knowledge. They overcome many of the difficulties associated with traditional research publication methods, and make information available to a wide audience. This enables data stored at AIMS to be used to support information transfer to many external users, including CRC Reef Research Centre's research partners, and management agencies such as GBRMPA.

Purpose of the Reef Futures Spatial Data Dictionary

This Spatial Data Directory has been developed to document the existing datasets stored at AIMS, and to describe some of the common methods of accessing this data. The intention is not just to provide a printed metadata directory but also to provide an overview as to the types of data held within AIMS, and the different methods that can be used to access the data. An overview of the spatial data management process, the range of access mechanisms available to clients, and a summary of the spatial data available will be provided in the following sections.

Data Collation Process

Acquisition and Processing

Before data is loaded into the AIMS spatial database, it is processed through a series of steps to ensure that the final data set is suitably documented, and compatible with all other data. These steps are performed by the Spatial Data Coordinator, and are outlined below:

- The data undergoes a preliminary check for omissions or gross errors. Where possible entire datasets are sourced, rather than having to later merge multiple datasets over a period of time.

- Metadata is sourced for the data as early as possible. As a bare minimum, all mandatory fields required by the ANZLIC metadata standard are obtained. Where available, extra metadata will be incorporated. Metadata is generated where required.

- The data is transformed into a geographic projection based on the wgs84 datum. Decimal degrees are used as the primary units. This serves as a common coordinate system for all AIMS spatial data.

- The data is loaded into a preliminary format (usually geodatabase, occasionally shape file) prior to being loaded into SDE. This allows calculation of appropriate spatial indexing parameters, and editing of field-names where appropriate.

- At this stage metadata is attached to the data if it is not already. Metadata is stored in xml format, and is associated (i.e. "stays") with the data from this point on. It is stored with the data as part of the loading process into ArcSDE. Information on any transformations made to the data are incorporated at this stage.

- The data is now at a stage where it can be loaded into a networked relational DBMS, managed by ArcSDE. Appropriate permissions are assigned to allow it to be accessed by AIMS staff.

- As a final step, the metadata is published to an ArcIMS server, allowing the metadata to be indexed and searched using only a web-browser.

While the above process can be somewhat laborious, many tools exist to facilitate the entire process, and it results in an end product that is well documented, and compatible with all other spatial data held by AIMS.

Data storage

Spatial data storage needs to address a number of factors. Some of the major issues that need to be addressed are:

- Data from a wide range of sources must be able to be stored. Source data sets have spatially disparate extents, and are based on many different datums/spheroids and projections.
- A wide range of data structures must be able to be stored. This includes spatial primitives (Points, Lines, Polygons) as well as rasters (images, tins, grids, etc), and potentially other more specialized data structures (Networks, Relational databases, etc).

- Data should be readily accessible by different user groups. This includes casual browsing, mainstream GIS analysis, as well as specialised and customized access.
- Properly documented tools should exist for data conversion.
- Data should be able to be readily accessed by all suitable members. It should be able to be accessed easily ($\Rightarrow$ networked, web-based delivery) and quickly ($\Rightarrow$ efficient data storage and delivery mechanisms).
- The storage solution should be highly scalable. Ideally the storage system will expand seamlessly as the data-holdings increase.

From the above discussion, it can be seen that a spatial data storage solution needs to meet a wide range of requirements. AIMS and CRC Reef Research Centre has implemented a range of GIS products to fulfill its spatial storage, retrieval and analysis needs. These are generally based on the ESRI product suite, and overall provide a robust, scalable and customizable solution.

This document focuses on spatial data management, and will concentrate on the ArcSDE product, however it should be understood that this is part of an overall spatial data solution, and ArcSDE is tightly integrated with ArcIMS and ArcGIS, to enable spatial data delivery and analysis.

ArcSDE offers a number of advantages when considering a spatial data storage implementation. Probably its biggest advantages are due to its utilization of a commercial Relational Database Management System (RDBMS) for data storage. Consequently:

- Spatial data can be incorporated into an existing RDBMS. (Scalability/Flexibility)

- Fine-grained control can be applied to the data. (Domain specifications, 'rules', PK uniqueness, etc, etc.)

- Well-developed tools are available to provide different access mechanisms to data, to different users.

- Data is provided in terms of a client – server model. This enables multiple clients to access the one store of spatial data efficiently.

ArcSDE has been implemented at AIMS, and it is proving a robust and scalable solution to spatial data storage.

Overview of Reef Futures Spatial Data Holdings

Data by Theme
Coastlines
- National and State coastlines (1:100 000)
- World Vector Shoreline (1:250 000)

Rivers
- Rivers 1:10 Million
- Rivers 1:2.5 Million
- Rivers 1:250 000
- Australian Surface Water Management Areas

Towns (Populated Places, Localities)

- Qld major towns
- World cities (1:15 Million)
- building/builtup/localities (1:250 000)
- Australian towns (1:25 Million)
- Australian towns (1:250 000) (Derived from Topo250K2)

Reefs & Bioregions
- Primary reefs layer (1:250 000)
- Old reefs layer (derived from original crc_reef data)
- Geoscience Australia's reefs (1:250 000)
- Bioregions of the GBR
- World reef (Lines)
- World reefs (Polygons)

Reef Zoning Plans

- Marine Park Zones
- Draft GBR Marine Park Zoning Plan 2003

Relief
- Australian Digital Elevation Model (Cellsize 9second=0.0025 DD (~ 278m))
- World Digital Elevation Model (Image)

Bathymetry
- Australian Bathymetry and Topography Grid
- Davies Reef contours
- Davies Reef spot heights
- Isobath lines for GBR (Lewis, 2001)
- Isobath lines derived from crcgis_ddm500i
- GBR Digital Depth Model Grid (cell size 500m (0.0045 DD))
- Torres Strait region Digital Depth Model (cellsize 0.005 DD)

Nautical Charts
- Nautical chart boundaries (Polygon) – Utility layer
- Nautical chart boundaries (Line) – Utility layer
- Nautical charts (geotiff) for Australian region

Administrative Boundaries
- Conservation Assessment Areas
- Australian Zones
- Australian Land Tenure 1993
- Commonwealth fisheries boundaries
- Dugong Protection Areas
- Multiple Administrative Zones relating the GBR Marine Park

- National Public and Aboriginal Lands (pre 1998)

Hazards
- Earthquake risk contours (Australia)
- AGSO World Earthquake database
- Tropical Cyclone Data (Bureau of Met. point data)
- Cyclone paths generated from met_cyclone (Line)

Environmental Monitoring
- TEACS Ocean Monitoring Network (Requires updating?)
- Sonobuoy Stations (Australia)
- CRC Reef monitoring database

Images
- GBR 30m resolution (Landsat ETM+ Image mosaic)
- Australia 300m resolution (Landsat7 Image mosaic)
- Townsville 10m resolution (Spot Image)
- Davies Reef approx 1m resolution (Aerial Photo)
- World Shaded relief image
- World Worldsat Colour image

Assorted Rasters
- World Daylength (0.5 DD cellsize) by month
- South Eastern Exposure (Fetch distance)
- Scott Reef WA (1:150 000)

Technical Considerations

The standard format used to store geospatial data is within a multi-user database (Oracle8i (running on a Solaris (Unix) Platform)), using ArcSDE. The new Geodatabase format provides the ability to transparently store all data formats, including rasters. It all also provides a standardised platform, with the ability to easily convert between different formats, including all ArcGIS formats, different raster formats, and text file format (ASCII).

The following loading parameters are used for loading Australian datasets, including datasets specific to the GBR region:

Coordinate System: Geographic Coordinates
Projection: Unprojected
Datum: World Geodetic System 1984 (wgs84)
Spheroid: GRS80
Map Units: Decimal Degrees

Storage Units: $9*10^{-6}$ DD (= 1.0 metre)
X-Shift: -9543
Y-Shift: -9696
Precision: 111111
Spatial Grid Tile Size: Approx. 3 times the average feature size.

Different loading parameters are used if the source data varies significantly in spatial extent, and / or differing storage resolutions are required. Examples are world-wide data sets (e.g. those provided by ESRI), and high-resolution data pertaining to a particular area (e.g. Davies Reef). Other loading parameters used are listed in Table 1.

TABLE 1: Loading parameters for datasets of differing spatial span.

LOCATION	Approx. Resolution	MAP UNITS	MAP STORAGE UNITS	PRECISION	X-SHIFT	Y-SHIFT
World	1m	DD	$9x10^{-6}$ DD	111 111	-9664	-9667
Australia	1m	DD	$9x10^{-6}$ DD	111 111	-9543	-9696
Davies Reef	0.1m	DD	$9x10^{-7}$ DD	1 111 111	-819	-984

Coordinate System

An unprojected system is used, so that world-wide and local datasets can be stored in the same way. A geographic coordinate system based on the wgs84 datum ensures that any data collected with a hand-held GPS will be immediately compatible. Modern GIS systems can reproject data on the fly, and this enables metric lengths and areas to be used within the GIS, without duplication of the original data.

Datum

The WGS84 datum is a geocentric (i.e. It is aligned to the earth's centre of mass). This is similar to the Geocentric Datum of Australia 1994 (GDA94), which is also geocentric. For vector data they are essentially identical. For raster data, the same datum should be used. Where data has been supplied in GDA94, it is transformed to WGS84, before being stored.

Storage Units

Units used internally by the geodatabase. These are the units that the internal 4 byte integers represent, and are chosen to represent the level of accuracy required. (NB. 1 metre = $9*10^{-6}$ DD)

Coordinate Shift

Geodatabases store all coordinates in positive integer space, between 0 and $2.14*10^9$. A coordinate shift maximises storage space by forcing the stored data units into the centre of this integer space. The shift is determined by calculating the difference between the middle of the data set and the middle of the coordinate system. The shift is expressed in the units of the data set (ie. $9*10^{-6}$ Decimal Degrees).

Precision

An appropriate level of precision maximises storage space, and increases retrieval speeds. By using an integer (unitary) value, identical results between different computing platforms can be achieved, by removing any dependence on floating-point calculations.
Precision = INT (MapUnits / StorageUnits) = 111111.

The coordinate shift was chosen such that Australia-wide datasets are moved into the centre of the X-Y coordinate space. The precision value represents a precision of approximately 1 metre on the ground, ensuring current and future datasets are able to be efficiently stored, without any data degradation.

The precision and X-Y shifts are applied as the data is loaded into SDE. If a more accurate level of precision is required for a data set, this can be applied as it is loaded into SDE, without affecting other datasets.

Spatial Index Grid Size

The spatial index grid tile size is used by SDE to generate a spatial index as data is loaded. This spatial index is used during spatial searches to speed feature retrieval. Personal geodatabases may have only one spatial index tile size, while SDE uses up to three. The ability to use greater than one level may be useful if the feature envelope size is greatly variable. An optimal tile size must balance:
- the number of features in a tile, and
- the number of records in the index (tiles per feature)

In general, three-times the average feature envelope is an appropriate value, and this can be calculated using a custom VB tool (AveFSize.dll). The index can be modified at any time by first deleting the old spatial index, and then adding the new index parameters.

Other Constraints:

Feature datasets stored within SDE are essentially all within the same database structure. Additionally, a maximum table name size of 30 characters applies (a constraint due to Oracle). To minimize confusion, a standardised table-naming scheme has been applied to the data held within SDE. This naming convention is of the following format:

([rstr])(_custodian)(_datasetname)[(_furtherDatasetIdentifer)]

 - rstr is applied as a prefix to all raster datasets
 - the custodian field is standardised to the following values:

Data Originator / Custodian	Prefix Code	Example
Geoscience Australia	ga	ga_ambis2001_aus_seabed
Australian Institute of Marine Science	aims	aims_teacs
Navy Hydrological Charts	chart	rstr_chart_aus00256a
CRC Reef	crc	crc_monitoringdb
CRC Reef / Adam Lewis	crcgis	crcgis_reef250
GBRMPA	gbrmpa	gbrmpa_bioregions
CSIRO	csiro	csiro_caa
Bureau of Rural Science (=Aus Gov – Agriculture, Fisheries and Forestry)	brs	brs_landcoverchange
Bureau of Meteorology	met	met_cyclone_paths

References:

Kininmonth, S., Donovan, T. & Edgar, S. 2003. Fusing Scientific Modelling with Knowledge Management Systems. In *MODSIM conference* proceedings (D. Post ed.), Townsville, July 2003.

Kininmonth, S. 2002. GIS: the key to integration at the Australian Institute of Marine Science, In *Marine Geography* (J. Breman ed.), ESRI, Redlands, pp.67-72

Spatial metadata for existing holdings
Layer Information
Title: CRC Reef Monitoring Database - Marine Turtle Breeding
Custodian: CRC Reef

File Name: spatial.SDE.MarineTurtleBreeding

Layer Description
Summary: This long-running project counts nesting turtles on index beaches on the Queensland coast and islands. It is managed by Queensland Parks and Wildlife Service (Dr Col Limpus). Some beaches have been studied since 1968. It is supported by additional studies on turtle biology and physiology, and is linked to the study of turtle foraging and population studies, as tagged turtles are tracked in both studies by the same researchers.

Purpose: The CRC Reef monitoring database describes monitoring programs occurring throughout the GBR region. This data was collected by the CRC Reef to identify existing montoring programs, analyse information needs and data gaps, and to improve the integration of monitoring programs.

Additional Information: Objectives: Monitoring of population dynamics and trends at index nesting

beaches, for marine turtles in Queensland..

Layer Information
Title: CRC Reef Monitoring Database - Michaelmas Cay Seabird
Monitoring
Custodian: CRC Reef

File Name: spatial.SDE._75_SeabirdMonitoring

Layer Description
Summary: This project started in 1984 to provide a better understanding of changes in seabird populations over time. The data so far show significant changes that may be detrimental to the conservation of sooty terns in Queensland.

Additional Information: Objectives: To determine whether there are detrimental effects of tourism

on the behaviour of breeding seabirds on Michaelmas Cay.

Layer Information
Title: CRC Reef Monitoring Database - Seagrass Monitoring in
Shoalwater Bay
Custodian: CRC Reef

File Name: spatial.SDE._76_SeagrassMonitoring

Layer Description
Summary: Shoalwater Bay is a large estuarine area about 50 kms north of Rockhampton. It lies within Shoalwater Bay Military Training Area and has been reserved for defence force training since 1965.

Access is restricted by the Dept of Defence and the lack of coastal development and significant rivers in the area ensures that the Bay is relatively free of nutrients and other pollutants from human sources.

About 37% of the Bay is shallow open water (< 10m deep) and supports about 13,000 ha of seagrass meadows. The Bay also supports the largest known feeding concentration of the southern Great Barrier Reef genetic stock of green turtles and the largest dugong population between Cooktown and Hervey Bay and is considered the most important dugong habitat in the GBR region south of Cape York.

Additional Information: Objectives: To describe the natural fluctuations in the quality and quantity of seagrass in Shoalwater Bay for a period of four years. To compare fluctuations of seagrass with changes in resident green turtle population.

Layer Information
Title: **CRC Reef Monitoring Database - Site and Nest Fidelity of Red-Tailed**
Tropic Birds at Raine Island
Custodian: CRC Reef

File Name: spatial.SDE._78_RaineIsBirds
Layer Description
Summary: Raine Island is the most significant seabird breeding colony in the Great Barrier Reef with nine principal species and a further 14 recorded. This represents the greatest abundance of seabird numbers, biomass and species for the entire GBRWHA. This project focuses on the red tailed tropic bird which is classified as a "vulnerable" species under Queensland Nature Conservation (Wildlife) Regulation 1994. Recaptures from previous bandings indicate both indivudual breeding longevity and species age longevity at over 17 years.

Additional Information: Objectives: To determine the extent of pair bonding of red tailed tropic birds at Raine island. To determine nest fidelity in relation to the above. To determine if there is interchange with Coral Sea populations (about 1140 NM to the south-east).

Layer Information
Title: **CRC Reef Monitoring Database - Tuna and Billfish Data**
Collection Program
Custodian: CRC Reef

File Name: spatial.SDE._79_TunaBillfishData
Layer Description
Summary: Tuna and billfish are a major commercial fishery in Australia. The Australian Fisheries Management Authority (AFMA) collects logbook information (which will be validated through an observer program) to enable them to make proper management desicisions to ensure the fishery is sustainable and the impacts on the ecosystem are minimised.

Additional Information: Objectives: To collect catch and effort data on tuna longline, minor line and pole fishing activity. To collect by-catch data on tuna longline, minor line and pole fishing activity. To collect wildlife interaction data on tuna longline, minor line and pole fishing activity.

Layer Information
Title: **CRC Reef Monitoring Database - Dwarf Minke Whales**
Custodian: CRC Reef

File Name: spatial.SDE._80_DwarfMinke

Layer Description

Summary: A study of the biology and behaviour of dwarf minke whales on the Great Barrier Reef. In addition, the dynamics of the interactions between the whales and dive tourists have been studied to develop a framework for managing these interactions in an ecologically sustainable manner. Outcomes of the project have included the development of a Code of Practice for swimming with whales which was tested with extensive input from dive operators and their passengers, and interpretative material for the industry, developed and tested over the two-year period.

Additional Information: Objectives: To understand the biology and behaviour of dwarf minke whales on their visits to the Great Barrier Reef. To understand the interaction between whales and tourists, and the response of both parties to the interaction. To develop a Code of Practice for sustainable interactions by swimmers with dwarf minke whales. To develop and promote educational materials to assist in the management of the swim-with-minke whales industry on the GBR.

