PULLING IT ALL TOGETHER

To be eligible to enter the competition you are required to submit a:

- Physical plan (the map with your recommendations marked)
- 5-page report to go with the map explaining the recommendations you have made
- Cover page with the name of your school and team members names clearly marked.

The following section may be used as a guide to help you complete your physical plan and write the recommendations for the plan in your report.

1. Point Specific Works

This section outlines point specific works you may want to include in your property plan. These works can be marked on your map, and then referred to in your report.

1.1 Soil Erosion Control Earthworks

Where broad area management practices alone are not capable of controlling a soil erosion problem, soil erosion control earthworks and/or best management practices will be required if the land is to be used on a sustainable basis.

- In areas subject to erosion, suitable control structures may include contour banks, levees, pasture belts, and waterways, gully filling and gully control dams.
- Structures that control water erosion are designed to remove excess water from the land before it can cause erosion. Excess water removed in this way can be directed into dams, adding to the farm water supply, or disposed of into the creek and flow lines (water disposal areas).
- Any erosion control program that involves diversion of run-off must provide for safe disposal of that water.
- When considering the disposal of run-off water, it is important to identify the flow-lines and point or points at which water naturally leaves the property.
- There is a legal obligation to ensure that there is no diversion of run-off from one exit point to another. Once these exit points are known it is then possible to design and locate a system of erosion earthworks.
- The modification of catchments through soil erosion control works that alters the way water is delivered to watercourses may affect stream behaviour and stability. When undertaking soil erosion works the impact on downstream areas should be considered.

For the purpose of the competition it is only necessary to shade the areas on the property that require earthworks to control erosion. You may like to indicate the direction of flow of the run-off water along the contour banks.

1.2 Water Supply

Water supplies have a significant effect on property management. Your task is to advise the landholders of the options open to them and give them reasons for the preferred option you recommend. Make sure you consider the current enterprises on the property and match these to the water supply option you recommend. Also consider the goals of the landowner.

Before planning water harvesting and water resource development it is important to check any legal constraints or policies which may affect your proposals.

1.3 Native Vegetation

Some tree decline has occurred throughout the property. It may be important to think about planting and establishing more trees throughout the property especially windbreaks, wildlife corridors and tree planting for salinity prevention.

Trees and understoreys are an integral part of the landscape and have a major role in catchment management. You need to identify where denser tree cover and the understorey is required for conservation and biodiversity, or where woodland environment with native grass understorey is needed for soil erosion, salinity control and where this is compatible with sustainable grazing.

- Alternative methods of tree establishment include direct seeding and natural revegetation.
- It is more efficient to protect regeneration areas from overgrazing where good seed banks or seedlings occur.
- Fencing areas of remnant vegetation or clumps of trees to exclude stock will allow new trees to become established providing weed competition is contained.
- The location of windbreaks and wildlife corridors need to be determined in conjunction with other planning considerations such as climate, boundaries, roads, powerlines, connections with existing trees for habitat expansion, paddock corners etc.
- The main purpose of vegetation establishment, however, should not be compromised to suit minor considerations such as internal fences, which can be moved if the benefit out ways the cost.

At this point you should have decided whether to include and where to locate the following:

- Erosion control earthworks,
- Tree plantings, tree regeneration areas etc. for land degradation control, windbreaks, and wildlife corridors,
- In stream and stream bank measures or the management of drainage lines and gullies,
- Water supply infrastructure
- Strategies to employ to address the site-specific land use issues included in Table 4.

It is important to ensure all the inter-relationships between enterprises and these point specific land management works have been considered. Once you are satisfied they have, they can be permanently marked on your map.

2. Management Recommendations

The next step in your plan is to determine the broad area land management practices for land within the property. The management recommendations should take into account all the resource information provided, address the Land Use Hazards and Issues outlined in Table 4, and consider the legal constraints given in Table 5.

This information will need to be presented in your report.

2.1 Land Management Practices

The delineation of land management units is a useful way of presenting this information. You will need to decide the boundary and size of each management unit based on the information provided in your maps and Section 3, 4 and 5. Land management units are best shown as shaded areas, or using a numbered system on the final physical plan with a summarised legend.

Land Management considerations that should be considered over the whole or parts of the property may include:

- Enterprise selection eg. Dryland cropping or grazing etc
- Soil management
- Weed and vermin control
- Fire prevention and control
- Drought management
- Management of riparian areas
- Protection of environmentally sensitive lands
- Use of land within its capability
- Tree and native vegetation management

If you are recommending establishment of native vegetation, the following list gives an indication of the type of information you need to include in your report.

- selection of suitable tree species
- windbreak design
- tree planting techniques
- methods of excluding stock
- weed control
- Seed source

2.2 Monitoring your Plan

When you have decided on what management options you wish to implement you may want to include some ways in which to monitor these changes. You can select one or a number of performance indicator sites on which the landholder can do regular tests. The chosen sites should either be representative of a large proportion of the property or have an obvious or

suspected land degradation problem. Consider carefully as you do not want to choose too many as this will be time consuming for the landholder.

