

Appendix B

Asset and asset value data request letters



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Doug Vickery
c/- Cockburn Sound Coastal Alliance
Manager Infrastructure Services
City of Cockburn
9 Coleville Cres, Spearwood, WA 6163
PO Box 1213, Bilbra Lake DC WA 6965

13/08/2013
Project No.: 1033_001

Dear Doug,

DATA REQUEST FOR THE COCKBURN SOUND COASTAL VULNERABILITY VALUES AND RISK ASSESSMENT STUDY

As you are aware, the Oceanica Consulting Pty Ltd (Oceanica) team have been engaged to deliver Stage 2 of the Cockburn Sound Coastal Vulnerability and Flexible Adaptation Pathways Project, being the Coastal Vulnerability Values and Risk Assessment Study. Oceanica's team includes Oceanica, BMT WBM Pty Ltd, Coastal Zone Management Pty Ltd, SGS Economics and Planning Pty Ltd and Damara WA Pty Ltd.

A key step in undertaking this study involves the review of collated data from the client. We therefore kindly request the timely provision of the most recent available spatial data within the study area, including:

- ortho-rectified aerial photographs;
- coastal hazards mapping (inundation and erosion);
- cadastre;
- tenure;
- land zonings;
- land use;
- land value and capital improved value;
- asset data:
 - stormwater assets and drainage,
 - sewerage networks,
 - water supply networks,
 - power supply networks,
 - gas/oil supply networks,
 - water infrastructure such as seawalls, groynes, training walls, breakwaters, harbours, jetties, wharves and boat ramps,
 - public open spaces and parks (including national parks and reserves),
 - park assets and features,
 - public buildings,
 - major private buildings (e.g. shopping centres, industrial buildings),
 - roads, lanes, cycleways and footpaths,
 - carparks and parking areas,
- topographic (preferably LiDAR) and bathymetric data;
- vegetation/habitat mapping, and/or threatened species mapping; and
- heritage sites (non-indigenous and indigenous where acceptable).

Additional non-spatial data (obtained within the previous 5 years) we request, where available, includes:

- Reports/data on ecology;
- cultural heritage studies;
- community and recreational surveys;
- economic analyses for tourism and the general economy;
- coastal, marine or other management plans;
- community strategic plans;
- current council, alliance or state government policies on flooding hazard management, habitat management, and/or beach hazard management;
- emergency management procedures (for flooding, and coastal erosion if available);
- existing risk frameworks or procedures in use by the alliance, council or state government; and
- any other reports/data deemed relevant to the study.

We enclose a map of the study area as well as the GIS shapefiles for the study to assist you in the data provision. Please note that a 200 m buffer has been added to the study area width in order to adequately capture all asset data within the study area. The actual study area widths are specified in Appendix K of the Request for Tender.

To save time and additional costs, datasets supplied should ideally be:

- topologically clean and verified
- in ESRI shapefile or personal/file geodatabase format
- clearly attributed with at least a descriptor field and name field for each attribute
- referenced to the UTM50_GDA94 and AHD84 datums
- accompanied by metadata statement that documents (at a minimum):
 - custodian
 - capture date/survey date/flight date
 - accuracy/limitations of dataset
 - horizontal and vertical datums
- supplied with a logical naming format and folder structure that groups like datasets together and makes it clear the data source

We kindly request that you forward these data by **Friday, 30 August 2013** to katharine.cox@oceanica.com.au or alternatively by mail on a data disk/thumb drive to the address above. Details for FTP transfer can also be provided if required.

Please note that any delay in data delivery will result in a commensurate delay in the project completion.

If you have any queries regarding this, please do not hesitate to contact me.