Layer Information

Title: **CRC Reef Monitoring Database - Coastal Dolphins in Australia**

Custodian: CRC Reef

File Name: spatial.SDE._81_CoastalDolphins

Layer Description

Summary: This is the first comprehensive study to gather baseline ecological information about Irawaddy dolphins, Orcaella brevirostris, and Indo-Pacific humpback dolphins, Sousa chinensis, in Australian waters. Information about distribution, abundance and habitat use of coastal dolphins is being collected.

Additional Information: Objectives: To gather baseline ecological information about the Irawaddy

dolphins, Orcaella brevirostris, and Indo-Pacific humpback dolphins, Sousa chinensis, including data on distribution, abundance and habitat use.

Layer Information

Title: **CRC Reef Monitoring Database - Adult Reef Fish Surveys**

Custodian: CRC Reef

File Name: spatial.SDE._82_AdultReefFish

Layer Description

Summary: The abundance of an ecologically diverse group of reef fishes has been monitored for more than 20 years on six reefs in the Centreal GBR. Changes in communities closely track increases and decreases in coral cover. Some fish species (mostly those that feed on or recruit to, live coral) are negatively impacted by loss of coral cover, but the abundance of most species has remained remarkably unaffected by extensive coral mortality. This may be related to the persistence of coral structure despite the death of the coral.

Additional Information: Objectives: To monitor temporal change in reef fish communities in Central GBR - particularly impacts of crown-of-thorns starfish outbreaks. To monitor temporal change in coral cover at limited sites.

Layer Information
Title: CRC Reef Monitoring Database - Annual Cross-Shelf Fish
Recruitment Surveys
Custodian: CRC Reef

File Name: spatial.SDE._83_AnnualFishRecruit
Layer Description
Summary: Annual cross-shelf surveys on the reef slopes of five reefs in the Central GBR including inshore, mid-shelf and outer shelf reefs.

Additional Information: Objectives: To monitor recruitment of reef fishes across the continental shelf.

Layer Information
Title: CRC Reef Monitoring Database - NRM Water Quality Monitoring
Program
Custodian: CRC Reef

File Name: spatial.SDE._87_NRM
Layer Description
Summary: Long-term monitoring program to study stream height, flow rates and water quality information from automatic recorders (time-series data) from each of the catchments that drain into the GBRWHA. NRM Division 1.

Additional Information: Objectives: To measure stream gauge height and water quality information. To measure gauged flow rates (stream flow measurements). To survey cross sectional information. To collect water samples at gauging stations for analysis for water quality. To undertake field measurements of a variety of water quality parameters.

Layer Information
Title: CRC Reef Monitoring Database - Marine Turtle Capture in Trawl Nets
Custodian: CRC Reef

File Name: spatial.SDE._88_TrawlNet
Layer Description
Summary: Six years of information about marine turtle captures in trawl nets in the Queensland east coast trawl fishery from voluntary logbooks. All trawlers now use turtle excluder devices.

Additional Information: Objectives: To look at how many and what type of turtles were caught where in the east coast trawl fishery.

Layer Information
Title: CRC Reef Monitoring Database - Social Assessment of
Commercial Fishers in QLD
Custodian: CRC Reef

File Name: spatial.SDE._89_SocialFishers
Layer Description
Summary: Social profiles of comercial fishers were first collected in 2000 to provide information for fisheries managers. This information provides a baseline to monitor the dynamics as well as the social-ecological resilience of Queensland's commercial

fishing industry. A proposal for continuing work on commercial fishers in the GBR Marine Park is underway.

Additional Information: Objectives: To assess dynamics of the commercial fishing industry. To determine social impacts of changes in fishing legislation..

Layer Information
Title: CRC Reef Monitoring Database - Ross Creek Water Quality Monitoring Program
Custodian: CRC Reef
          File Name: spatial.SDE._90_ReefHQ
Layer Description
Summary: Water from Ross Creek is being used in Reef HQ exhibit. This project was started to manage risks associated with water intake into Reef HQ tanks in Townsville.

Additional Information: Objectives: To maintain good water quality in the Reef HQ exhibit. To determine risk of water intake from Ross Creek into Reef HQ exhibit.

Layer Information
Title: CRC Reef Monitoring Database - Bramble Reef Fish Surveys
Custodian: CRC Reef

          File Name: spatial.SDE._91_BrambleFishSurvey
Layer Description
Summary: Fish densities on Bramble Reef, a mid-shelf reef situated north east of Townsville have been monitored by underwater visual surveys before, during and after a 3.5 year closure to fishing. The study indicated that eight weeks following the reopening of Bramble Reef to fishing, legal size coral trout densities had been reduced by almost 60%. Two years after the reopening, the legal size coral trout density on Bramble Reef was similar to the pre-closure level.

Additional Information: Objectives: To determine the impact of fishing in the size and density of coral trout.

Layer Information
Title: CRC Reef Monitoring Database - QLD Nickel Environmental Monitoring
Custodian: CRC Reef

          File Name: spatial.SDE._92_QldNickel
Layer Description
Summary: Qld Nickel Envirnomental Monitoring.

Layer Information
Title: CRC Reef Monitoring Database - Marine Turtle Foraging
Custodian: CRC Reef

          File Name: spatial.SDE._02_MarineTurtleForaging
Layer Description
Summary: Long-running marine turtle studies by QPWS is associated with the project on marine turtle breeding. It involves surveys of tagged turtles in their foraging grounds. Turtles are captured and tagged and movement patterns are tracked.

The project has not been funded in the GBR area since 1999/2000, but the turtles tracked in Shoalwater Bay and Moreton Bay are part of the same population as GBR turtles.

Additional Information: Objectives: Monitoring population dynamics and trends at index foraging areas for marine turtles of Queensland.

Layer Information
Title: **CRC Reef Monitoring Database - Marine Wildlife Stranding and**
Mortality
Custodian: CRC Reef

File Name: spatial.SDE._03_MarineWildlifeStranding
Layer Description
Summary: QPWS maintains a database of reports of marine wildlife standings and mortality along the Queensland coast. The database builds on the shark-netting studies of DPI by Baden Lane. Results are reported annually in 3 reports for dugong, turtles and cetaceans, and stored in the EPA library and State Library. The database is available on the internal EPA network and is copied to regional staff. Records for the Bundaberg coast date from about 1980, and areas north of about Hervey Bay from 1990.

Additional Information: Objectives: Data is used by management agencies to guide marine wildlife conservation actions. To assist in the implementation of the Nature Conservation Act and other State and Commonwealth Marine Park Acts.

Layer Information
Title: **CRC Reef Monitoring Database - Ocean Monitoring Network**
Custodian: CRC Reef

File Name: spatial.SDE._04_TEACS
Layer Description
Summary: The ocean monitoring network will focus on ocean colour and represents a merging of two earlier AIMS programs. The TEACS program has been operating since 1986 and focused on studying the East Australian Current at a number of offshore sites. This has now merged with the real-time buoy network which is being implemented in 2002.

Additional Information: Objectives: To accumulate long-time series oceanographic data to

understand interannual and seasonal variability in the large-scale circulation of the GBR shelf. To validate satellite altimeter data to study global circulation, by placing instruments under the satellite path.

Layer Information
Title: **CRC Reef Monitoring Database - Remote Sensing of the Marine**
Environment
Custodian: CRC Reef

File Name: spatial.SDE._05_RemoteSensing

Layer Description
Summary: This has been an ongoing AIMS program focused on water temperature for production of an SST Atlas. The project will be refocused to concentrate more on ocean colour, and coordinated with the chlorophyll monitoring program, also based at AIMS.

Additional Information: Objectives: Long-term monitoring of spatial structure of water temperature, ocean colour and turbidity. To track oceanographic features and current eddies. To provide spatial data for research, e.g. for comparison with spot checks.

Layer Information
Title: **CRC Reef Monitoring Database - Long-term Monitoring of Sea**
Temperatures
Custodian: CRC Reef

> **File Name:** spatial.SDE._06_LTMSeaTemp

Layer Description
Summary: This study aims to establish and maintain a sea temperature monitoring program at sites representative of the GBR and adjacent waters, and to provide fine-scale and accurate sea temperature data Some sites in this study have been monitored since 1992, and the study was expanded in 1996. Part of the project includes water temperature monitoring for Queensland Ports.

Additional Information: Objectives: To establish and maintain a sea temperature monitoring program at sites representative of the GBR and adjacent waters, and to provide fine-scale and accurate sea temperature data which can be: - correlated with temperature-related perturbations on the reef (e.g. coral bleaching); - used for monitoring global warming trends; - used by other researchers and managers for a wide range of other projects. To provide high resolution sea temperature data for Queensland ports.

Layer Information
Title: **CRC Reef Monitoring Database - Long Term Chlorophyll**
Monitoring
Custodian: CRC Reef

> **File Name:** spatial.SDE._07_chlMonitor

Layer Description
Summary: The long-term chlorophyll monitoring study was initiated by GBRMPA in 1992, and was transferred to AIMS in 2002. Data has been collected at 41 sites on an approximately monthly basis and an additional 9 remote sites annually.

Additional Information: Objectives: Maintain a long-term watch on regional and cross-shelf

distributions of chlorophyll a concentrations and basic water quality parameters (temperature, salinity, water transparency) in GBR surface waters. Maintain a long-term watch on temporal trends in chlorophyll concentration. Maintain a long-term watch on natural variability in surface chlorophyll concentrations and basic water quality parameters due to seasonal factors and significant disturbance events (e.g. cyclones, floods). Provide a basis for correlating regional chlorophyll concentrations with qualified or estimated nutrient runoff from catchments adjoining the GBR.

Provide a basis for evaluating the effectiveness of land-based programs to reduce terrestrial runoff of nutrients into the GBR. Provide a basis for calibrating remotely sensed ocean colour imagery as a basis for ongoing chlorophyll and water quality monitoring in the GBR.

Layer Information
Title: CRC Reef Monitoring Database - River Turbidity Monitoring
Custodian: CRC Reef

File Name: spatial.SDE._08_RiverTurbidity
Layer Description
Summary: River turbidity monitoring is a reduced program following other now discontinued studies, e.g. a 13 year study of the Tully River which concluded in 2000.

Additional Information: Objectives: Estimating the inputs of fine sediment to the GBR. Determining the role of floods in sediment imputs.

Layer Information
Title: CRC Reef Monitoring Database - Cairns Coastal Transect
Custodian: CRC Reef

File Name: spatial.SDE._09_CairnsCoastalTransect
Layer Description
Summary: This long-running project counts nesting turtles on index beaches on the Queensland coast and islands. It is managed by Queensland Parks and Wildlife Service (Dr Col Limpus). Some beaches have been studied since 1968. It is supported by additional studies on turtle biology and physiology, and is linked to the study of turtle foraging and population studies, as tagged turtles are tracked in both studies by the same researchers.

Purpose: Long-term program to examine water quality in the region offshore of Cairns.

Additional Information: Objectives: Maintain long-term watch on water quality in Cairns/ Douglas Shire region. Detect trends and variability in water quality.

Layer Information
Title: CRC Reef Monitoring Database - Southern GBR Water
Temperature
Custodian: CRC Reef

File Name: spatial.SDE._10_SGBRWaterTemp
Layer Description
Summary: The project began as an examination of upwelling, and has continued as an extension of the water temperature monitoring network.

Additional Information: Objectives: To measure the effect of upwelling on water temperature. To monitor water temperatures at sites in the southern GBR in relation to global climate change.

Layer Information
Title: CRC Reef Monitoring Database - Heron Island Reef Monitoring
Custodian: CRC Reef

File Name: spatial.SDE._11_HeronIsReefMonitoring

Layer Description

Summary: The project was initiated as a monitoring program for the alterations to the Heron Island harbour and bund wall. Monitoring continued through the 1990s. There is no funding for the project at present, and the last sample was taken in 1999. Initial samples with line transects were taken in 1988-90, and video transects were sampled from 1993. The more recent study includes both reef flat and reef slope sites.

Additional Information: Objectives: To determine the impact of construction of a harbour bund wall on coral communities at Heron Island.

Layer Information

Title: CRC Reef Monitoring Database - Eye on the Reef
Custodian: CRC Reef

File Name: spatial.SDE._12_EyeOnTheReef

Layer Description

Summary: The Eye on the Reef project is supported by the tourism industry which collects

environmental data on reefs visited repeatedly. The project is presently stalled while awaiting an improved database to provide reports back to the industry.

Additional Information: Objectives: Develop a "nature diary" for individual sites which can be used by staff to better understand the environmental trends in their area and provide better interpretative information for visitors. Document unusual, sporadic events at both local and reef-wide scale (eg. freshwater plumes, cyclone damage). Encourage tourism industry staff participation in monitoring of the health of the reef. Foster stewardship amongst marine tourism operators and staff. Act as an "early warning" indicator of potential environmental changes- natural or human induced (eg. coral bleaching events, COTS outbreaks).

Layer Information

Title: CRC Reef Monitoring Database - Cairns Fringing Reefs
Custodian: CRC Reef

File Name: spatial.SDE._15_CairnsFringingReefs

Layer Description

Summary: The study was initiated as an examination of the effects of the construction in the mid 1980s of a road at Cape Tribulation on the fringing reefs. The reefs were surveyed between 1985-88 and again from 1994-2000. Following a general survey of 17 fringing reefs in the Cairns region in 1994-95, monitoring programs were established on two reef: Snapper Island and Double Island.

Additional Information: Objectives: To examine the effects of floods, bleaching and COTS events on the fringing reefs in the Cairns region. To document changes in fringing reefs in the Cairns area where there has been concern that human impact may have resulted in reef degradation.

Layer Information

Title: CRC Reef Monitoring Database - EPA Ambient Water Quality
Custodian: CRC Reef

File Name: spatial.SDE._16_EPA_WQ

Layer Description
Summary: EPA has maintained an extensive water quality monitoring program in coastal Queensland. Since 1999, the program has stopped monitoring in northern Australia and now focuses on SE Queensland. Historical data is available for the coast between Cooktown and Home Hill, and in the Gladstone-Bundaberg region. The program began in 1992, though data was collected at some sites since 1973. In 1998-99, water quality was monitored every month at more than 500 sites across Queensland, with monitoring effort concentrated in estuaries.

Additional Information: Objectives: To assess the condition of sites and determine long term trends in water quality.

Layer Information
Title: **CRC Reef Monitoring Database - Storm Tide Network**
Custodian: CRC Reef

File Name: spatial.SDE._17_StormTideNet
Layer Description
Summary: The EPA supports a network of robust tide gauges to withstand severe weather and storm surge along the Queensland coast. Data from these gauges are used by Qld Dept Transport to monitor regular rise and fall of the tides.

Additional Information: Objectives: To record the magnitude of storm tide events. To record the regular rise and fall of tides. To provide advice to the State Counter Disaster Organisation.

Layer Information
Title: **CRC Reef Monitoring Database - Waverider Buoys**
Custodian: CRC Reef

File Name: spatial.SDE._18_WaveriderBuoys
Layer Description
Summary: Six waverider buoys as part of a state-wide system are located within the GBRWHA.

Additional Information: Objectives: To monitor the type and availability of wave conditions. To provide advice on wave heights and possible damage during a cyclone. To assist short- and long-term investigations of natural coastal processes.

Layer Information
Title: **CRC Reef Monitoring Database - Commercial Fisheries**
Information System (CFISH)
Custodian: CRC Reef

File Name: spatial.SDE._20_CFISH
Layer Description
Summary: The Commercial Fisheries Information System (CFISH) collates census information

collected by a compulsory daily logbook for Queensland commercial fishing activities.

Additional Information: Objectives: Allows the QFS to assess the condition of Queensland's fisheries resources.Makes a contribution to the development of fisheries management plans. Monitors the progress of commercial catch quotas.

Layer Information
Title: **CRC Reef Monitoring Database - Recreational Fisheries**
Custodian: CRC Reef

> **File Name:** spatial.SDE._21_RFISH

Layer Description
Summary: An integrated program developed in 1995 to collect data on Queensland's recreational fisheries. Elements include statewide telephone surveys, angler diary surveys, socio-economic surveys, historical records from fishing clubs, fishing competition surveys, boat ramp surveys and a national recreational and Indigenous fishing survey.

Additional Information: Objectives: To estimate the size of the recreational fishery. To determine the number of people involved in recreational fishing and their fishing characteristics. To provide information about the importance of recreational fishing expenditure.

Layer Information
Title: **CRC Reef - Monitoring Database - Fisheries Long-Term**
Monitoring Program
Custodian: CRC Reef

> **File Name:** spatial.SDE._22_1_LTMPFish

Layer Description
Summary: A major ongoing state-wide program initiated in 1999 to collect information on status of fish stocks and key habitats and to monitor major fisheries over many years.

Additional Information: Objectives: To monitor priority target and by-product fisheries species on an annual basis to provide data for the assessment of fish stocks. To complement and build on information from commercial fisheries logbooks and surveys of indigenous and recreational fishing. To contribute to understanding of by-catch and ecosystem impacts of these fisheries. To provide information for reporting the status and sustainability of fisheries in Queensland waters.

Layer Information
Title: **CRC Reef Monitoring Database - Remote Weather Stations**
Custodian: CRC Reef

> **File Name:** spatial.SDE._23_RemoteWeatherStn

Layer Description
Summary: Remote weather stations on the GBR and coastal areas are operated by AIMS (with 2 stations funded by GBRMPA). The first stations at Myrmidon Reef and Cape Bowling Green have been operational since 1987.

