# Some personal experiences

#### Undertaking and Auditing



## Some examples

External auditing and pressure
When all else fails change the rules
Shelved assessments
Plenty of experts in the sea
Fund our own results
Everyday issues
Two can play at that game

# Third party assessors of reports

Report 'independent' auditing pressure
Full understanding of the issues
Enough experience



# Grassy Box Gum Woodland

- Deleting the word shrubby
- Interesting survey site placement
- various local experts our estimate 4% accuracy
  'independent expert'
  State maps withheld
  All else fails - move goal posts







# Sorry, we would like a different answer Confidentiality agreements Partitioning of expert components/subcontracting Hiring the 'right' contractors





# Lets find another expert

Threatened grass found requiring a small delay
New expert unfamiliar with species flown in
Result – its not the threatened species
Grassland ecologist hired – agrees with first answer



## Build your own case

• What to do when all the published evidence is against your proposed case and none exists in your favour?

Create your own grey-literature evidence to muddy the waters



# Every day issues .....

#### A degree in ecology or natural resources is not the only qualification you need

- Melbourne, Brisbane, Hobart, Perth where your expertise is from matters
- What specialisation you have matters ... for some reason this is rarely understood or acknowledged

# • When reviewing EIAs a common response is ....

- No way you found that !!!
- Is one day really enough for 100,000 ha of survey
- Cut and paste you actually didn't visit the site did you?
- Survey at the wrong time
- Did you actually read the determination?
  - e.g. box gum



# **NSW Statewide Type Map**

- Comprehensive and seamless map produced by segmentation analysis (modelling)
- To plant community type (PCT) ≈ association
- Originally planned to map all PCTs to 85% accuracy
- Officially only tested internally for accuracy
- Underpins all environmental, planning and property management, including offsetting and self-assessments
   First port of call for impact assessments



# **Greater** Namoi Map

To assist in catchment planning and prioritisation and EIA offset planning Replacing existing mapping Their own validation stated 71.5% accuracy

#### We used ...

- All previous survey sites
- Published high quality small scale verified mapping
- On ground survey of 300 properties
- Targeted under-sampled locations for plots
- ADS40 10cm & SPOT imagery perused for gross inaccuracy
- 600 random centroid locations on ADS40 imagery tested for accuracy [Fishnet]
- Total 2,150 verification sites







# Namoi Results

- Original non-modelled map had a greater accuracy than the new map
- Ca. 44% accuracy overall; 40% of PCTs mapping highly unreliable (
  Wetlands particularly poorly mapped

#### Why the discrepancy?

- Map verification only on wooded vegetation >60% of vegetation & 30% of PCTs not tested
- Small sample sizes: PCT with only 2 samples deemed 100% accuracy (our esimtate 10%)
- Exact match not required correct = correct and incorrect but acceptable (not defined)





### **Upper Hunter Strategic Assessment**

- Collaboration between mining companies, the NSW & Federal Governments
- Proactive assessment of cumulative impacts at a regional & subregional level
- Rather than several EIAs for each project or extension

   one process for all potential mining for a 25-30 year
   period
  - i.e. a single EIA for an entire industry within an entire catchment
- If successful to be rolled out to other areas and industries

# Using the data that created the models – version 4 of the map

#### Three levels of mapping Formation, Class & PCT

Row Labels	FALSE	TRUE	% Accuracy	Reliability
Dry Sclerophyll Forests	555	2268	80.3	Highly Reliable
Forested Wetlands	277	238	46.2	Poor
Freshwater Wetlands	38	24	38.7	Unreliable
Grasslands	11	8	42.1	Poor
Woodlands	164	299	47.5	Poor
Heathlands	106	96	50.0	Poor
Rainforests	182	301	62.3	Reliable
Saline wetlands	6	22	78.6	Reliable
Wet sclerophyll Forests	212	899	71.9	Reliable
Total	1596	4155	72.2	

PCT Mapping Reliability	Total	%
Highly Reliable (80-100%)	43	16.9
Reliable (60-79%)	54	21.3
Poor (40-59%)	61	24.0
Unreliable (20-39%)	41	16.1
Unusable (< 20%)	20	7.9
Unknown (< 3 sites)	28	11
Not mapped	7	2.8
Grand Total	<b>2</b> 54	





# Overall – using only their own training data

- II PCTs 70% of the area, and majority of distribution in disturbance zone.
- 4 of these over 90% of the distribution in the disturbance zone i.e. can't be offset
- 40% mapped less than 60% accuracy
- 17% achieved >60%; 40% very poorly mapped (< 40% accuracy)</li>
- Can't model TECs due to condition criteria
  - Only dry sclerophyll forests & rainforests well modelled
- Woodlands, heathlands, grasslands very poorly modelled

# **Upper Hunter Assessment**

- Incorporated all existing site data
- Ground truthing with 249 full floristic and 1718 releves placement blind to mapping
  - SPOT5 imagery check for gross inaccuracies in difficult access locations
- Analysed PCT composition based on listed diagnostic taxa to form accurate and accurate but acceptable groups
   *up to 10 PCTs considered in groups*
  - GHM correct if adjacent polygon was correct or near correct



# Results ....



- Our data was less biased and had greater coverage
- They suggested a 65.3% accuracy for PCT mapping. We found only 22% accuracy for formation and 17% for PCT at best 30% of near correct and adjacent polygons considered

#### Why the difference?

- Only 37% of PCTs assessed for accuracy
- Only PCTs with most data assessed for accuracy
- Only 18% of PCTs had enough data to be accurately modelled
- No information given on what was considered near correct (some analysis suggest up to 20 PCT cluster)
- We tested 4 times more PCTs with 10 or more validation sites

# **Overall** issues

- lack of sufficient survey points and biased datasets;
- failure of the automated segmentation mapping process to effectively map non-woody vegetation (e.g. wetlands, grasslands, heathlands, shrublands);
- failure to adequately distinguish between forested mapping units and distinguish change due to floristics or simply to disturbance; and
- lack of inclusion (or mapping) of a number of well described and distinguishable communities known for the study area