Regards,



Katharine Cox

Enclosed:

Study area map
Study area GIS shapefiles

27/11/2013
Project No.: 1033_001

Dear Council Representative,

VALUE DATA REQUEST FOR THE COCKBURN SOUND COASTAL VULNERABILITY VALUES AND RISK ASSESSMENT STUDY

As discussed at our recent meeting with you, BMT is currently undertaking a risk assessment for areas potentially affected by coastal hazards adjacent to Cockburn Sound over the next 100 years. In order for us to undertake this risk assessment, we need to gain a sound appreciation for the value of the land affected, including the value of all assets and infrastructure located on this land.

We propose a triple bottom line accounting approach to our risk assessment, meaning that we will be considering economic, social and environmental consequences of potential impacts by future coastal hazards. In respect to the economic consequences, we are largely trying to determine 'replacement' cost for existing infrastructure and assets. To evaluate social consequences we need to determine the broad level of community use of affected lands and assets, while for environmental consequences we need to identify environmental significance (including local/regional uniqueness) and the associated ecosystem services offered by bushland and natural habitat areas.

With specific consideration for the area of the Cockburn Sound foreshore under your care and control, we kindly request the following information:

Economic values:

- Approx. cost per metre for stormwater drainage replacement
- Approx. cost per metre for sewerage pipe replacement
- Approx. cost per metre for water supply pipe replacement
- Approx. cost per metre for power supply replacement
- Approx. cost per metre for gas/oil supply replacement
- Approx. cost per metre for roads, cycleways and footpaths replacement
- Approx. cost for replacement of jetties, wharves and boat ramps
- Approx. cost for replacement of park assets and features
- Approx. cost per square metre for replacement of carparks and other hardstand areas
- Approx. value of local tourism, and percentage attributed to the coastal foreshore areas and associated assets.

Social values:

- Beaches, reserves and public open space areas along the coastal foreshore:
 - Information relating to how much they are used (high, medium or low community usage as a minimum)
 - Information relating to how they are used (activities, seasonality to usage etc)
 - Information relating to how locally unique they are
- Significance of heritage sites/areas along the coastal foreshore and in low-lying areas behind the shoreline.

Ecosystem values:

- Bushland reserves and natural habitat areas along the coastal foreshore:
 - Information relating to the ecosystem service provided (refer attached list of ecosystem service types) and the value of the service (high, medium or low as a minimum)
 - Information relating to how locally unique they are.

We kindly request that you forward these data by **20 December 2013** to myself (katharine.cox@bmtocanica.com.au) with a cc to Dr Phil Haines (philip.haines@bmtwbm.com.au).

If you have any queries regarding this, please do not hesitate to contact Phil on 0417 208 240.

Regards,



Katharine Cox
Project Manager

What are ecosystem services?

Goods & services:

Goods are things "you can drop on your toe." Goods can be measured by quantity, such as pounds of fish or gallons of water. Services are benefits you cannot "drop on your toe." Such as flood protection or water quality. Goods can be valued with a price/quantity.

Services require different measures other than physical quantity produced. For example, labour, water quality, or recreation.

Ecosystem services:

Ecosystem services require "natural capital", such as a forest or marine ecosystem, with physical and/or nonphysical processes to support human activities and sustain life. For example, forest and soils are natural capital assets that provide the ecosystem service of filtering water without need of a costly filtration plant.

The four categories of ecosystem services:




Regulating services create and maintain healthy environmental conditions. Examples are gas and climate stability, flood and storm protection, water quality, & soil erosion control. These contribute to ecosystem functions and economic resilience.

Provisioning services produce food, water, oxygen, buildings, fuel, clothing, medicine, etc. Everything in our economy is made from natural capital such as minerals, liquids, gases and living things.








Supporting services maintain conditions for life including habitat, nutrient cycling & soil formation. These natural processes are vital. These are often left out of economic analysis.

Cultural services provide meaningful human interactions with ecosystems. Cultural services include spiritual, recreational, scientific, aesthetic and educational value.