Additional Information: Objectives: Monitoring weather elements on the reef to relate weather observations to biological systems and change. Provision of data to support numerical modelling of physical processes in the reef environment.

Layer Information
Title: CRC Reef Monitoring Database - Reef Crest Community
Dynamics on Heron Island
Custodian: CRC Reef

File Name: spatial.SDE._24_CommunityDynamicsHeron
Layer Description
Summary: This study is the longest data set on coral communities in the GBR, with data available on an approximately annual basis since 1962. Data is available only for the reef flat and crest for repeatedly photographed 3m X 3m plots.

Additional Information: Objectives: To determine long-term dynamics of benthic assemblages at small spatial scales.

Layer Information
Title: CRC Reef Monitoring Database - Community Dynamics at Lizard
Island
Custodian: CRC Reef

File Name: spatial.SDE._25_CommunityDynamicsLizard
Layer Description
Summary: A study of benthic communities on the reef crest at Lizard Island has included data collection for several postgraduate student projects.

Additional Information: Objectives: To determine long-term dynamics of benthic assemblages at small spatial scales.

Layer Information
Title: CRC Reef Monitoring Database - Community Dynamics at the
Palm Group
Custodian: CRC Reef

File Name: spatial.SDE._26_CommunityDynamicsPalm
Layer Description
Summary: The project was initiated as part of an ecological study of corals at the Palm Island, but continued to track the impacts of and recovery from coral bleaching.

Additional Information: Objectives: To characterise coral species abundance before and after the 1998 coral bleaching event. For ecological studies of coral species habitat and distribution.

Layer Information
Title: CRC Reef Monitoring Database - Spatial Variability in Coral
Community Dynamics
Custodian: CRC Reef

File Name: spatial.SDE._27_SpatialVariabilityInCoral
Layer Description
Summary: Ongoing research by Dr Terry Done from AIMS. Sites have been surveyed repeatedly since 1980 using stereophotography.

Additional Information: Objectives: To document the rates of population and community processes. To use information from coral populations to develop models of coral community dynamics.

Layer Information
Title: **CRC Reef Monitoring Database - Nelly Bay Monitoring**
Custodian: CRC Reef

File Name: spatial.SDE._28_NellyBayMonitoring

Layer Description
Summary: The reef at Nelly Bay has been repeatedly monitored since 1993 as part of the impact assessment process for the development of the Nelly Bay marina on Magnetic Island.

Additional Information: Objectives: To detect the impacts of the construction of a marine and residential development at Nelly Bay, Magnetic Island.

Layer Information
Title: **CRC Reef Monitoring Database - Coastal Weather Stations**
Custodian: CRC Reef

File Name: spatial.SDE._29_CoastalWeatherSTN

Layer Description
Summary: The Bureau of Meteorology maintains a set of 34 weather stations on the Queensland coast and Coral Sea. Some have been operational since 1939.

Additional Information: Objectives: Coastal weather observations.

Layer Information
Title: **CRC Reef Monitoring Database - Rainfall Stations**
Custodian: CRC Reef

File Name: spatial.SDE._30_RainfallWeatherSTN

Layer Description
Summary: The Bureau of Meteorology maintains more than 800 stations where rainfall is recorded on the Queensland coast

Additional Information: Objectives: Rainfall observations.

Layer Information
Title: **CRC Reef Monitoring Database - Environmental Management**
Charge Database
Custodian: CRC Reef

File Name: spatial.SDE._31_EnvManagementDB

Layer Description
Summary: Information on commercial tourism operations in the GBR Marine Park is collated from logbooks maintained for the purpose of charging the EMC.

Additional Information: Objectives: To record commercial tourism usage for the purpose of collecting the Envirnomental Management Charge. To provide data on patterns of visitor use within the Marine Park.

Layer Information
Title: **CRC Reef Monitoring Database - AUF Spearfishing**
Custodian: CRC Reef

File Name: spatial.SDE._32_AUF

Layer Description
Summary: Record of recreational fishing catch by AUF (Qld Branch) members, from spearfishing competitions since 1979. Various reefs, mostly offshore from Cairns, Townsville, Mackay.

Additional Information: Objectives: To compile information on catch, effort and catch-per-unit-effort (CPUE) by spearfishers in Queensland waters. Opportunistic sampling linked to competitions throughout Queensland.

Layer Information
Title: **CRC Reef Monitoring Database - COTSWATCH / COTSBASE**
Custodian: CRC Reef

File Name: spatial.SDE._34_Cotswatch
Layer Description
Summary: COTSBASE contains oral records and records from the literature for the period 1952-93. COTSWATCH collates questionnaire returns from the public on observations of COTS on reefs for the period 1993-2001. COTSWATCH is presently inactive.

Additional Information: Objectives: To indicate the occurrence of COTS in areas not necessarily frequented by researchers. To gather information about international COTS patterns in order to assess the nature of these 'outbreaks' especially in terms of cause and effects. To gather information about international COTS patterns in order to assess the nature of these 'outbreaks' especially in terms of cause and effects.

Layer Information
Title: **CRC Reef Monitoring Database - Fine Scale COTS Surveys**
Custodian: CRC Reef

File Name: spatial.SDE._35a_FineScaleCOTS
Layer Description
Summary: Fine-scale surveys targeted at COTS juveniles were started in 1994. Between 1994-95 and 1999-00, between 19 and 24 reefs were surveyed each year, including nine reefs common to each survey. Those nine common reefs were surveyed again in 2000-01.

Additional Information: Objectives: To obtain reliable estimates of A. planci population densities and associated live hard coral cover on mid-shelf reefs in the survey area. To accurately determine size-frequency distributions within A. planci populations to facilitate the identification of probable age classes. If present, to detect early signs of possible new and emerging outbreaks to provide an early warning of likely future trends. To identify differences in the abundance and/or age composition of starfish populations at three different spatial scales: regional (latitude), between reefs (local) and within-reef (zonal).

Layer Information
Title: **CRC Reef Monitoring Database - QLD Coastal Bird Atlas**
Custodian: CRC Reef

File Name: spatial.SDE._36_CoastalBirdAtlas

Layer Description
Summary: The project has evolved over a period of time using standardised methods for monitoring recording and storing information on coastal birds. The database contains >30,000 records dating from the early 19th Century.

Additional Information: Objectives: To record the size and distribution of breeding and non-breeding birds in the coastal areas of Queensland, with a focus on breeding colonies of seabirds. To report on the status of each species.

Layer Information
Title: **CRC Reef Monitoring Database - Bird Population Monitoring**
Custodian: CRC Reef

File Name: spatial.SDE._37_BirdPopulation

Layer Description
Summary: Populations of boobies in the Swain Reefs have been monitored since 1982.

Additional Information: Objectives: To gain knowledge of the population structure and movements of masked and brown boobies in the southern GBR.

Layer Information
Title: **CRC Reef Monitoring Database - Tern Population Monitoring**
Custodian: CRC Reef

File Name: spatial.SDE._38_TernMonitoring

Layer Description
Summary: This project involves the capture, banding and leg-tagging of non-breeding roseate and black-naped terns in the Swains Reefs.

Additional Information: Objectives: To determine the breeding origins of the large non-breeding populations of roseate and black-naped terns present in the Swain Reefs in winter and summer.

Layer Information
Title: **CRC Reef Monitoring Database - Silvereye Population Monitoring**
Custodian: CRC Reef

File Name: spatial.SDE._39_SilvereyePopulation

Layer Description
Summary: A long-term project has tagged and monitored the population dynamics of Silvereyes at Heron Island since the 1980s. Each bird on Heron Island is tagged each year for population and genetic studies.

Additional Information: Objectives: To monitor the population dynamics of Silvereyes at Heron Island .

Layer Information
Title: **CRC Reef Monitoring Database - Townsville Citiwater**
Custodian: CRC Reef

File Name: spatial.SDE._40_TSVCitiwater

Layer Description
Summary: Council monitoring of water quality at sewage discharge points and receiving waters in Cleveland Bay and the Bohle River.

Additional Information: Objectives: To gauge environmental health of Townsville waterways - sewage discharge points and receiving waters.

Layer Information
Title: CRC Reef Monitoring Database - AIMS Long Term Monitoring
Program
Custodian: CRC Reef

File Name: spatial.SDE._41_LTMP
Layer Description
Summary: This project is a broad-scale examination of reef fish and benthic communities in approx. 50 reefs in six sectors along the length of the GBR. The data collected has been extensively used in evaluating the impacts of COTS and coral bleaching.

Additional Information: Objectives: To monitor the status and changes in distribution and abundance of reef biota on a large scale. To provide environmental managers with a context for assessing impacts of human activity within the Great Barrier Reef Marine Park and with a basis for managing the GBR for ecologically sustainable use.

Layer Information
Title: CRC Reef Monitoring Database - Cairns Water
Custodian: CRC Reef

File Name: spatial.SDE._42_CairnsWater
Layer Description
Summary: A water quality sampling program to examine the effects of discharge of treated sewage effluent at point source discharge points in the Cairns region.

Additional Information: Objectives: To determine the extent (if any) of environmental damage as a result of effluent discharge. To promote environmental responsibility with respect to a sustainable environment. To provide data which may be used in prioritising treatment improvements/upgrades.

Layer Information
Title: CRC Reef Monitoring Database - Reef Check
Custodian: CRC Reef

File Name: spatial.SDE._43_ReefCheck
Layer Description
Summary: An international program designed for volunteers to monitor reefs using a set of standard techniques.

Additional Information: Objectives: To collect high quality data on reef health for monitoring. Education and awareness. To empower communities to assist in the management of the resource.

Layer Information
Title: **CRC Reef Monitoring Database - Seagrass Watch**
Custodian: CRC Reef

File Name: spatial.SDE._44_SeagrassWatch

Layer Description
Summary: Program coordinated by QDPI using volunteers to monitor seagrass health in the Cairns, Townsville, Mackay, Whitsundays and Hervey Bay regions.

Additional Information: Objectives: To raise awareness and provide educational and scientific opportunities on the assessment of seagrass ecosystems. To collect information on changes in seagrass meadows and possible human impacts for coastal management. To integrate existing education and scientific programs for the benefit of people and organisations who participate.

Layer Information
Title: **CRC Reef Monitoring Database - Port's Fisheries Habitat**
Monitoring
Custodian: CRC Reef

File Name: spatial.SDE._45_PortsSeagrass

Layer Description
Summary: In cooperation with the ports industry, fisheries habitats including seagrass, mangroves, benthic macro-invertebrates and algae are monitored in Queensland ports.

Additional Information: Objectives: To establish a baseline of fisheries/seagrass habitat distribution and abundance in Queensland ports. To develop monitoring programs for seagrasses/fisheries habitat in Queensland ports. To assess changes in seagrass/fisheries habitat in relation to port activities.

Layer Information
Title: **CRC Reef Monitoring Database - Ross River Volunteers**
Custodian: CRC Reef

File Name: spatial.SDE._46_RRVolunteer

Layer Description
Summary: A project by a volunteer group includes weekly bird counts and monthly water quality measurements in Ross River estuary, Townsville.

Additional Information: Objectives: To establish baseline data for the Ross River estuary.

Layer Information
Title: **CRC Reef Monitoring Database - Dugong Aerial Surveys**
Custodian: CRC Reef

File Name: spatial.SDE._47_Dugong

Layer Description
Summary: This long-running program has surveyed dugong populations on Queensland coast at five-year intervals since 1985. In a long-lived mammal species with low reproductive rate, subject to indigenous hunting and commercial fishing impacts, an understanding of population trends is critical.

Additional Information: Objectives: To provide information on the distribution and relative

abundance of dugongs, sea turtles and cetaceans as a basis for conservation planning. To provide information on temporal trends in dugong populations. To provide standardised dugong population estimates to compare with records of mortality as a basis for assessing conservation status especially with respect to traditional fisheries.

Layer Information
Title: **CRC Reef Monitoring Database - Waterwatch (Mackay-Whitsunday**
Region)
Custodian: CRC Reef

File Name: spatial.SDE._48_Waterwatch
Layer Description
Summary: Community monitoring project reporting on water quality in the Mackay region.

Additional Information: Objectives: Make regular reports to the community on the State of Water Quality in the region. Become a valuable part of the regional Water Quality monitoring program by contributing high quality data. Provide relevant data in appropriate format for use in regional natural resource management projects. Have community volunteers who are highly skilled in water quality monitoring and are capable of making a valuable contribution to regional monitoring and regional aquatic resource management.

Layer Information
Title: **CRC Reef Monitoring Database - Woongarra MP Water Quality**
Custodian: CRC Reef

File Name: spatial.SDE._49_WngraMP_WQ
Layer Description
Summary: A community supported study of water quality which supports the management of the Woongarra Marine Park, in the Bundaberg region.

Additional Information: Objectives: To provide a picture of water quality in Woongarra Marine Park and to detect changes and trends over time. To assist in sustainable management of the Marine Park. To increase awareness of the Woongarra Marine Park and to empower the community to participate in management.

Layer Information
Title: **CRC Reef Monitoring Database - Woongarra MP Benthic Surveys**
Custodian: CRC Reef

File Name: spatial.SDE._50_WngraMP_Benthic
Layer Description
Summary: A community supported study of inshore benthic communities which supports the

management of the Woongarra Marine Park, in the Bundaberg region.

Additional Information: Objectives: To provide a picture of benthic (coral) cover in Woongarra Marine Park and to detect changes and trends over time. To assist in

sustainable management of the Marine Park. To increase awareness of the Woongarra Marine Park and to empower the community to participate in management.

Layer Information
Title: CRC Reef Monitoring Database - Mackay Mangrove Monitoring.
Custodian: CRC Reef

File Name: spatial.SDE._51_MackayMangroveMonitor

Layer Description
Summary: A project on mangrove health was initiated by QDPI in 1999, and has subsequently been taken up by volunteers under the supervision of QDPI. Some sampling done by UQ under contract to QDPI.

Additional Information: Objectives: To establish baseline and ongoing monitoring of mangrove health in the Pioneer River Basin.

Layer Information
Title: CRC Reef Monitoring Database - QLD Wader Study Group
Custodian: CRC Reef

File Name: spatial.SDE._52_QldWader

Layer Description
Summary: A study by the Queensland Wader Study Group (QWSG) of the distribution of waders along the Queensland coast.

Additional Information: Objectives: To provide information on the population and distribution of waders (migratory and resident) from year to year. To determine the national and international significance of wader sites in Australia for conservation purposes. The aims of QWSG are: 1. To promote and participate in the study of conservation of waders and their habitats. 2. To influence government policy and public opinion for the well-being of waders.

Layer Information
Title: CRC Reef Monitoring Database - Townsville Regional Bird
Observers
Custodian: CRC Reef

File Name: spatial.SDE._53_TsvRegionBirds

Layer Description
Summary: A study by the Townsville Regional Bird Observers Club on the distribution of shorebirds and seabirds in the Townsville region.

Additional Information: Objectives: Monitoring selected coastal beaches during the spring-autumn migratory season for shorebirds (waders) and seabirds. Provide accurate information for inclusion in local, national and international databases and seabird atlas: a significant contribution to management plans. To involve and heighten awareness of the community in the diversity of coastal birdlife in the region and the importance of planned, relevant management.

Layer Information
Title: CRC Reef Monitoring Database - Townsville Port Authority
Monitoring
Custodian: CRC Reef

File Name: spatial.SDE._54_TsvPortMonitor

Layer Description

Summary: Environmental monitoring by TPA has three parts: A. Integrated environmental monitoring system (from 2001); B. Long term sediment monitoring system (from 1995); C. Long term stormwater monitoring system (from 2001).

Additional Information: Objectives: A1. Investigate local environmental paramaters that effect the movement of sediments within the Outer Harbour. A2. Gather sufficient data to be used in a model to predict sediment movement within the Outer Harbour. A3. Provide real-time environmental data to allow pilots to assess the current environmental conditions which may impact on shipping movements. B1. Investigate the level of chemical and biological contamination of sediments at the Port of Townsville. B2. Allow the Authority to assess the suitablity of sediments to be disposed at sea (dredging). B3. Determine the temporal changes of heavy metal concentrations within sediments. This allows for the early detection of problems and provides for the implementation of management measures to prevent further contamination. C1. Investigate the level of chemical and biological contamination of stormwater discharge from the Port of Townsville. C2. Provide a means of detecting likely sources of pollution so that improved environmental management initiatives can be adopted. C3. Obtain an understanding of any spatial or temporal variation in the contamination of stormwater runoff. C4. Determine stormwater discharge contamination levels contributing to any actual or perceived problem.

Layer Information
Title: CRC Reef Monitoring Database - Understanding Tourist Use of the GBR World Heritage Area
Custodian: CRC Reef

File Name: spatial.SDE._55_TouristUse

Layer Description

Summary: A CRC Reef project which surveys topics in tourism use of the GBR. Topics vary depending on priority issues for industry and management agencies.

Additional Information: Objectives: To provide detailed information about the levels and nature of tourist use of the GBRWHA. In particular the project aims to identify those factors which influence tourist patterns of travel and activity participation. To identify and describe types of tourist users and their expectations, motivations and perceptions of the quality of the GBRWHA experience provided. Specifically the research will identify those factors which influence tourist perceptions of the quality of GBR environment, its management and reef tour operations, and their satisfaction with the available experiences. To use the results of the previous two activities to develop management performance indicators as they relate to tourist use and to provide feedback to reef tour operators on marketing and service provision. To develop and maintain a database on reef tourism may be used to inform impact assessments associated with management alternatives. To include wherever possible data on recreational patterns of use within the database.

