

# Statewide wetland geospatial inventory update

## Factsheet 3: Method to classify salinity regime

### Purpose

This memo describes the method used to classify salinity regime.

### Intent of the classification

The new Victorian Wetland Classification Framework adopts four categories of salinity regime:

Fresh	Wetlands with salinity concentrations between 0 and 3,000 mg/L
Saline – Hyposaline	Wetlands with salinity concentrations between 3,000 and 10,000 mg/L
Saline – Mesosaline	Wetlands with salinity concentrations between 10,000 and 50,000 mg/L
Saline – Hypersaline	Wetlands with salinity concentrations between 50,000 and 350,000 mg/L

### Data sources

The salinity regime classification approach utilised multiple lines of evidence to classify the most likely salinity regime, based on three relatively independent data sources:

Dataset name	Dataset description / link
Modelled 2005 EVC	Polygon features delineating native vegetation type across Victoria, modelled in 2005 using Ecological Vegetation Classes (EVCs) <a href="http://www.giconnections.vic.gov.au/content/vicgdd/record/ANZVI0803003495.htm">http://www.giconnections.vic.gov.au/content/vicgdd/record/ANZVI0803003495.htm</a>
IWC EVC	Database describing the EVCs at sites assessed by the Index of Wetland Condition (IWC) in Victoria (unpublished)
Frood 2012 database	Report and accompanying database describing the water and salinity regime and depth preferences for Victorian wetland Ecological Vegetation Classes (unpublished)

### EVC salinity preferences

The majority of the salinity regime classification was based upon known salinity tolerances of different EVCs, combined with spatial overlay analysis linking specific EVCs to each wetland.

The primary source of salinity tolerances of each EVC was the Frood 2012 database and report (Frood 2012). Frood 2012 describes the salinity regime of approximately 70 of the 490 mapped EVCs occurring in wetlands Victoria. For each of these 70 EVCs the report/database identifies whether the EVC's salinity regime was one of, or a combination of four classes: fresh, hyposaline, mesosaline and hypersaline. Frood's report/database was therefore used to directly classify the salinity regime of approximately 70 of the 490 mapped EVCs.

A further 225 EVCs were assigned a likely salinity regime based on the following rules:

- Likely to be fresh if the EVC name includes the text 'freshwater', 'woodland', 'wetland formation' or 'aquatic herbland' or 'plains grassland'
- Likely to be hyposaline if the EVC name includes the text 'brackish', 'estuarine' or 'estuary'
- Likely to be mesosaline if the EVC name includes the text 'saltmarsh', 'saline' or 'salt'

While most EVCs were classified into one of the salinity regime classes, there are some EVCs that were classified into two or more classes (e.g. Coastal Saltmarsh Aggregate was classified into both mesosaline and hypersaline classes). The 290 EVCs with known/likely salinity regime were therefore classified as either:

Fresh	Wetlands with salinity concentrations between 0 and 3,000 mg/L
Fresh – Hyposaline	Wetlands with salinity concentrations between 0 and 10,000 mg/L
Hyposaline	Wetlands with salinity concentrations between 3,000 and 10,000 mg/L
Hyposaline - Mesosaline	Wetlands with salinity concentrations between 3,000 and 50,000 mg/L
Mesosaline	Wetlands with salinity concentrations between 10,000 and 50,000 mg/L
Mesosaline – Hypersaline	Wetlands with salinity concentrations between 10,000 and 350,000 mg/L

Approximately 200 of the 490 mapped wetland EVCs had an unknown salinity regime at the completion of this step.

### Assigning EVC salinity preferences to wetlands

The next step involved spatial overlay analysis between Wetland 2013 features and the Modelled 2005 EVC and IWC EVC datasets, to determine which EVCs occurred in each wetland. The known/likely salinity regime of each EVC was then assigned to each wetland using the following rules:

- Where a given wetland has 50% or greater of its area comprised of a single salinity regime class, assign that salinity regime class.
- Where a given wetland has less than 50% of its area comprised of a single salinity regime class, assign the wetland as 'variably salt tolerant'.

In addition this step involved classifying all features from the alpine mapping and all Victoria's named storages<sup>1</sup> as fresh, regardless of the outcomes of the EVC analysis.

### Results

At the completion of the salinity regime classification approximately:

- 60% of wetlands were classified as fresh
- 8% were classified as one of the five saline classes
- less than 1% were 'variability salt tolerant'
- 13% were classified as unknown (i.e. EVCs within those wetlands had an unknown salinity regime)
- 18% did not overlay the EVC mapping (modelled or IWC) and were therefore described as 'no data'.

No confidence rating was assigned for salinity regime, as all wetlands were classified using the same data and with the same approach.

### References

DSE 2008. Victorian Water Accounts 2006-07.

Frood, D. 2012. Water and salinity regime and depth preferences for Victorian wetland ecological vegetation classes: Compiled July 2012 for Department of Sustainability and Environment.

### Acknowledgement

This work was prepared for the Department of Environment and Primary Industries by Mark Stacey and other staff at Alluvium Consulting Pty Ltd, Richmond, Victoria.

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<sup>1</sup> The full list of Victoria's named storages was sourced from Attachment B of the *Victorian Water Accounts 2006-07* (DSE 2008). Most, but not all, of these storages occur in the Wetland 2013 dataset.