The 23 ecosystem services

| Services | Infrastructure and Goods & Services | Processes |
|--|--|--|
| Regulating Services | Maintenance of essential ecological processes and life support systems | |
|  1 Gas regulation | Provides clean, breathable air, disease prevention, and a habitable planet | Role of ecosystems in bio-geochemical cycles |
|  2 Climate regulation | Maintenance of a favourable climate promotes human health, crop productivity, recreation, and other services | Influence of land cover and biological mediated processes on climate |
|  3 Disturbance prevention | Prevents and mitigates natural hazards and | Influence of ecosystem structure on damopenina |

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|---|----|--------------------------------|---|--|
| | | | environmental disturbances | natural events, generally associated with storms and other severe weather |
|  | 4 | Water regulation | Role of land cover in regulating runoff and river discharge | Provides natural irrigation, drainage, channel flow regulation, and navigable transportation |
|  | 5 | Water supply | Filtering, retention and storage of fresh water (e.g. in aquifers and snow pack) | Provision of water for consumptive use, includes both quality & quantity |
|  | 6 | Soil retention | Role of vegetation root matrix and soil biota in soil retention | Maintains arable land and prevents damage from erosion, and promotes agricultural productivity |
|  | 7 | Soil formation | Weathering of rock, accumulation of organic matter | Promotes agricultural productivity, and the integrity of natural ecosystems |
|  | 8 | Nutrient cycling | Role of biota in storage and recycling of nutrients | Promotes health and productive soils, and gas, climate, and water regulations |
|  | 9 | Waste treatment | Role of vegetation & biota in removal or breakdown of xenic nutrients and compounds | Pollution control/detoxification; Filtering of dust particles through canopy services |
|  | 10 | Pollination | Role of biota in movement of floral gametes | Pollination of wild plant species and harvested crops |
|  | 11 | Biological control | Population control through trophic-dynamic relations | Provides pest and disease control, reduces crop damage |
| Provisioning Services | | Provision of Natural Resources | | |
|  | 14 | Food | Conversion of solar energy into edible plants and animals | Hunting, gathering of fish, game, fruits, etc.; small scale subsistence farming & aquaculture |
|  | 15 | Raw materials | Conversion of solar energy into biomass for human construction and other uses | Building and manufacturing; fuel and energy; fodder and fertilizer |

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|---|----|---|--|---|
|  | 16 | Genetic resources | Genetic material and evolution in wild plants and animals | Improve crop resistance to pathogens & pests |
|  | 17 | Medicinal resources | Variety in (bio)chemical substances in, and other medicinal uses of, natural biota | Drugs, pharmaceuticals, chemical models, tools, test and assay organisms |
|  | 18 | Ornamental resources | Variety of biota in natural ecosystems with (potential) ornamental use | Resources for fashion, handcraft, jewelry, pets, worship, decoration & souvenirs |
| Supporting Services | | Providing habitat (suitable living space) for wild plant and animal species | | |
|  | 12 | Habitat biodiversity | and Suitable living space for wild plants and animals | Maintenance of biological and genetic diversity (and thus the basis for most other functions) |
|  | 13 | Nursery | Suitable reproduction habitat | Maintenance of commercially harvested species |
| Cultural Services | | Providing opportunities for cognitive development | | |
|  | 19 | Aesthetic information | Attractive landscape features | Enjoyment of scenery |
|  | 20 | Recreation | Variety in landscapes with (potential) recreational uses | Travel to natural ecosystems for eco-tourism, outdoor sports, etc. |
|  | 21 | Cultural and artistic information | Variety in natural features with cultural and artistic value | Use of nature as motive in books, film, painting, folklore, national symbols, architecture, advertising, etc. |
|  | 22 | Spiritual and historic information | Variety in natural features with spiritual and historic value | Use of nature for religious or historic purposes (i.e., heritage value of natural ecosystems and features) |
|  | 23 | Science education | and Variety in nature with scientific educational value and | Use of natural systems for school excursions, etc. Use of nature for scientific research |

27/11/2013
Project No.: 1033_001

Dear Tim Fisher and Robert Campbell,

VALUE DATA REQUEST FOR THE COCKBURN SOUND COASTAL VULNERABILITY VALUES AND RISK ASSESSMENT STUDY

As discussed at our recent meeting with you, BMT is currently undertaking a risk assessment for areas potentially affected by coastal hazards adjacent to Cockburn Sound over the next 100 years. In order for us to undertake this risk assessment, we need to gain a sound appreciation for the value of the land affected, including the value of all assets and infrastructure located on this land.