Layer Information
Title: CRC Reef Monitoring Database - GBR: Destination Image and Competitiveness
Custodian: CRC Reef

File Name: spatial.SDE._56_DestinationImage

Layer Description
Summary: The research team collects and analyses print media news and travel coverage of the GBR and its competitor destinations in Australian regional and national newspapers, national magazines, UK and USA newspapers and magazines and travel trade sources

Additional Information: Objectives: To continue monitoring coverage of the GBR as a travel

destination in major media in the USA, UK, Japan and Australia. To compare the amount and nature of this coverage to that given to competitive destinations. To content analyse coverage of the GBR as a destination and other major stories of the GBR and its management.

Layer Information
Title: **CRC Reef Monitoring Database - Understanding Public Perceptions of the GBR**
Custodian: CRC Reef

File Name: spatial.SDE._57_PublicPerceptions
Layer Description
Summary: Residents on the east coast of Australia are surveyed to determine their perceptions of the health of the GBR and on other management issues. Surveys have been completed in 1997, 1998, 2000 and 2001.

Additional Information: Objectives: To establish existing levels of knowledge about topics important to interpretation of the GBR. To determine community understanding of threats to the GBR, perceptions of the GBR, reasons for its management and its current and likely future status.

Layer Information
Title: **CRC Reef Monitoring Database - Indo-Pacific Sea Turtle**
Monitoring
Custodian: CRC Reef

File Name: spatial.SDE._58_Seaturtle
Layer Description
Summary: A community based study of marine turtles and their nesting patterns in north Queensland.

Additional Information: Objectives: To determine the number of marine turtles in coastal waters along the north Queensland coast. To determine the number and geographic location of marine turtles nesting along the north Queensland coast. To determine the hatchling success rates for nesting marine turtles along the north Queensland coast. To undertake community education programs about threats to marine turtles in north Queensland. To supply information to management agencies concerned with protection of marine turtles in north Queensland.

Layer Information
Title: **CRC Reef Monitoring Database - Pioneer Bay Effluent Monitoring**
Program
Custodian: CRC Reef

File Name: spatial.SDE._59_PioneerBay

Layer Description

Summary: An assessment of water quality, seagrass distribution and abundance and incorporation of sewage by seagrasses for sewage discharge into Pioneer Bay, in the Whitsundays region.

Additional Information: Objectives: To alert Council Officers of the onset of significant environmental damage to Pioneer Bay due to sewage effluent discharges. To cross-check the environmental health of the bay with previous predictions, and allow the Council to reassess it's Wastewater Management Strategy Implementation Strategies. To enable the review of changes in the mass load of nutrients entering the Bay, and comment on trends and effects. To enable the review and development of the monitoring program for future testing and objectives based on current data and subsequent trends.

Layer Information

Title: **CRC Reef Monitoring Database - EPA Hydrographic Surveys**

Custodian: CRC Reef

File Name: spatial.SDE._60_EPA

Layer Description

Summary: Hydrographic surveys for beach erosion monitoring purposes have been conducted at

numerous locations within the GBRWHA..

Additional Information: Objectives: To monitor beach processes. To provide information for sound coastal planning and management. To assist short and long-term investigations of natural coastal processes.

Layer Information

Title: **CRC Reef Monitoring Database - Seagrass Net**

Custodian: CRC Reef

File Name: spatial.SDE._61_SeagrassNet

Layer Description

Summary: Program coordinated by QDPI using scientists to monitor seagrass health parameters in the western Pacific including the Cairns region.

Additional Information: Objectives: To monitor global change in seagrass parameters. To raise awareness and provide educational and scientific opportunities on the assessmetn of seagrass ecosystems. To collect information on changes in seagrass meadows and possible human impacts for coastal management. To integrate existing education and scientific programs for the benefit of people and organisations who participate.

Layer Information

Title: **CRC Reef Monitoring Database - Brook Islands Bird Surveys**

Custodian: CRC Reef

File Name: spatial.SDE._62_BrookIsSeabird

Layer Description

Summary: A long-term monitoring project initiated by Margaret and Aurthur Thorsborne (Hinchinbrook authors and conservationists) in the 1970s, to monitor the recovery of the southern-most large colony of Torresian Imperial Pigeons (TIPS)

since their critical decline from illegal shooting in the 1960s. The project is now managed by QPWS, with volunteer support, to count the birds arriving and departing the Brook Islands during the summer season each year. Nesting and roosting seabirds and shorebirds are recorded at the same time. Seeds from TIP droppings are collected for identification and monitoring.

Additional Information: Objectives: To monitor the population status (and trends) of Torresian Imperial Pigeons visiting the Brook Islands. To identify the preferred foods of TIPS as an indication of feeding locations. To identify and monitor seabirds and shorebirds (population and trends) nesting and roosting on the Brook Islands.

Layer Information
Title: CRC Reef Monitoring Database - Hadley Seawater Temperature
Custodian: CRC Reef

File Name: spatial.SDE._63_HadleySeaTemp
Layer Description
Summary: An extract (40 one-degree boxes that encompass the GBR) of the global compilation of sea water temperatures (averaged for each month over one degree of latitude by one degree of longitude boxes) collected by ships of opportunity (1871-1999) and continued as blended satellite and observation data (Nov 1981 to present).

Additional Information: Objectives: To monitor seawater temperature.

Layer Information
Title: CRC Reef Monitoring Database - Subtidal Sediment Pollutant
Concentrations
Custodian: CRC Reef

File Name: spatial.SDE._64_SedimentPollutants
Layer Description
Summary: Establish baseline concentrations of heavy metals, organochlorine compounds and modern pesticides in subtidal sediments between the Burdekin River and Cape York and establish sites of input into the marine environment.

Additional Information: Objectives: To establish concentration of heavy metals, organochlorine compounds and modern pesticides in the marine environment. To establish sites of input of these compounds into the marine environment.

Layer Information
Title: CRC Reef Monitoring Database - Australian Baseline Sea Level
Monitoring Project
Custodian: CRC Reef

File Name: spatial.SDE._65_AusBaselineSurvey
Layer Description
Summary: The National Tidal Facility of Australia (NTFA) at the Flinders University in South Australia provides the management and operational support to the Australian Baseline Sea Level Monitoring Project, under the Australian Greenhouse Science Program. This project is designed to monitor sea level and climate around the coastline of Australia. The ultimate goal is to identify long period sea level changes, with particular emphasis on the enhanced greenhouse effect sea level signal. The

current estimate for the sea level change due to this effect is a rise of between one and two millimetres per year.

Additional Information: Objectives: To monitor sea level and climate around the coastline of Australia. To identify long-term sea level changes, with particular emphasis on the enhanced greenhouse effect sea level signal.

Layer Information
Title: **CRC Reef Monitoring Database - Wet Tropics Waterwatch**
Custodian: CRC Reef

File Name: spatial.SDE._66_Waterwatch
Layer Description
Summary: Community-based water quality monitoring and extension program coordinated by Qld Department of Natural Resources. Aims to increase community awareness of catchment processes and management.

Additional Information: Objectives: To establish and maintain a community-based water quality monitoring network in the Wet Tropics. To increase regional community awareness of catchment management issues. To engage the community in catchment management through action. To build capacity in the community to participate in catchment management processes.

Layer Information
Title: **CRC Reef Monitoring Database - Port Surveys for Introduced**
Marine Species
Custodian: CRC Reef

File Name: spatial.SDE._67_PortSurvey
Layer Description
Summary: Baseline surveys to document biological communities in ports and to search for introduced marine species.

Additional Information: Objectives: To survey marine habitats for introduced marine pests. To conduct baseline surveys of marine habitats.

Layer Information
Title: **CRC Reef Monitoring Database - Recreational Vessels in QLD**
Custodian: CRC Reef

File Name: spatial.SDE._69_RecreationalVessels
Layer Description
Summary: Recreational vessels in Queensland are registered by the Queensland Dept of Transport. This information can be useful as a surrogate for recreational fishing activity.

Additional Information: Objectives: To determine the distribution and abundance of recreational vessels in Queensland. To monitor change of recreational vessel registration in Queensland.

Layer Information
Title: **CRC Reef Monitoring Database - Aerial Surveys for Coral**
Bleaching
Custodian: CRC Reef

File Name: spatial.SDE._70_CoralBleach

Layer Description

Summary: Aerial surveys of coral bleaching are undertaken after reports of high levels of bleaching are received from scientists and reef visitors in at least three Sections of the Great Barrier Reef Marine Park.

Additional Information: Objectives: To document the spatial extent and intensity of coral bleaching on the Great Barrier Reef.

Layer Information

Title: CRC Reef Monitoring Database - Effects of Line Fishing

Experiment

Custodian: CRC Reef

File Name: spatial.SDE._71_ELF

Layer Description

Summary: This research program is designed to determine the effects of line fishing on the Great Barrier Reef Marine Park.

Additional Information: Objectives: To document direct and indirect impacts of reef line fishing on target stocks, their prey and the ecosystem. To document changes in fishing quality (catch per unit effort and size of fish) associated with impacts of line fishing. To quantify the effectiveness of historical area closures to line fishing. To document the temporal dynamics of fish stocks and other ecosystem components in the presence and absence of reef line fishing.

Layer Information

Title: CRC Reef Monitoring Database - Scale Insect Populations in

Capricornia Cays National Park

Custodian: CRC Reef

File Name: spatial.SDE._72_ScaleInsect

Layer Description

Summary: A severe scale insect infestaton on pisonia forests on Coringa Island first seen in 1991 has since killed 80% of the pisonia forest. Pisonia grandis forests on Tryon Island were found infected with soft scale insects Pulvinaria urbicola in 1993. These forests have been monitored annually since.

Additional Information: Objectives: To determine if and when the vegetation on Tryon Island recovers sufficiently to allow the re-introduction of campers and day visitors. To detect new outbreaks of scale insects in the Capricornia Cays National Park. To record the continued recovery (or otherwise) of Pisonia grandis forests at Tryon Island To survey populations of scale insects (Pulvinaria urbicola) in the pisonia forests of the Capricornia Cays national parks on an annual basis for the next three years.

Layer Information

Title: CRC Reef Monitoring Database - Sudbury Reef Coral Ref Benthos

Custodian: CRC Reef

File Name: spatial.SDE._73_SudburyGBRMPA

Layer Description

Summary: The project was established to monitor the recovery of coral reef benthos at the site of the grounding of the Bunga Teratai Satu on Sudbury Reef.

Additional Information: Objectives: To monitor the recovery of coral reef benthos at the site of the grounding of the Bunga Teratai Satu on Sudbury Reef. To monitor the success of clean-up efforts after the Bunga Teratai Satu was removed. To make recommendations re options for clean-up efforts after future ship groundings of a similar nature.

Layer Information

Title: **CRC Reef Monitoring Database - Monitoring of Piper Reef**
Custodian: CRC Reef

File Name: spatial.SDE._74_PiperGBRMPA

Layer Description

Summary: In mid July 1996, the vessel Peacock en route to Japan grounded on Piper Reef, north of Temple Bay. The vessel ran up onto the reef carving a scar through the reef community and depositing anti-fouling (tributyl tin) onto the substrate. The site has been monitored since 1997 and by 1999, had shown no sign of recovery when compared with controls.

Additional Information: Objectives: To monitor the natural recovery of a ship grounding site relative to control sites. To determine the time needed for recovery of a reef to its natural state after a ship grounding in the absence of any remediation. To determine the ecological impact of a ship grounding to a reef environment.

Layer Information

Title: **Timor Sea Bathymetry Data - RV Cape Ferguson**
Custodian: I. Zagorskis

File Name: SDE_OWNER.aims_bathy_timor

Layer Description

Summary: Bathymetry data generated from the RV Cape Ferguson, using MaxSea.

Purpose: To collect basic bathymetry data in the Timor Sea region.

Additional Information: Data has not been corrected for transducer depth, or tidal variation.

Layer Information

Title: **GBR Marine Park Restricted Access Areas**
Custodian: GBRMPA
File Name: SDE_OWNER.gbrmpa_zone_restr_access

Layer Description

Summary: Restricted Access Areas described in the GBR Marine Park Far Northern Section zoning plan.

Purpose: Indicates boundaries within the GBR Marine Park.

Additional Information: Nominal Scale: 1:250 000 Alternate Name: restr_access (GBRMPA).

Layer Information

Title: **AIMS Burdekin River Plume Model - Return Periods (24 ppt, 5day)**

Custodian: AIMS

File Name: SDE_OWNER.aims_brpm_re24_5dy

Layer Description

Summary: A verified 3-dimensional hydrodynamic model, capable of simulating river plume dynamics, was employed to create computer simulations of the fate and mixing of a flood of freshwater from the Burdekin River. The model was used to simulate 30 years (1966 - 1995) of the Burdekin River in flood based on measured local winds and river discharge data. The computer simulations have produced a comprehensive time varying and 3-dimensional spatially varying database of the fate and mixing of plume waters from the Burdekin River during the flood events. This database has been analysed to determine the concentrations and residence times of plume waters in the Central Great Barrier Reef (CGBR). The 30 years of simulations showed that the Burdekin River plume regularly stretches over 400 km to the north in coastal waters due to the discharge and wind. Steering effects from the coastal topography, continental islands and the dense reef matrices created complex spatial patterns in the plume distribution. The model predicts that shelf edge reefs in the CGBR are unlikely to be affected by Burdekin River plumes, but that the inner shelf reefs are impacted when an offshore wind prevails following a flood event. A simulation of one extreme low salinity event of 26 ppt, shows that Burdekin River water can reach the inner reefs with a minimum dilution rate of 1 part river water to 3 parts coastal seawater. The simulations also showed that the plume would usually take at least a 2-3 week period, after discharge from the river mouth, to reach the inner reefs. Given the natural temporal and spatial variability that exists in the plume behaviour, the model simulations for all 30 years were compiled to examine the intensity, duration and frequency of different lower salinity events. Return periods were then calculated for such events over the entire model domain. This analysis reveals that close proximity to the river mouth does not necessarily increase the likelihood of impact. Indeed, the closest mid-shelf reefs to the mouth of the river are only 50 km away, yet the most frequently impacted region (Rib Reef, John Brewer Reef, Lodestone and Keeper) are over 120 km away. The 30-year historical simulation of the discharge and dilution of Burdekin River runoff was undertaken to broaden the understanding of the spatial extents of likely impacts on the reefs and coastal waters of the CGBR from catchment management practices. The simulations demonstrate a range of common spatial patterns and unusual events that can be expected from a dynamic process. A risk assessment using return period analysis of the frequency of different impact events was undertaken to identify 'high-risk' regions or reefs. Environmental managers can use the database to assess land use changes. For example, risk assessments can be performed on the expected dilutions and residence times of Burdekin river water and hence the implications for dilutions and residence times of dissolved and suspended material carried within catchment runoff into the CGBR. Further, Environmental Managers can also use the simulations to identify the potential plume pathways and travel times for the runoff and its contents to reach the reefs.

Purpose: Using the latest in 3-dimensional mathematical techniques, this project aims to use computer simulation to better understand the final fate of riverine water as it mixes and moves around with the currents and winds. In particular, the project is

focussing on simulating all the floods of the Burdekin River for the 30 year period 1966-1995. This river has a very large discharge when in flood and these are known to impact the Central Great Barrier Reef.

Additional Information: See also - King, McAllister, Wolanski, Done and Spagnol, 2000 "River Plume Dynamics in the Central Great Barrier Reef" As Chapter 10 in: Coral Reef Processes; Physics-Biology Links in the Great Barrier Reef. E.Wolanski (Ed.). CRC Press, Boca Raton, Florida.

Layer Information
Title: *AIMS Data - Mud Core Data*
Custodian: Greg Brunskill

File Name: SDE_OWNER.aims_brunskill_mudcore
Layer Description
Summary: Data generated from samples obtained by Greg Brunskill and team, from 1990 onwards.

Sample collection is on-going.

Purpose: Monitoring / Exploration of NW Shelf and PNG sediment samples.

Additional Information: This is a preliminary view of the data, and it is intended to update the spatial dataset in the future.

Layer Information
Title: *AIMS Data - Surface Grab Sample Data*
Custodian: Greg Brunskill

File Name: SDE_OWNER.aims_brunskill_mudcore
Layer Description
Summary: Surface Grab Samples. Data generated from samples obtained by Greg Brunskill and team, from 1990 onwards. Sample collection is on-going.

Purpose: Monitoring / Exploration of NW Shelf and PNG sediment samples.

Additional Information: This is a preliminary view of the data, and it is intended to update the spatial dataset in the future.

Layer Information
Title: *Hydrographic Chart Boundaries (Polygon)*
Custodian: Australian Institute of Marine Science

File Name: SDE_OWNER.aims_chartbnds
Layer Description
Summary: This shapefile shows the extent of many of the marine hydrographic charts available for the Australian region. Attributes include the chart name, chart title, projection and chart extents.

Purpose: This dataset has been generated to assist users in selecting an appropriate hydrographic chart. The format allows multiple charts to be selected by identifying a single point.

Additional Information: System generated coordinates - do not reproject. Developed by Aims from data supplied by the Hydrographic Office.

Layer Information
Title: **Hydrographic Chart Boundaries (Line)**
Custodian: Australian Institute of Marine Science

File Name: SDE_OWNER.aims_chartbnds_line
Layer Description
Summary: This shapefile shows the extent of many of the marine hydrographic charts available for the

Australian region. Attributes include the chart name, chart title, projection and chart extents.

Purpose: This dataset has been generated to assist users in selecting an appropriate hydrographic chart.

Additional Information: System generated coordinates - do not reproject. Developed by Aims from data supplied by the Hydrographic Office.

Layer Information
Title: **Davies Reef - Depth Contours**
Custodian: AIMS
File Name: SDE_OWNER.aims_ddm_davies_contour
Layer Description
Summary: Davies Reef - Depth Contours
Purpose: To provide baseline information on the GBR.

Additional Information: File Name: aims_ddm_davies_contour.

Layer Information
Title: **Davies Reef - Spot Depths**
Custodian: AIMS
File Name: SDE_OWNER.aims_ddm_davies_spot
Layer Description
Summary: Davies Reef - Spot Depths
Purpose: To provide baseline information on the GBR.

Additional Information: File Name: aims_ddm_davies_spot.

Layer Information
Title: **Indicative Diver Rescue Times**
Custodian: AIMS
File Name: SDE_OWNER.aims_diver_rescue_times
Layer Description
Summary: Indicative rescue times for diving restrictions. Attached documentation describes assumptions made.

Purpose: Developed to assist in the planning of Aims Field Trips.

Layer Information
Title: **LTMP: COTS Outbreaks 1985 - 2000**
Custodian: Long Term Monitoring Program Team

File Name: SDE_OWNER.aims_ltmp_cots

Layer Description
Summary: This data set has been derived from the Long Term Monitoring Program at AIMS. This set of points is a subset describing the Crown of Thorns occurrence between 1985 and 2000. The additional field called OUT_SURV is the number of outbreaks divided by the number of surveys.

Purpose: This data set was designed to show the occurrence of COTS across a long time period. This then provides an input data set for the predictive modelling of COTS outbreaks.

Layer Information
Title: **AIMS - Long Term Monitoring Sites**
Custodian: Long Term Monitoring Program Team

File Name: SDE_OWNER.aims_ltm_sites
Layer Description
Summary: This data set has been derived from the Long Term Monitoring Program Database (AIMS).

Purpose: Provides locational information on Long-Term Monitoring Sites.

Layer Information
Title: **Australian 12nm Territorial Limit**
Custodian: CRC Reef

File Name: SDE_OWNER.crcgis_au12ter
Layer Description
Summary: Australian 12 nautical mile territorial limit. Indicative only, consult Federal authorities for accurate boundaries.

Purpose: The CRC GIS dataset provides information on the basic topography of the GBR region.

Additional Information: Descriptive Name: Australian 12 nm territorial limit. Nominal Scale: 1 : 250 000 LUTS - None, All attributing is linked directly to polygons.

Layer Information
Title: **Prevalence of Carbonate in Benthic Sediments**
Custodian: CRC Reef

File Name: SDE_OWNER.crcgis_carbonate
Layer Description
Summary: Based on Maxwell's 1956 atlas of the Great Barrier Reef.

Purpose: The CRC GIS dataset provides information on the basic topography of the GBR region.

Additional Information: Descriptive Name: Prevalence of carbonate in benthic sediments Nominal Scale: 1 : 250 000 LUTS - None, All attributing is linked directly to polygons.

Layer Information
Title: **Boundary of the Digital Depth Model (DDM500)**
Custodian: CRC Reef

File Name: SDE_OWNER.crcgis_ddm_bound

Layer Description

Summary: Extent of the digital depth model (DDM500).

Purpose: The CRC GIS dataset provides information on the basic topography of the GBR region.

Additional Information: Descriptive Name: Boundary of the Digital Depth Model (DDM500) Nominal Scale: 1 : 250 000 LUTS - None.

Layer Information

Title: **Half Degree Lines**

Custodian: CRC Reef

File Name: SDE_OWNER.crcgis_deg_half

Layer Description

Summary: Lines of latitude and longitude, with half degree spacing.

Purpose: The CRC GIS dataset provides information on the basic topography of the GBR region.

Additional Information: Descriptive Name: Half degree lines Nominal Scale: 1 : 100 000 LUTS - None.

Layer Information

Title: **One Degree Lines**

Custodian: CRC Reef

File Name: SDE_OWNER.crcgis_deg_one

Layer Description

Summary: Lines of latitude and longitude, with one degree spacing.

Purpose: The CRC GIS dataset provides information on the basic topography of the GBR region.

Additional Information: Descriptive Name: One degree lines Nominal Scale: 1 : 100 000 LUTS - None.

Layer Information

Title: **GBR Continental Shelf Area**

Custodian: CRC Reef

File Name: SDE_OWNER.crcgis_gbr_shelf

Layer Description

Summary: Boundary of the GBR region, essentially from the coast -line to the limits of the continental shelf (150 m isobath).

Purpose: The CRC GIS dataset provides information on the basic topography of the GBR region.

Additional Information: Descriptive Name: Great Barrier Reef continental shelf area. Nominal Scale: 1 : 250 000 LUTS - None.

Layer Information

Title: **Sections of the GBR Marine Park (polygon)**

Custodian: CRC Reef

File Name: SDE_OWNER.crcgis_gbrmpa250

Layer Description

Summary: Zoning of the Great Barrier Reef Marine Park. Contains section names, estimated section areas. NB. The inclusion of several new sections into the Marine Park in 2000 means that this dataset will be out of date.

Purpose: The CRC GIS dataset provides information on the basic topography of the GBR region.

Additional Information: Descriptive Name: Sections of the Great Barrier Reef Marine Park Nominal Scale: 1 : 250 000 LUTS - None.

Layer Information

Title: **100m Isobaths (Depth Contours)**
Custodian: CRC Reef

File Name: SDE_OWNER.crcgis_isobath100

Layer Description

Summary: One-hundred metre isobaths (depth contours) derived from DDM500.

Purpose: The CRC GIS dataset provides information on the basic topography of the GBR region.

Additional Information: Descriptive Name: 100m isobaths Nominal Scale: 1 : 250 000 LUTS - None.

Layer Information

Title: **5m Isobaths (Depth Contours)**
Custodian: CRC Reef

File Name: SDE_OWNER.crcgis_isobath5

Layer Description

Summary: Five metre isobaths (depth contours) derived from DDM500.

Purpose: The CRC GIS dataset provides information on the basic topography of the GBR region.

Additional Information: Descriptive Name: 5m isobaths Nominal Scale: 1 : 250 000 LUTS - None.

Layer Information

Title: **Land Base Layer**
Custodian: CRC Reef

File Name: SDE_OWNER.crcgis_land250

Layer Description

Summary: Contains basic landtype features: cays, islands, rocks, reefs, land, mangrove, foreshore. This dataset is derived from the original Landtype250 coverage, and some attribute data has been incorporated directly, rather than by including look-up tables. X & Y Coordinate attributes have been updated to refer to the feature centroid, based on the WGS84 datum, expressed in decimal degrees.

Purpose: The dataset provides information on the basic topography of the GBR region.

Additional Information: Nominal Scale: 1:250 000.

Layer Information
Title: Limits of Standard Landsat Images
Custodian: CRC Reef

File Name: SDE_OWNER.crcgis_landsat_bnds
Layer Description
Purpose: The CRC GIS dataset provides information on the basic topography of the GBR region.

Additional Information: Descriptive Name: Nominal Scale: 1 : 250 000 LUTS - None, All attributing is linked directly to polygons.

Layer Information
Title: Long Term Monitoring Survey Areas
Custodian: CRC Reef

File Name: SDE_OWNER.crcgis_ltms
Layer Description
Summary: The boundaries of the AIMS long-term monitoring sectors.

Purpose: The CRC GIS dataset provides information on the basic topography of the GBR region.

Additional Information: Descriptive Name: Long Term Monitoring Survey Nominal Scale: 1 : 250 000 LUTS - None.

Layer Information
Title: Prevalence of Mud in Benthic Sediments
Custodian: CRC Reef

File Name: SDE_OWNER.crcgis_mud
Layer Description
Summary: Prevalence of mud in benthic sediments. Based on Maxwell's 1956 atlas of the Great Barrier Reef.

Purpose: The CRC GIS dataset provides information on the basic topography of the GBR region.

Additional Information: Descriptive Name: Prevalence of mud in benthic sediments Nominal Scale: 1 : 250 000 LUTS - None, all attributing is linked directly to polygons.

Layer Information
Title: State 3nm Limit
Custodian: CRC Reef

File Name: SDE_OWNER.crcgis_qld3ter
Layer Description
Summary: Three nautical-mile limit of Queensland territorial waters. Indicative only, consult state authorities for accurate boundaries. NB. 'Inside' field definition is unclear.

Purpose: The CRC GIS dataset provides information on the basic topography of the GBR region.

Additional Information: Descriptive Name: State Three Nautical Mile Limit
Nominal Scale: 1 : 250 000 LUTS - None.

Layer Information
Title: Reefs Base Layer
Custodian: CRC Reef

File Name: SDE_OWNER.crcgis_reef250
Layer Description
Summary: The Reefs Base Layer is derived from the Landtype Base Layer, and contains all the features labelled as 'reef'. Selected attributes from the reef250 look-up table have been incorporated.

Purpose: The dataset provides information on the basic topography of the GBR region.

Additional Information: Nominal Scale: 1:250 000 All coordinate information has been updated to be consistent with the WGS84 datum.

Layer Information
Title: Dry Reef Areas
Custodian: CRC Reef

File Name: SDE_OWNER.crcgis_reefdry
Layer Description
Summary: Show outlines of that part of the reef shoal which is expected to be exposed at lowest astronomical tide.

Purpose: The CRC GIS dataset provides information on the basic topography of the GBR region.

Additional Information: Descriptive Name: Dry Reef Areas. Nominal Scale: 1 : 250 000 LUTS - None, All attributing is linked directly to polygons.

Layer Information
Title: Survey Control
Custodian: CRC Reef

File Name: SDE_OWNER.crcgis_surv_control
Layer Description
Summary: Locations of survey control points through the GBR region. Note: This dataset has been re-projected to WGS84 (from AGD66). Therefore survey points which have a datum field = 'AGD66' should be in the correct location.

Purpose: The CRC GIS dataset provides information on the basic topography of the GBR region.

Additional Information: The true locations of the survey control points may not be exactly as indicated in the coverage due to datum inconsistencies. The actual coordinates and datum are attributes of the feature. Descriptive Name: Survey control Nominal Scale: 1 : 10 000 LUTS - None.

Layer Information
Title: Major Towns
Custodian: CRC Reef

File Name: SDE_OWNER.crcgis_town250

Layer Description

Summary: Shows location of major towns along the coast in the GBR region. Useful to give a general idea of location.

Purpose: The CRC GIS dataset provides information on the basic topography of the GBR region.

Additional Information: Descriptive Name: Major Towns Nominal Scale: 1 : 250 000 LUTS - None.

Layer Information
Title: **GBR Transects**
Custodian: CRC Reef

File Name: SDE_OWNER.crcgis_transects

Layer Description

Summary: A set of curvilinear transects used to summarise the latitudinal variations in physical properties of the GBR. The 'LAT_INT' field indicates the latitude of the approximate centre of the transect. The transects are spaced 0.25 degrees along the GBR.

Purpose: The CRC GIS dataset provides information on the basic topography of the GBR region.

Additional Information: Descriptive Name: GBR Transects. Nominal Scale: 1 : 250 000 LUTS - None.

Layer Information
Title: **WHA Boundary of the GBR**
Custodian: CRC Reef

File Name: SDE_OWNER.crcgis_whagbr

Layer Description

Summary: Interpreted boundary of the World Heritage Area (WHA). This version excludes estuaries.

Purpose: The CRC GIS dataset provides information on the basic topography of the GBR region.

Additional Information: Descriptive Name: Boundary of the WHA. Nominal Scale: 1 : 250 000 LUTS - None The estimated area of the WHA from this dataset is ~ 348, 000 square kilometres. Inaccuracies arise from the uncertainty of the coastal boundary and from the representation of geodesic curves as straight line segments. As a general guide, allow at least 1% either side of this for error.

Layer Information
Title: **Zoning Information**
Custodian: CRC Reef

File Name: SDE_OWNER.crcgis_zoning

Layer Description

Summary: Zoning information for GBRMPA provided by the Authority in 1998. The Far Northern zoning is under review. Proposed changes will take effect in 2000. The

entire zoning will be reviewed thereafter, as part of the Marine Park Authorities 'Representative Areas Program' (RAP).

Purpose: The CRC GIS dataset provides information on the basic topography of the GBR region.

Additional Information: Descriptive Name: Zoning information Nominal Scale: 1 : 250 000 LUTS - None, All attributing is linked directly to polygons.

Layer Information
Title: eacon03 - Conservation Assessment Areas
Custodian: Chris Moeseneder - CSIRO

File Name: SDE_OWNER.csiro_eacon03
Layer Description
Summary: The Commonwealth Minister for the Environment, the Hon Robert Hill announced on the 26 September 2001 a plan to assess the conservation values of 11 unique marine areas in Commonwealth waters. These assessments will provide information to support the Government's conservation management for Australia's marine ecosystems.

Purpose: Provides spatial information on the Conservation Assessment Areas - 11 unique areas in Commonwealth waters, currently being assessed.

Additional Information: See http://www.ea.gov.au/minister/env/2001/mr26sep01.html for more information. (Also attached as an enclosure.).

Layer Information
Title: Geohazard Risk Contour Map (National Geoscience Dataset)
Custodian: Australian Geological Survey Organisation (AGSO)

File Name: SDE_OWNER.ga_agso_geohazard_risk_contour
Layer Description
Summary: This data set is the Geohazard Risk Contour Map for Australia based on earthquake measurements taken from the AGSO World Earthquake Database, owned by the Australian Seismological Centre of AGSO. It shows the acceleration coefficient (a) 10 percent chance of being exceeded in the next 50 years. High values of this calculation represent higher risk areas of earthquake occurrence.

Purpose: To display a geohazard risk contour map.

Additional Information: Nominal Scale: 1:1,000,000 (1km to 10km) Download: eqriskdd.shp File name: ga_agso_geohazard_risk_contour.

Layer Information
Title: Geology (National Geoscience Dataset)
Custodian: Australian Geological Survey Organisation (AGSO)

File Name: SDE_OWNER.ga_agso_geology_line
Layer Description
Summary: The Geology of Australia data set documents the distribution and age of major

stratigraphic, intrusive and medium to high-grade metamorphic rock units of onshore Australia. It is an ongoing compilation, subject to periodic revision as additional data becomes available. The data set was compiled to use at scales between 1:2,500,000

and 1:5,000,000 inclusive. The units distinguished/mapped mainly represent stratigraphic supergroups, regional intrusive associations and regional metamorphic complexes. Groupings of Precambrian units in the time -space diagram are generally separated by major time breaks; Phanerozoic units are grouped according to stratigraphic age i.e. System/Period. The time-space diagram has the added benefit that it provides a summary of units currently included on the themes. The method used to distinguish sedimentary and many volcanic units varies for each geological eon as follows: * Cainozoic units are morphological units which emphasise the relationship of the sedimentary fill to the landscape; * Mesozoic units are regionally extensive to continent-wide time-rock units which emphasise the System of Period(s); * Palaeozoic units are stratotectonic units that emphasise either the dominant System or Period(s) or the range of Periods; * Proterozoic units are commonly regional stratotectonic units - separated by major time breaks and split into the Palaeoproterozoic, Mesoproterozoic and Neoproterozoic Eras - which are

generally unique to each cratonic region; and * Archaean units are regional lithological units grouped into broad time divisions. Metamorphic units are lithological units which emphasise the metamorphic facies and timing of the last major metamorphic event. Igneous units are regional units which emphasise the dominant lithology and are grouped into broad time divisions. Note: This is a specialist product and most items in the data set do not comply with the current AGSO GIS standards for digital data and should be treated accordingly.

Purpose: It is an ongoing compilation of the Geology of Australia.

Additional Information: Nominal Scale: 1:2,500,000 Download: geollndd.shp File name: ga_agso_geology_line.

Layer Information
Title: Fundamental Gravity Network Stations (National Geoscience Dataset)
Custodian: Australian Geological Survey Organisation (AGSO)

　　　　File Name: SDE_OWNER.ga_agso_gravity_fgns
Layer Description
Summary: The Gravity Survey Index presents a summary of the essential specifications on about 1000 gravity surveys held in the National Gravity Database. Gravity measurements have been made in Australia since about 1900. Organised surveys for geophysical purposes (initially oil and coal exploration) have been conducted from 1939 onwards. The dataset includes surveys carried out by AGSO (BMR), state governments, private companies, universities and other organisations. The digital point data, maps and grids derived from these surveys are available as separate products. Additional to the survey index is the locations of the Australian fundamental gravity network stations as a separate dataset.

Purpose: The Gravity Survey Index presents a summary of the essential specifications on about 1000 gravity surveys held in the National Gravity Database.

Additional Information: Nominal Scale 1: 250,000 Download: afgnstn.shp File name:

ga_agso_gravity_fgns.