We propose a triple bottom line accounting approach to our risk assessment, meaning that we will be considering economic, social and environmental consequences of potential impacts by future coastal hazards. In respect to the economic consequences, we are largely trying to determine 'replacement' cost for existing infrastructure and assets. To evaluate social consequences we need to determine the broad level of community use of affected lands and assets, while for environmental consequences we need to identify environmental significance (including local/regional uniqueness) and the associated ecosystem services offered by bushland and natural habitat areas.

With specific consideration for the reserve areas of the Cockburn Sound foreshore under your care and control, we kindly request the following information:

Economic values:

- Approx. cost for replacement of reserve assets and features

Social values:

- Information relating to how frequently the reserves are used (high, medium or low community usage as a minimum)
- Information relating to how they are used (activities, seasonality to usage etc)
- Information relating to how locally unique they are
- Significance of any heritage sites/areas within the reserves.

Ecosystem values:

- Information relating to the ecosystem service provided (refer attached list of ecosystem service types) and the value of the service (high, medium or low as a minimum)
- Information relating to how locally unique they are.

We kindly request that you forward these data by **20 December 2013** to myself (katharine.cox@bmtocanica.com.au) with a cc to Dr Phil Haines (philip.haines@bmtwbm.com.au).

If you have any queries regarding this, please do not hesitate to contact Phil on 0417 208 240.

Regards,

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Katharine Cox
Project Manager

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|  | 23 | Science education | and Variety in nature with scientific educational value and | Use of natural systems for school excursions, etc. Use of nature for scientific research |

28/11/2013
Project No.: 1033_001

Dear Stakeholder Representative,

VALUE DATA REQUEST FOR THE COCKBURN SOUND COASTAL VULNERABILITY VALUES AND RISK ASSESSMENT STUDY

As you may be aware, BMT is currently undertaking a risk assessment for areas potentially affected by coastal hazards adjacent to Cockburn Sound over the next 100 years. In order for us to undertake this risk assessment, we need to gain a sound appreciation for the value of the land affected, including the value of all assets and infrastructure located on this land.

We propose a triple bottom line accounting approach to our risk assessment, meaning that we will be considering economic, social and environmental consequences of potential impacts by future coastal hazards. In respect to the economic consequences, we are largely trying to determine 'replacement' cost for existing infrastructure and assets. To evaluate social consequences we need to determine the broad level of community use of affected lands and assets, while for environmental consequences we need to identify environmental significance (including local/regional uniqueness) and the associated ecosystem services offered by bushland and natural habitat areas.

With specific consideration for your privately owned land fronting Cockburn Sound, we kindly request information regarding the replacement value of the assets and infrastructure on your property. We appreciate that this information may be hard to determine, however, a best estimate is suitable for our risk assessment purposes. To simplify this task, you may wish to provide a cost for your entire site, and we can then apply a percentage to this value based on the proportion of land affected by coastal hazards. Alternatively, please feel free to provide us with an indicative value per square metre.

In providing an estimate for the value of assets and infrastructure on your land, please include the costs of all services that support the site development (roads, drains, power, water etc) if known.

We kindly request that you forward this information by **20 December 2013** to myself (katharine.cox@bmtoceanica.com.au) with a cc to Dr Phil Haines (philip.haines@bmtwbm.com.au).

If you have any queries regarding this, please do not hesitate to contact Phil on 0417 208 240.

Regards,

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Katharine Cox
Project Manager