Layer Information
Title: **Index of Gravity Surveys (National Geoscience Dataset)**
Custodian: Australian Geological Survey Organisation (AGSO)

File Name: SDE_OWNER.ga_agso_gravity_surv_index
Layer Description
Summary: The Gravity Survey Index presents a summary of the essential specifications on about 1000 gravity surveys held in the National Gravity Database. Gravity measurements have been made in Australia since about 1900. Organised surveys for geophysical purposes (initially oil and coal exploration) have been conducted from 1939 onwards. The dataset includes surveys carried out by AGSO (BMR), state governments, private companies, universities and other organisations. The digital point data, maps and grids derived from these surveys are available as separate products. Additional to

the survey index is the locations of the Australian fundamental gravity network stations as a separate dataset.

Purpose: The Gravity Survey Index presents a summary of the essential specifications on about 1000 gravity surveys held in the National Gravity Database.

Additional Information: Nominal Scale 1: 250,000 Download: gravsrv.shp File name:

ga_agso_gravity_surv_index.

Layer Information
Title: **Spatial representation of AGSO World Earthquake Database**
(National Geoscience Dataset)
Custodian: Australian Geological Survey Organisation (AGSO)
File Name: SDE_OWNER.ga_agso_world_earthquakes
Layer Description
Summary: This dataset is a spatial representation of AGSO's World Earthquake Database owned by the Australian Seismological Centre. The dataset contains recorded magnitudes, origin times(UTC) and dates for earthquakes on and near Australia.

Purpose: To spatially represent AGSO's World Earthquake Database.

Additional Information: Nominal Scale: 1:100,000 (10m to 500m) Download: equakesdd.shp File name: ga_agso_world_earthquakes Up to the minute earthquakes can be mapped on line and seen at:

http://www.agso.gov.au/bin/listQuakes?showall=true.

Layer Information
Title: **Ambis2001 - Australian Zones**
Custodian: Geoscience Australia

File Name: SDE_OWNER.ga_ambis2001_aus_zones
Layer Description
Summary: Australian Zones. (Multiple) Contains the 3, 12, 24, 200 nautical mile, and treaty boundaries in a single coverage.

Purpose: Geoscience Australia is responsible for defining Australia's maritime boundaries. To assist in this task National Mapping has developed the Australian

Maritime Boundaries Information System (AMBIS). AMBIS 2001 is a data product, derived from AMBIS, providing access to the data for Australia's Territorial Sea Baseline (TSB) and maritime zones. AMBIS 2001 data comporises the TSB and the outer limits of each zone, together with quality attributes. Base points that generate the zone boundaries are supplied in separate files.

Layer Information
Title: **Australia's Coastline (Geodata Coast 100K)**
Custodian: Geoscience Australia

File Name: SDE_OWNER.ga_coast100k_Aus_coastline
Layer Description
Summary: Vector, coastline data for GIS - Source scale 1:100 000 Contains a vector representation of the topographic features depicting Australia's coastline, and State and Territory borders. The coastline represents the position of the Mean High Water, the seaward edge of coastal mangroves, inlet closing lines and those parts of the coastline defined as indefinite.

Purpose: COAST-100K is a GEODATA product derived primarily from the national coverage of 1:100 000 scale topographic maps. It provides a base layer of coast, and State and Territory border information on which numerous applications may be built.

Additional Information: This is a subset of the Coast100K dataset, containing State data features labelled as 'coastline'. State datasets were joined into a national dataset using ArcInfo's merge function. COAST-100K provides a fundamental base layer of coast and border information on which a wide range of applications can be built. The level of detail in the source mapping means COAST-100K is particularly suited to regional, State-wide and national applications.

Layer Information
Title: **Dams and Water Storages**
Custodian: Geoscience Australia

File Name: SDE_OWNER.ga_dams
Layer Description
Summary: Shows point location of large reservoirs in Australia owned by a public authority. Attribute information includes: - name of the dam wall and associated water body - name of the stream on which it is located - storage capacity and surface area of the water body - ownership - construction details of the dam wall.

Purpose: This dataset was developed by GEOSCIENCE Australia to provide geographic data on the location of Dams and Water Storages within Australlila at a scale of 1:1 000 000.

Additional Information: Nominal Scale: 1:1 000 000.

Layer Information
Title: **Commonwealth Fisheries 2003**
Custodian: Geoscience Australia

File Name: SDE_OWNER.ga_fisheries_commonwealth
Layer Description
Summary: Commonwealth Fisheries 2003 is a digital representation of the limits of all Commonwealth Fisheries around Australia and its External Territories (except for

the Australian Antarctic Territory), as set out in the Fisheries Management Regulations 1992 and/or relevant Management Plans administered by the Australian Fisheries Management Authority (AFMA). See www.auslig.gov.au/mapping/marbound/ and www.afma.gov.au/fisheries for further information.

Purpose: Indicates fishery management boundaries.

Additional Information: Nominal Scale: Variable - source is generally larger than 1:150 000. All current Commonwealth Fisheries have been represented in the GIS database. Internal fisheries and closure areas have not been included. It is expected that the data set will be maintained and updated as changes occur.

Layer Information
Title: **National Public and Aboriginal Lands (NPAL) Pre-1998.**
Custodian: Geoscience Australia

File Name: SDE_OWNER.ga_npal_pre1988_point
Layer Description
Summary: Contains boundary and attribute information for parcels of public, Aboriginal and Torres Strait Islander land in Australia which are greater than 40 hectares. Selected smaller areas are shown by point locations (includes nature reserves, forests and Aboriginal land). The public lands and Aboriginal lands fall within six broad reserve classes: Forestry; Environmental protection; Institutional; Mining; Other reserved and unreserved Crown land; and Freehold or Crown leasehold land. Attribute information includes (as applicable to the type of reserve): State and reserve name; Reserve type; Administering authority; Size (in hectares); Identification number; and Dates of original proclamation

and latest update. Note: Data have not been verified by State authorities.
Purpose: Contains boundary and attribute information for parcels of land.
Additional Information: Nominal Scale: 1:250 000.

Layer Information
Title: **Sonobuoy Stations (National Geoscience Dataset)**
Custodian: Geoscience Australia

File Name: SDE_OWNER.ga_sonobouy
Layer Description
Summary: This dataset shows locations of sonobuoy recording stations. It is generated from a database containing coordinates of all Geoscience Australia's seismic traverses.

Purpose: Indicates sonobuoy station coordinates.

Additional Information: Nominal Scale: 1:10 000 Dataset No. 2409 Presumably a sonobouy is a sonobuoy.

Layer Information
Title: **Australian Surface Water Management Areas**
Custodian: Geoscience Australia

File Name: SDE_OWNER.ga_surfacewater
Layer Description
Summary: Contains the boundaries and names of Surface Water Management Areas. These areas are regions defined by State and Territory water management agencies for

use in national water resources reporting. Many Surface Water Management Areas are the same as the Australia's River (AWRC) Basins (AUSLIG 1977) boundaries, however in some States and Territories some Surface Water Management Areas are a sub-set or a major part of the AWRC Basins.

Purpose: Provides a description of the boundaries and names of Surface Water Management Areas.

Additional Information: The National Land and Water Resources Audit funded the compilation of the data. Sinclair Knight Mertz (Spatial Division) undertook the compilation of the national coverage. Coastline and State borders came from Geoscience Australia, while boundaries came from the various State governments and Geoscience Australia.

Layer Information
Title: **GEODATA TOPO-10M - DRAINAGE**
Custodian: Geoscience Australia

File Name: SDE_OWNER.ga_topo10m_drainage
Layer Description
Summary: ga_topo10m_drainage was derived from the GEODATA TOPO-10M aus10dgs coverage. It shows Australia's rivers at a scale of 1:10 000 000.

Purpose: Shows a small scale vector representation of Australia's drainage network.

Additional Information: Scale: 1:10 million.

Layer Information
Title: **GEODATA TOPO-10M - WATERBODY**
Custodian: Geoscience Australia

File Name: SDE_OWNER.ga_topo10m_waterbody
Layer Description
Summary: ga_topo10m_waterbody was derived from the GEODATA TOPO-10M aus10wgs coverage. It shows bodies of water around Australia at a scale of 1:10 000 000.

Purpose: Shows a small scale vector representation of Australia's water bodies.

Additional Information: Scale: 1:10 million.

Layer Information
Title: **TOPO-250K2 Hydrography Theme - MARINE FACILITIES**
Custodian: Geoscience Australia

File Name: SDE_OWNER.ga_topo250k2_hydro_marine
Layer Description
Summary: This linear layer depicts constructed features used for the docking or safe anchorage of marine craft.

Purpose: The hydrography themes depict features which are related to the drainage, flow or use of water on the earth's surface. The hydrography theme is composed of the 'drainage', 'waterbody', 'offshore', 'navigation', 'waterpoint' and 'marine facilities' layers.

Additional Information: Nominal Scale: 1:250 000 Data is released periodically by Geoscience Australia as a sequence of data tiles. These will be appended to the dataset as they become available.

Layer Information
Title: TOPO-250K2 Hydrography Theme - NAVIGATION
Custodian: Geoscience Australia

File Name: SDE_OWNER.ga_topo250k2_hydro_navigation

Layer Description

Summary: This point layer contains features which can be used as a guide for coastal navigation such as lighthouses and wrecks. This data however should not be used as a source for marine navigation.

Purpose: The hydrography themes depict features which are related to the drainage, flow or use of water on the earth's surface. The hydrography theme is composed of the 'drainage', 'waterbody', 'offshore', 'navigation', 'waterpoint' and 'marine facilities' layers.

Additional Information: Nominal Scale: 1:250 000 LUTS: RELATIONSHIP - lut_ga_topo250k2_rel Data is released periodically by Geoscience Australia as a sequence of data tiles. These will be appended to the dataset as they become available.

Layer Information
Title: TOPO-250K2 Hydrography Theme - OFFSHORE
Custodian: Geoscience Australia

File Name: SDE_OWNER.ga_topo250k2_hydro_offshore

Layer Description

Summary: The offshore layer is used to represent offshore polygon features such as reefs.

Purpose: The hydrography themes depict features which are related to the drainage, flow or use of water on the earth's surface. The hydrography theme is composed of the 'drainage', 'waterbody', 'offshore', 'navigation', 'waterpoint' and 'marine facilities' layers.

Additional Information: Nominal Scale: 1:250 000 LUTS: REEF - lut_ga_topo250k2_ref

RELATIONSHIP - lut_ga_topo250k2_rel Data is released periodically by Geoscience Australia as a sequence of data tiles. These will be appended to the dataset as they become available.

Layer Information
Title: TOPO-250K2 Hydrography Theme - WATERBODIES
Custodian: Geoscience Australia

File Name: SDE_OWNER.ga_topo250k2_hydro_waterbody

Layer Description

Summary: This is a polygon layer of waterbody area features such as lakes, swamps, land subject to inundation and watercourses sufficiently wide to be shown as polygons on the source material or at 1:250 000 scale.

Purpose: The hydrography themes depict features which are related to the drainage, flow or use of water on the earth's surface. The hydrography theme is composed of the 'drainage', 'waterbody', 'offshore', 'navigation', 'waterpoint' and 'marine facilities' layers.

Additional Information: Nominal Scale: 1:250 000 LUTS: HEIRARCHY - lut_ga_topo250k2_her PERENNIAL - lut_ga_topo250k2_per Data is released periodically by Geoscience Australia as a sequence of data tiles. These will be appended to the dataset as they become available.

Layer Information
Title: TOPO-250K2 Hydrography Theme - WATERPOINT
Custodian: Geoscience Australia

File Name: SDE_OWNER.ga_topo250k2_hydro_waterpoint
Layer Description
Summary: This is a point layer showing point water features such as bores and springs which exist independently of the drainage network.

Purpose: The hydrography themes depict features which are related to the drainage, flow or use of water on the earth's surface. The hydrography theme is composed of the 'drainage', 'waterbody', 'offshore', 'navigation', 'waterpoint' and 'marine facilities' layers.

Additional Information: Nominal Scale: 1:250 000 LUTS: WATERPOINT - lut_ga_topo250k2_wat Data is released periodically by Geoscience Australia as a sequence of data tiles. These will be appended to the dataset as they become available.

Layer Information
Title: TOPO-250K2 Infrastructure Theme - AERONAUTICAL POINT
Custodian: Geoscience Australia

File Name: SDE_OWNER.ga_topo250k2_infra_aeronaut
Layer Description
Summary: This point layer uses points to depict aircraft facilities including airports, landing grounds and heliports.

Purpose: The infrastructure themes generally contain features which depict built structures on the earth's surface. The infrastructure theme is composed of the aeronautical point, buildings point, built-up areas, localities, pipelines, rail transport, road transport, utilities, powerlines and seismic lines layers.

Additional Information: Nominal Scale: 1:250 000 LUTS: FACILITY - lut_ga_topo250k2_fac Data is released periodically by Geoscience Australia as a sequence of data tiles. These will be appended to the dataset as they become available.

Layer Information
Title: TOPO-250K2 Infrastructure Theme - BUILDINGS POINT
Custodian: Geoscience Australia

File Name: SDE_OWNER.ga_topo250k2_infra_buildings

Layer Description
Summary: This point layer is used to depict permanent walled and roofed constructions or the remaining ruins of such constructions. Buildings are not shown in built-up areas.

Purpose: The infrastructure themes generally contain features which depict built structures on the earth's surface. The infrastructure theme is composed of the aeronautical point, buildings point, built-up areas, localities, pipelines, rail transport, road transport, utilities, powerlines and seismic lines layers.

Additional Information: Nominal Scale: 1:250 000 LUTS: BUILDING - lut_ga_topo250k2_bld Data is released periodically by Geoscience Australia as a sequence of data tiles. These will be appended to the dataset as they become available.

Layer Information
Title: TOPO-250K2 Infrastructure Theme - BUILT-UP AREAS
Custodian: Geoscience Australia

File Name: SDE_OWNER.ga_topo250k2_infra_built_up
Layer Description
Summary: This is a polygon layer representing the urban environment.

Purpose: The infrastructure themes generally contain features which depict built structures on the earth's surface. The infrastructure theme is composed of the aeronautical point, buildings point, built-up areas, localities, pipelines, rail transport, road transport, utilities, powerlines and seismic lines layers.

Additional Information: Nominal Scale: 1:250 000 LUTS: PARK - lut_ga_topo250k2_prk Data is released periodically by Geoscience Australia as a sequence of data tiles. These will be appended to the dataset as they become available.

Layer Information
Title: TOPO-250K2 Infrastructure Theme - LOCALITIES
Custodian: Geoscience Australia

File Name: SDE_OWNER.ga_topo250k2_infra_localities
Layer Description
Summary: This point layer shows named places or areas as a point locality. A locality may be a populated centre such as a town or a homestead, or may be linked to a geographic feature such as a mountain peak, a bay or a road junction. Other localilties may not be based on any ground feature.

Purpose: The infrastructure themes generally contain features which depict built structures on the earth's surface. The infrastructure theme is composed of the aeronautical point, buildings point, built-up areas, localities, pipelines, rail transport, road transport, utilities, powerlines and seismic lines layers.

Additional Information: Nominal Scale: 1:250 000 LUTS: LOCALITY - lut_ga_topo250k2_loc Data is released periodically by Geoscience Australia as a sequence of data tiles. These will be appended to the dataset as they become available.

Layer Information
Title: TOPO-250K2 Infrastructure Theme - PIPELINES
Custodian: Geoscience Australia

File Name: SDE_OWNER.ga_topo250k2_infra_pipelines

Layer Description

Summary: The pipeline layer is a linear network representing pipelines which carry water, gas, oil and/or other materials. Pipelines are not shown in built-up areas.

Purpose: The infrastructure themes generally contain features which depict built structures on the earth's surface. The infrastructure theme is composed of the aeronautical point, buildings point, built-up areas, localities, pipelines, rail transport, road transport, utilities, powerlines and seismic lines layers.

Additional Information: Nominal Scale: 1:250 000 LUTS: PRODUCT - lut_ga_topo250k2_pro

RELATIONSHIP - lut_ga_topo250k2_rel Data is released periodically by Geoscience Australia as a sequence of data tiles. These will be appended to the dataset as they become available.

Layer Information

Title: **TOPO-250K2 Infrastructure Theme - POWERLINES**

Custodian: Geoscience Australia

File Name: SDE_OWNER.ga_topo250k2_infra_powerlines

Layer Description

Summary: This linear feature depicts only powerlines carrying 110 kilovolts or greater.

Purpose: The infrastructure themes generally contain features which depict built structures on the earth's surface. The infrastructure theme is composed of the aeronautical point, buildings point, built-up areas, localities, pipelines, rail transport, road transport, utilities, powerlines and seismic lines layers.

Additional Information: Nominal Scale: 1:250 000 Data is released periodically by Geoscience Australia as a sequence of data tiles. These will be appended to the dataset as they become available.

Layer Information

Title: **Built Up Areas of Queensland**

Custodian: AIMS

File Name: SDE_OWNER.ga_topo250k2_infra_qldtowns

Layer Description

Summary: Indicates the location of built-up areas throughout Queensland. Feature class is derived from data obtained from Geoscience Australia (Topo250K2: Built-Up Areas). Note: Points indicate the centre of a built-up area, rather than a feature such as a Post Office.

Purpose: Gives information on the location of populated areas.

Additional Information: Nominal Scale: 1:100 000.

Layer Information

Title: **TOPO-250K2 Infrastructure Theme - RAIL TRANSPORT**

Custodian: Geoscience Australia

File Name: SDE_OWNER.ga_topo250k2_infra_rail

Layer Description
Summary: This combined point/linear layer depicts transport systems which use one or more rails to carry freight or passengers. All rail features are attributed with the number of tracks, the status of the railway and the rail gauge.

Purpose: The infrastructure themes generally contain features which depict built structures on the earth's surface. The infrastructure theme is composed of the aeronautical point, buildings point, built-up areas, localities, pipelines, rail transport, road transport, utilities, powerlines and seismic lines layers.

Additional Information: Nominal Scale: 1:250 000 LUTS: GAUGE - lut_ga_topo250k2_gag STATUS -lut_ga_topo250k2_stu TRACKS - lut_ga_topo250k2_tra Data is released periodically by Geoscience Australia as a sequence of data tiles. These will be appended to the dataset as they become available.

Layer Information
Title: **TOPO-250K2 Infrastructure Theme - ROAD TRANSPORT**
Custodian: Geoscience Australia

File Name: SDE_OWNER.ga_topo250k2_infra_road
Layer Description
Summary: The road transport layers comprises both point and linear features which relate to vehicle transport. Roads, and the related infrastructure such as tunnels and bridges, are classified under a heirachy of road types as provided in the Data Dictionary at Appendix A. Road formation and route numbers are also included as attributes to the data. Minor bridges are not shown in the data. Gates and stockgrids in more densely settled areas are not included in the data except for those in vermin and dog proof fences. Only foot tracks of national significance are included in the data.

Purpose: The infrastructure themes generally contain features which depict built structures on the earth's surface. The infrastructure theme is composed of the aeronautical point, buildings point, built-up areas, localities, pipelines, rail transport, road transport, utilities, powerlines and seismic lines layers.

Additional Information: Nominal Scale: 1:250 000 LUTS: CLASS - lut_ga_topo250k2_cla FORMATION - lut_ga_topo250k2_for Data is released periodically by Geoscience Australia as a sequence of data tiles. These will be appended to the dataset as they become available.

Layer Information
Title: **TOPO-250K2 Infrastructure Theme - SEISMIC LINES**
Custodian: Geoscience Australia

File Name: SDE_OWNER.ga_topo250k2_infra_seismic
Layer Description
Summary: This linear feature depicts seismic lines and cleared lines. These are defined as "A graded path in a straight line for the purpose of sub-surface geological exploration."

Purpose: The infrastructure themes generally contain features which depict built structures on the earth's surface. The infrastructure theme is composed of the aeronautical point, buildings point, built-up areas, localities, pipelines, rail transport, road transport, utilities, powerlines and seismic lines layers.

Additional Information: Nominal Scale: 1:250 000 Data is released periodically by Geoscience Australia as a sequence of data tiles. These will be appended to the dataset as they become available.

Layer Information
Title: *TOPO-250K2 Relief Theme - RELIEF AREA*
Custodian: Geoscience Australia

File Name: SDE_OWNER.ga_topo250k2_relief_area

Layer Description
Summary: This polygon layer depicts areas of land which have a particular surface condition. Features such as sand, sand dunes, craters, open cut mines and rocky outcrops are included in this layer.

Purpose: The relief theme contains contours, relief features and point elevations which depict the shape of the earth's surface. It is composed of the 'spot heights', 'survey marks', 'sand ridges', 'relief area', 'contours' and 'morphology' layers.

Additional Information: Nominal Scale: 1:250 000 Data is released periodically by Geoscience Australia as a sequence of data tiles. These will be appended to the dataset as they become available.

Layer Information
Title: *TOPO-250K2 Relief Theme - CONTOURS*
Custodian: Geoscience Australia

File Name: SDE_OWNER.ga_topo250k2_relief_contour

Layer Description
Summary: Contours at 50 metre intervals form the basis of this polygon layer. The area between adjacent contours are held as hypsometric area polygons. (These are polygons in between consecutive contours, and carry the elevation of the lowest contour.)

Purpose: The relief theme contains contours, relief features and point elevations which depict the shape of the earth's surface. It is composed of the 'spot heights', 'survey marks', 'sand ridges', 'relief area', 'contours' and 'morphology' layers.

Additional Information: Nominal Scale: 1:250 000 Data is released periodically by Geoscience Australia as a sequence of data tiles. These will be appended to the dataset as they become available.

Layer Information
Title: *TOPO-250K2 Relief Theme - SAND RIDGES*
Custodian: Geoscience Australia

File Name: SDE_OWNER.ga_topo250k2_relief_sandridge

Layer Description
Summary: This is a linear layer which represents sand drifts, formed by prevailing winds. Where known, an average height for each sand ridge is provided as an attribute in the data.

Purpose: The relief theme contains contours, relief features and point elevations which depict the shape of the earth's surface. It is composed of the 'spot heights', 'survey marks', 'sand ridges', 'relief area', 'contours' and 'morphology' layers.

Additional Information: Nominal Scale: 1:250 000 Data is released periodically by Geoscience Australia as a sequence of data tiles. These will be appended to the dataset as they become available.

Layer Information
Title: TOPO-250K2 Relief Theme - SPOT HEIGHTS
Custodian: Geoscience Australia

File Name: SDE_OWNER.ga_topo250k2_relief_spot_ht
Layer Description
Summary: This point layer contains discrete point information with all height values contained as attributes. Spot elevations have been selected to show terrain shape, change of slope and high and low points. In any group of mountains and hills, spot elevations are used to show the highest point. Due to the introduction of contours in TOPO-250K Series 2, there are not as many spot elevations as provided in Series 1.

Purpose: The relief theme contains contours, relief features and point elevations which depict the shape of the earth's surface.

Additional Information: Nominal Scale: 1:250 000 LUTS: SOURCE - lut_ga_topo250k2_src POINT - lut_ga_topo250k2_pnt Data is released periodically by Geoscience Australia as a sequence of data tiles. These will be appended to the dataset as they become available.

Layer Information
Title: TOPO-250K2 Relief Theme - SURVEY MARKS
Custodian: Geoscience Australia

File Name: SDE_OWNER.ga_topo250k2_relief_surveymk
Layer Description
Summary: This point layer contains spot elevations for which at least the height (for Bench Marks) or the position (for Horizontal Control Points) has been determined by geodetic survey.

Purpose: The relief theme contains contours, relief features and point elevations which depict the shape of the earth's surface.

Additional Information: Nominal Scale: 1:250 000 Data is released periodically by Geoscience Australia as a sequence of data tiles. These will be appended to the dataset as they become available.

Layer Information
Title: TOPO-250K2 Reserve Theme - RESERVED AREAS
Custodian: Geoscience Australia

File Name: SDE_OWNER.ga_topo250k2_res_reserved
Layer Description
Summary: This polygon layer contains four reserved area features, namely: Aboriginal areas, forestry reserves, nature conservation areas and water supply reserves. Aboriginal area features describe freehold, leasehold or Crown land that is assigned to an Aboriginal community. It does not include land held privately by individual Aboriginal landowners. Forestry reserves are public land managed by State forestry authorities. These include State forests and timber reserves. Nature convervation areas are land that is set aside for the protection of the natural

environment. This feature includes national parks, flora reserves, State recreation areas and conservation parks. Water supply reserves are Crown land set aside for the protection of water supply catchments and associated works.

Purpose: The reserved area theme depicts land which has been set aside for special purposes. It is composed of the 'security areas' and 'reserved areas' layers.

Additional Information: Nominal Scale: 1:250 000 LUTS: AUTHORITY - lut_ga_topo250k2_aut Data is released periodically by Geoscience Australia as a sequence of data tiles. These will be appended to

the dataset as they become available.

Layer Information
Title: **TOPO-250K2 Reserve Theme - SECURITY AREAS**
Custodian: Geoscience Australia

File Name: SDE_OWNER.ga_topo250k2_res_security
Layer Description
Summary: The Security Area layer contains Prohibited Area features, which are areas of land set aside for defence, scientific or other activities in the public interest. Examples of this are CSIRO research areas and communication sites which are sufficiently sized to be shown as polygons on the source material. All land reserved for the Australian military forces is classed as Prohibited Area. This includes features such as army barracks, firing ranges, naval bases and military training areas.

Purpose: The reserved area theme depicts land which has been set aside for special purposes. It is composed of the 'security areas' and 'reserved areas' layers.

Additional Information: Nominal Scale: 1:250 000 LUTS: AUTHORITY - lut_ga_topo250k2_aut Data is released periodically by Geoscience Australia as a sequence of data tiles. These will be appended to the dataset as they become available.

Layer Information
Title: **TOPO-250K2 Vegetation Theme - VEGETATION MISCELLANEOUS**
Custodian: Geoscience Australia

File Name: SDE_OWNER.ga_topo250k2_veg_misc
Layer Description
Summary: This layer contains linear features which represent narrow strips of natural or planted trees, positioned to break the force of the prevailing wind.

Purpose: The vegetation theme contains features which depict vegetation cover on the earth's land surface. It is composed of the 'vegetation' and 'vegetation miscellaneous' layers.

Additional Information: Nominal Scale: 1:250 000 Data is released periodically by Geoscience Australia as a sequence of data tiles. These will be appended to the dataset as they become available.

Layer Information
Title: **TOPO-250K2 Vegetation Theme - VEGETATION**
Custodian: Geoscience Australia

File Name: SDE_OWNER.ga_topo250k2_veg_vegetation

Layer Description
Summary: This polygon layer contains forest features which are defined as areas of land with greater than 20% cover of trees or scrub. This layer also contains specific vegetation classes including mangrove, orchard, pine plantation and rainforest.

Purpose: The vegetation theme contains features which depict vegetation cover on the earth's land surface. It is composed of the 'vegetation' and 'vegetation miscellaneous' layers.

Additional Information: Nominal Scale: 1:250 000 Data is released periodically by Geoscience Australia as a sequence of data tiles. These will be appended to the dataset as they become available.

Layer Information
Title: Drainage - TOPO 2.5M 1998
Custodian: Geoscience Australia

File Name: SDE_OWNER.ga_topo25m_drainage
Layer Description
Summary: Drainage - TOPO 2.5M 1998 contains a small scale vector representation of the river drainage system of Australia.This data is derived from Geoscience Australia's TOPO 2.5M 1998 hydrography theme.

Purpose: This is a national seamless data product aimed at regional or national applications. The hydrography theme shows drainage networks including rivers, lakes and offshore features.

Additional Information: Nominal Scale: 1:2 500 000 (Small Scale).

Layer Information
Title: Towns - TOPO 2.5M 1998
Custodian: Geoscience Australia

File Name: SDE_OWNER.ga_topo25m_towns_pt
Layer Description
Summary: Towns - TOPO 2.5M 1998 contains a small scale vector representation of the built-up areas of Australia. Built up areas have been represented as points.This data is derived from Geoscience Australia's TOPO 2.5M 1998 Infrastructure theme.

Purpose: The infrastructure themes generally contain features which depict built structures on the earth's surface. The infrastructure theme is composed of the roads, railways, localities and built-up areas layers.

Additional Information: Nominal Scale: 1:2 500 000 (Small Scale).

Layer Information
Title: Australia's Natural Vegetation (1788)
Custodian: Geoscience Australia

File Name: ga_veg_natural_1788
Layer Description
Summary: Shows a reconstruction of Australian vegetation in the 1780s. Areas over 30 000 hectares are shown plus small areas of significant vegetation such as rainforest. Attribute information includes:

growth form of tallest and lower stratum, foliage cover of tallest stratum and dominant floristic types. Data are captured from 1:5 million source material. Data are suitable for GIS applications. Scale: 1:5

million

Additional Information: Contains the following attributes: - growth form of tallest and lowest stratum foliage cover - dominant floristic type.

Layer Information
Title: **Australia's Present Vegetation (1988)**
Custodian: Geoscience Australia

File Name: SDE_OWNER.ga_veg_present_1988
Layer Description
Summary: Shows vegetation of Australia in the mid 1980s. Areas over 30 000 hectares are shown plus small areas of significant vegetation such as rainforest and croplands. Attribute information includes growth form of the tallest and lower stratum, foliage cover of tallest stratum and dominant floristic type. Data are suitable for GIS applications. Scale: 1:5 million

Additional Information: Contains the following attributes: - growth form of tallest and lowest stratum foliage cover - dominant floristic type.

Layer Information
Title: **Bioregions of the GBR**
Custodian: GBRMPA

File Name: SDE_OWNER.gbrmpa_bioregion
Layer Description
Summary: Bioregions of the Great Barrier Reef. Attribute data from the bioreg_lut lookup table has been incorporated.

Purpose: Developed to represent the different biological regions occurring throughout the Great Barrier Reef Marine Park.

Additional Information: Nominal Scale: 1:250 000.

Layer Information
Title: **GBRMPA Orthophoto Boundaries**
Custodian: GBRMPA

File Name: SDE_OWNER.gbrmpa_ortho_catalog
Layer Description
Summary: Boundaries of orthophoto maps held by GBRMPA.

Purpose: Indicates areas within the GBR Marine Park for which alternate data is available. **Additional Information:** Nominal Scale: 1:250 000 Alternate Name: ortho_catalog (GBRMPA).

Layer Information
Title: **Backshore Flats (Saline Coastal Flats)**
Custodian: GBRMPA

File Name: SDE_OWNER.gbrmpa_physical_backshore

Layer Description

Summary: Saline coastal flats (derived from Geodata) along the Queensland coast immediately adjacent to the Great Barier Reef World Heritage Area.

Purpose: Indicates location within the GBR Marine Park.

Additional Information: Nominal Scale: 1:250 000 Alternate Name: BAKSHORE250K.

Layer Information

Title: **The Coastline of Queensland**

Custodian: GBRMPA

File Name: SDE_OWNER.gbrmpa_dpa

Layer Description

Summary: Queensland coastline from QLD/NSW border to QLD/NT border.

Purpose: Indicates location of Queensland's coastline.

Additional Information: Nominal Scale: 1:250 000.

Layer Information

Title: **Drying / Coral Reef Areas**

Custodian: GBRMPA

File Name: SDE_OWNER.gbrmpa_dpa

Layer Description

Summary: Tidal, Drying or Emergent reef areas of major CORAL REEF strufctures within the Great

Barrier Reef World Heritage Area; details those reef areas which may be submerged or exposed during tidal fluctuations from HAT to LAT.

Purpose: Produced under specific contract for GBRMPA by AUSLIG.

Additional Information: Nominal Scale: 1:250 000.

Layer Information

Title: **Foreshore Flats**

Custodian: GBRMPA

File Name: SDE_OWNER.gbrmpa_dpa

Layer Description

Summary: Foreshore Flats (Derived from Geodata TOPO250K_2) along the Queensland coast immediately adjacent to the Great Barrier Reef World Heritage Area.

Purpose: Indicates location of foreshore flats along Queensland's coastline.

Additional Information: Nominal Scale: 1:250 000 Alternate Name: FORESHORE250K.

Layer Information

Title: **Mangrove Flats**

Custodian: GBRMPA

File Name: SDE_OWNER.gbrmpa_physical_mangrove

Layer Description

Summary: Mangrove flats (derived from Geodata TOPO250K_2) along the Queensland coast immediately adjacent to the GBR World Heritage Area.

Purpose: Indicates location of Queensland's Mangroves at a 1:250000 scale.

Additional Information: Nominal Scale: 1:250 000 Alternate Name: Mangroves250K (GBRMPA).

Layer Information
Title: **Major Coral Reefs within the GBR WHA**
Custodian: GBRMPA
      File Name: SDE_OWNER.gbrmpa_physical_reefs
Layer Description
Summary: Major coral reef structures within the GBR World Heritage Area, as defined by the reef shoal edge.

Purpose: Indicates location of reefs within the GBRWHA.

Additional Information: Nominal Scale: 1:250 000 Alternate Name: reefs (GBRMPA).

Layer Information
Title: **Rocks within the GBR region (Points)**
Custodian: GBRMPA
      File Name: SDE_OWNER.gbrmpa_physical_rocks_pnt
Layer Description
Summary: Rocks within the GBR region.
Purpose: Produced under specific contact for GBRMPA by AUSLIG.
Additional Information: Nominal Scale: 1:250 000 Alternate Name: rocks_pt (GBRMPA).

Layer Information
Title: **GBR Marine Park Defence Areas**
Custodian: GBRMPA
      File Name: SDE_OWNER.gbrmpa_zone_defence
Layer Description
Summary: Defence areas described in GBRMP zoning plans.
Purpose: Indicates boundary positions within the GBR Marine Park.
Additional Information: Nominal Scale: 1:250 000 Alternate Name: def_area (GBRMPA).

Layer Information
Title: **Dugong Protection Areas**
Custodian: GBRMPA
      File Name: SDE_OWNER.gbrmpa_dpa
Layer Description
Summary: Gazetted Dugong Protection Areas along the Queensland Coast from Hinchinbrook to Great Sandy Strait.

Purpose: Indicates gazetted dugong protection areas.

Additional Information: Nominal Scale: 1:250 000.

Layer Information

Title: Draft Great Barrier Reef Marine Park Zoning Plan 2003

Custodian: GBRMPA

　　　　File Name: SDE_OWNER.gbrmpa_zone_draft_dzp

Layer Description

Summary: The Draft Great Barrier Reef Marine Park Zoning Plan 2003 has been released by GBRMPA for public comment as part of the second formal phase of Community Participation for the Representative Areas Program. The Draft Zoning Plan provides a single consistent Zoning Plan for the entire Marine Park including the 28 new coastal sections, which were added to the Marine Park between 2000 and 2001.

Purpose: The Draft Zoning Plan brings together the best available information from scientists, government agencies, local communities, industry and other organisations to protect the Great Barrier Reef for future generations.

Layer Information

Title: Boundaries of the GBR Marine Park

Custodian: GBRMPA

　　　　File Name: SDE_OWNER.gbrmpa_gbrmp

Layer Description

Summary: Boundary of the GBR Marine Park, with internal Marine Park Section boundaries.

Purpose: Indicates location of Queensland's coastline.

Additional Information: Nominal Scale: 1:250 000.

Layer Information

Title: GBRMP Cairns Section - No Structures Subzone

Custodian: GBRMPA

　　　　File Name: SDE_OWNER.gbrmpa_zone_no_str_subz

Layer Description

Summary: 'No Structures Subzone' described in GBR Marine Park Cairns Section Zoning Plan.

Purpose: Indicates boundary positions within the GBR Marine Park.

Additional Information: Nominal Scale: 1:250 000 Alternate Name: no_str_subz (GBRMPA).

Layer Information

Title: Compulsory Pilotage Areas

Custodian: GBRMPA

　　　　File Name: SDE_OWNER.gbrmpa_zone_pilot_area

Layer Description

Summary: Compulsory pilotage areas described in GBR Marine Park regulations.

Purpose: Indicates location of Queensland's coastline.

Additional Information: Nominal Scale: 1:250 000 Alternate Name: pilot_area (GBRMPA).

Layer Information

Title: GBR Marine Park Far Northern Section - Remote Natural Area

Custodian: GBRMPA

　　　　File Name: SDE_OWNER.gbrmpa_zone_rem_nat_area

Layer Description
Summary: Remote National Area described in GBR Marine Park Far Northern Section Zoning Plan   **Purpose:** Indicates boundaries within the GBR Marine Park.

Additional Information: Nominal Scale: 1:250 000 Alternate Name: rem_nat_area (GBRMPA).

Layer Information
Title: GBR Marine Park Replenishment Areas
Custodian: GBRMPA
        File Name: SDE_OWNER.gbrmpa_zone_repln_area
Layer Description
Summary: Replenishment Areas described in the GBR Marine Park zoning plans.

Purpose: Indicates boundaries within the GBR Marine Park.

Additional Information: Nominal Scale: 1:250 000 Alternate Name: repln_area (GBRMPA).

Layer Information
Title: AIMS Biotech Sample Sites
Custodian: Australian Institute of Marine Science

        File Name: SDE_OWNER.aims_biotech_allsamples
Layer Description
Summary: The AIMS Biotech Sample Sites dataset contains information on the location and properties of animal and water samples obtained from the field.

Purpose: To display locations from which the AIMS biotechnology unit has obtained samples.

Additional Information: Nominal Scale: 1:250 000.

Layer Information
Title: GBR Marine Park Seasonal Closure Areas
Custodian: GBRMPA
        File Name: SDE_OWNER.gbrmpa_zone_seasnl_closur
Layer Description
Summary: Seasonal Closure Areas described in the GBR Marine Park zoning plans.

Purpose: Indicates boundaries within the GBR Marine Park.

Additional Information: Nominal Scale: 1:250 000 Alternate Name: seasnl_closur (GBRMPA).

Layer Information
Title: GBR Marine Park Shipping Areas
Custodian: GBRMPA
        File Name: SDE_OWNER.gbrmpa_zone_shiparea
Layer Description
Summary: Shipping Areas described in the GBR Marine Park zoning plans.
Purpose: Indicates boundaries within the GBR Marine Park.
Additional Information: Nominal Scale: 1:250 000 Alternate Name: shiparea (GBRMPA).

Layer Information
Title: **GBR Marine Park Zoning**
Custodian: GBRMPA
    File Name: SDE_OWNER.gbrmpa_zoning
Layer Description
Summary: Federal Marine Park Zones within the GBR World Heritage Area.
Purpose: Indicates boundaries within the GBR Marine Park.
Additional Information: Nominal Scale: 1:250 000 Alternate Name: zoning (GBRMPA).

Layer Information
Title: **SDE_OWNER.HOTSPOTS2002**
    File Name: SDE_OWNER.HOTSPOTS2002
Layer Description
Summary: Stuart's Hotspots (No ColorMap).
Additional Information: GRID -> SDE.

Layer Information
Title: **Tropical Cylone Data**
Custodian: Bureau of Meteorology

    File Name: SDE_OWNER.met_cyclone
Layer Description
Summary: Tropical Cyclone Data, downloaded from the Bureau of Meteorology. Cyclone_Id (unique for each cyclone), X_Coord, Y_Coord attributes have been added to the original data.

Purpose: Provides a set of points representing various tropical cyclone parameters.

Additional Information: SDE File Name: met_cyclone.

Layer Information
Title: **Tropical Cylone Paths**
Custodian: Bureau of Meteorology

    File Name: SDE_OWNER.met_cyclone_paths
Layer Description
Summary: Tropical Cyclone Paths displays point data (obtained from the Bureau of Meteorology) as a series of cyclone paths. Attribute information has not been retained, but this data can be linked back to the original data (met_cyclone) using the CYCLONE_ID field.

Purpose: To display the cyclone data as a series of paths.

Additional Information: SDE File Name: met_cyclone_paths Related data: met_cyclone. NOTE:

Cyclone paths from two cyclones has been lost (Cyclone_Id's 72, 439) as single point data is not represented in this dataset.

Layer Information

Title: **World Vector Shoreline**

Custodian: NIMA

File Name: SDE_OWNER.nima_wvs

Layer Description

Summary: The World Vector Shoreline (WVS) is a digital data file at a nominal scale of 1:250000. The main source material for the WVS was the Defense Mapping Agency's Digital Landmass Blanking (DLMB) data, which consists of a land/water flag file on a 3 by 3 arc-second interval grid. This raster data set was converted into vector form to create the WVS. For areas of the world not covered by the DLMB data (eg. the Arctic and Antarctic), the shoreline was taken from the best available hard copy sources at a preferred scale of 1:250000.

Purpose: The World Vector Shoreline is a standard US Defense Mapping Agency (DMA) product that has been designed for use in many applications.

Additional Information: Nominal Scale: 1:250 000.

Layer Information

Title: **WWF Australia - Proposed GBR Marine Park Zoning Plan**

Custodian: WWF Australia

File Name: SDE_OWNER.wwf_dzp

Layer Description

Summary: This zoning plan incorporates changes to GBRMPAs original draft zoning plan, as proposed by WWF Australia. The Draft Great Barrier Reef Marine Park Zoning Plan 2003 has been released by GBRMPA for public comment as part of the second formal phase of Community Participation for the Representative Areas Program. The Draft Zoning Plan provides a single consistent Zoning Plan for the entire Marine Park including the 28 new coastal sections, which were added to the Marine Park between 2000 and 2001.

Purpose: The Draft Zoning Plan brings together the best available information from scientists, government agencies, local communities, industry and other organisations to protect the Great Barrier Reef for future generations.

Layer Information

Title: **World Digital Elevation Model (MrSID Image)**

Custodian:

U.S. Geological Survey, EROS Data Center Distributed Active Archive

Center (EDC DAAC), Environmental Systems Research Institute, Inc.

(ESRI)

File Name: world_elevation.sid

Layer Description

Summary: World Digital Elevation Model (MrSID Image) represents a classified elevation map for the world derived from the global digital elevation model (DEM) - GTOPO30 data sets from the U.S. Geological Survey's EROS Data Center Distributed Active Archive Center (EDC DAAC). The data has been resampled.

Purpose: World Digital Elevation Model (MrSID Image) provides a base map layer displaying global elevation information for geographic analysis on global and national scales.

Additional Information: Largest scale when displaying the data: 1:5,000,000.

Layer Information
Title: **Ortho-Rectified Aerial Photo - Davies Reef**
Custodian: AIMS
File Name: SDE_OWNER.RSTR_CRCGIS_DDM500_IMAGE
Layer Description
Summary: Orthorectified Aerial Photograph of Davies Reef, flown 1980.
Purpose: To provide baseline information on the GBR.
Additional Information: File Name: rstr_aims_reef_davies.

Layer Information
Title: **Digital Depth Model Image**
Custodian: CRC Reef

File Name: SDE_OWNER.RSTR_CRCGIS_DDM500_IMAGE
Layer Description
Summary: Visualisation of the depth model - DDM500I.

Purpose: The CRC GIS dataset provides information on the basic topography of the GBR region.

Additional Information: File Name: rstr_crcgis_ddm500_image Nominal Scale: 1:250 000.

Layer Information
Title: **Digital Depth Model - Reliability**
Custodian: CRC Reef

File Name: SDE_OWNER.RSTR_CRCGIS_DDM500_RELIABILITY
Layer Description
Summary: Reliability of the depth model, dataset rstr_crcgis_ddm500i. Ninety percent of points in the depth model are expected to be within the amount indicated in the reliability dataset of the true depths. Modelled on the distance from the data points used to interpolate the depth model.

Purpose: The CRC GIS dataset provides information on the basic topography of the GBR region.

Additional Information: Filename: rstr_crcgis_ddm500_reliability Nominal Scale: 1:250 000.

Layer Information
Title: **South-Eastern Exposure**
Custodian: CRC Reef

File Name: SDE_OWNER.RSTR_CRCGIS_SE_EXP
Layer Description
Summary: Indication of south-easterly exposure based on the sum of the fetch-distances in the directions between south and east.

Purpose: The CRC GIS dataset provides information on the basic topography of the GBR region.

Additional Information: Filename: rstr_crcgis_se_exposure Nominal Scale: 1:250 000.

Layer Information
Title: *Digital Depth Model - Torres Strait*
Custodian: CSIRO
      File Name: SDE_OWNER.RSTR_CSIRO_DDM_PAPUA
Layer Description
Summary: Bathymetric model of the Australian NW Shelf.

Purpose: The dataset was developed to model depth (elevation) in the Torres Strait region.

Additional Information: Data Contributors: Australian Hydrographic Office CSIRO Marine Research - Cleveland CSIRO Marine Research - Hobart Geoscience Australia GBRMPA.

Layer Information
Title: *World Daylength (hours) - JAN*
Custodian: AIMS
      File Name: SDE_OWNER.RSTR_AIMS_DAYLENGTH_01
Layer Description
Summary: Raster indicating daylength in hours, for the month of January.

Purpose: To provide world-wide daylength information.

Additional Information: File Name: rstr_aims_daylength_01 Cell-size: 0.5 Decimal Degrees.

Layer Information
Title: *World Shaded Relief (MrSID Image)*
Custodian:
U.S. Geological Survey, EROS Data Center Distributed Active Archive

Center (EDC DAAC), Environmental Systems Research Institute, Inc.

(ESRI)

      File Name: world_shadedrelief.sid
Layer Description
Summary: World Shaded Relief (MrSID Image) represents a shaded relief map for the world derived from the global digital elevation model (DEM) - GTOPO30 data sets from the U.S. Geological Survey's EROS Data Center Distributed Active Archive Center (EDC DAAC). The data has been resampled.

Purpose: World Shaded Relief (MrSID Image) provides a base map layer displaying global shaded relief information for geographic analysis on global and national scales.

Additional Information: Largest scale when displaying the data: 1:5,000,000.

Layer Information
Title: *World WorldSat Color Shaded Relief Image*
Custodian: WorldSat International, Inc., Environmental Systems Research

Institute, Inc. (ESRI)

File Name: SDE_OWNER.RSTR_ESRI_WORLD_WSIEARTH

Layer Description

Summary: World WorldSat Color Shaded Relief Image represents a cloud-free view of the Earth produced by mosaicing hundreds of individual 1996 NOAA weather satellite images. These satellites orbit the Earth at an altitude of 800 km (520 miles). The image has a cell size of 4 kilometers (at the equator). On completion of the base satellite mosaic, the land areas were enhanced with shaded relief imagery, derived from 1,000-meter digital elevation data, bringing the Earth's topography to life. For the Ocean areas, WorldSat incorporated ocean floor relief data (bathymetry), providing a view of the undersea topography.

Purpose: World WorldSat Color Shaded Relief Image provides for displaying a shaded relief background on which other data can be displayed.

Additional Information: Largest scale when displaying the data: 1:7,500,000.

Layer Information

Title: Australian Bathymetry and Topography Grid

Custodian: Geoscience Australia

File Name: SDE_OWNER.RSTR_GA_AUS_BATHYMETRY_TOPO

Layer Description

Summary: These data represent the January 2002 edition of the Australian bathymetry and topography grid at 0.01 degree (~1 km) cell size. The grid is derived from data in Geoscience Australia databases including GA-Mardat and GA-Swath and represents over 900 surveys acquired since 1963 by GA, the Australian Hydrographic Service, oil exploration companies, and foreign institutions.

Purpose: To integrate various data sources into a unified bathymetry grid.

Additional Information: Nominal Scale 1:13,000,000 when imaged at 300 dpi resolution. Pixel size 0.01 degrees.

Layer Information

Title: GEODATA 9 Second Digital Elevation Model (DEM-9S) Version 2

Custodian: Geoscience Australia

File Name: SDE_OWNER.RSTR_GA_DEM9S

Layer Description

Summary: DEM9s is a gridded digital elevation model covering all of Australia. ArcInfo's GRID Merge( )

function was used to create a spatial mosaic of all the grids available from the GEODATA 9 Second DEM

Version 2.

Purpose: The GEODATA 9 Second DEM Version 2 is a gridded digital elevation model computed from topographic information including point elevation data, elevation contours, stream lines and cliff lines. The grid spacing is 9 seconds in longitude and latittude (approximately 250 metres). 9 Second DEM is a cooperative effort of Geoscience Australia and Centre for Resource and Environmental Studies (CRES) at the Australian National University.

Layer Information
Title: Landsat 7 Picture Mosaic of Australia (300m res)
Custodian: Geoscience Australia

File Name: SDE_OWNER.RSTR_GA_LANDSAT7_MOSAIC300
Layer Description
Summary: Landsat 7 Picture Mosaic of Australia
Purpose: The Landsat 7 Picture Mosaic of Australia was produced by the Australian Greenhouse Office (AGO) as part of their National Carbon Accounting System. The mosaic is comprised of 369 individual Landsat satellite scenes acquired between July 1999 and September 2000.

Additional Information: 300 metre resolution.

Layer Information
Title: Scott Reef - Limits of Coastal Waters and Territorial Sea
Custodian: Geoscience Australia

File Name: SDE_OWNER.RSTR_GA_SCOTT_REEF_IMAGE
Layer Description
Summary: Scanned image of Scott Reef. Shows outer limit of 3 nautical mile coastal waters at Scott Reef, WA. Sourced from a printed image produced by Geoscience Australia. The printed image was scanned, and georeferenced. Outer limit of 3 nautical mile coastal waters is indicated by the pink dotted line. Unbroken lines represent lines of longitude and latitude. The pink dot on Sandy Islet represents an automatic weather station.

Purpose: To display Australia's Territorial Sea Boundaries in the vicinity of Scott Reef, WA.

Additional Information: Nominal Scale: 1:150 000 IMAGE: Landsat Thematic Mapper Scene 111/70 acquired at 0116 hours (UT) 3 September 1992. Bands 1, 2 and 3. SEA LEVEL HEIGHT: At imagery acquisition time, sea level was predicted to be 1.01 metres above the level of lowest astronomical tide.

Layer Information
Title: GBRDEM250
Custodian: CRC Reef

File Name: SDE_OWNER.RSTR_GBRMPA_GBR_DEM250
Layer Description
Summary: GBRDEM - Gridded Depth and Elevation Model of the GBR. Gridded depth and elevation datasets of the Great Barrier Reef Region and surrounds are collectively referred to as the GBRDEM

Purpose: The GBR DEM250 dataset provides information on the basic topography of the GBR region.

Additional Information: GBRDEM250 contains 250 metre cells (0.00225 degrees).

Layer Information
Title: Landsat ETM Mosaic of the GBR
Custodian: GBRMPA
File Name: SDE_OWNER.RSTR_GBRMPA_GBR_LANDSAT_ETM

Layer Description

Summary: The image mosaic shows the Great Barrier Reef region and neighbouring inland in approximate natural colouration and geographic projection referenced to GDA 94. It is based on band 1 (0.450-0.515 um), band 2 (0.525-0.605 um) and band 3 (0.630-0.690 um) of 25 Landsat ETM+ images acquired between 17 August 1999 and 16 May 2002 during the March-May or July-November periods. (For details on acquisition date and time see Appendix 1). Image acquisition coincided generally with periods of relatively low tide and the mosaic as a result allows identification of submerged features in clear water to approximately 30 m depth. The entire mosaic has been subset into 9 parts and converted to jfif (.jpg) format. If displayed simultaneously the parts overlay neatly without lines between them. If not, the order of them need to be altered. Pixel size of all image parts is

0.0002780 degrees (= 30 m).

Purpose: To provide a large scale reef dataset, covering the Great Barrier Reef Marine Park, with an estimated accuracy of 30 metres.

Additional Information: Nominal Scale: 1:250 000 (±30 m) The dataset described has been mosaiced into a single landsat coverage, and stored as a raster in SDE.

Layer Information
Title: *Townsville SPOT Image - 1990*
Custodian: Geoscience Australia

File Name: SDE_OWNER.RSTR_SPOT_TSV_90
Layer Description
Summary: SPOT Image of the Townsville region 1990

Purpose: Remote sensing data acquisition.