Decide on some indicators of change that you can use to monitor physical changes on the property. Think about some of the tests and assessments you participated in at the field day. Some examples could include:

- Pasture and/or groundcover percentage
- Pasture and/or crop yields
- Soil carbon or structural changes and soil pH
- Groundwater levels
- Records of bird sightings as an increase in the number and diversity of species signals better environmental conditions
- Water quality

Record these sites on your final overlay and refer to in your report.

3. The Physical Plan

Once you have considered all of the resource information and land use issues, your next step is to draw up a new layout for the property. This should show the best arrangement for the property's improvements in relation to its land capability, proposed land uses and constraints.

3.1 Mapping your Plan

You will need to download the base photo from the website and draw directly onto the photograph. Standard mapping symbols used in property planning are given below but you are not limited in using these symbols as long as you do not forget to label and add a key.

It is advised to draft ideas on paper with a pencil as you may think of more ideas whilst drawing. When ready move to your final map, using markers with clear lines and symbols.

1. Use a black marker to draw in the property boundary, north mark scale, house and sheds, stockyards, etc.
2. Use a blue marker to draw in rivers, creeks and major drainage lines, water supply etc.
3. Use a red marker to draw in soil conservation works – contour banks and gully fill, fences and other points as proposed. Do not add contour banks (if required) if the plan is looking too complicated. Just make a note in your written report.
4. Use a green marker to draw in tree planting (windbreaks, woodlots, shade and wildlife) and conservation measures.
5. Use shading or hatching with colours of your choice to mark in different enterprise areas eg. Wheat, cotton, summer crops, pastures, alternate enterprises (eg viticulture).

3.2 Mapping Symbols for Property Plans

FEATURE	SYMBOL	COLOUR
North		black
Damaging winds	COLD	black
Power		black
Telstra		black
Mains water pipe		black
Creek/river		blue
Ridges	R R R R	black

Other Symbols include these: Blue for water, Brown for earthworks, Green for Vegetation.

Dam	Contour
Yards	Waterway
Windmill	Tree regeneration area TRA
Tank	Windbreak WB
Watering point W	Tree lot TL

It is also worthwhile marking on the base photograph two "X's" so overlays can be easily aligned (if using overlays).

WRITING YOUR REPORT

- You are allowed a maximum of five A4 pages, font size 12, that describe your intended land management practices.

- Remember that land use and management proposals should be outlined in your report along with reasons for your decisions. List options then justify the recommended action.

A major part of property planning is evaluation of alternative enterprises for each particular management unit. This usually includes a detailed comparison and assessment of the economic viability of the alternative enterprise as well as addressing physical requirements. However, for the purposes of this exercise it is not necessary to produce a detailed report on economic aspects. A simple summary would be quite sufficient along with a short explanation of why a particular enterprise was chosen. Nevertheless, it is still very important to consider how you would fund any point specific works suggested.

USING THE RESOURCES AVAILABLE

1. Expertise

There are many sources of information you can access for technical expertise. Below is a preliminary list to get you started. There are many others.

- Catchment Management Authorities
- Department of Water and Energy
- Department of Environment and Climate Change
- Department of Primary Industries
- Commercial agronomists
- Your local library and School resources

2. Funding Opportunities

You need to think about whether point specific works and management changes requiring infrastructure you are considering are able to be funded through external means. Environmental works and changes in management that have off site benefit (in addition to benefits to the landholder) may be able to be supported financially through different organisations. The following sources of information may be useful:

- Banks and accountants
- Grants Information http://www.grantslink.gov.au/
- Australian Natural Heritage Trust http://www.nht.gov.au/
    - Australian Government Envirofund
- Catchment Management Authorities www.namoi.cma.gov.au

3. Other relevant websites

A great deal has been written about Property Planning and relevant issues. Scour these and other web pages for more detail on various subjects.

NSW Departments and Organisations:	
NSW Department of Water and Energy	http://www.dwe.nsw.gov.au/home/
NSW Soil and Land Information System (SALIS)	http://www.regional.org.au/au/gia/22/722mcgaw.htm
NSW Soil Profile Attribute Data Environment (SPADE)	http://spade.dlwc.nsw.gov.au
NSW Department of Primary Industries: Agriculture, Forests and Fisheries	http://www.dpi.nsw.gov.au/
Landcare NSW	http://www.landcarensw.org/
Department of Environment and Climate Change	http://www.epa.nsw.gov.au/index.htm
Native vegetation	http://www.nativevegetation.nsw.gov.au/
Soil Conservation Service	

	http://www.lands.nsw.gov.au/soil_conservation
National Departments and Organisations:	
Australian Department of Environment and Heritage	http://www.deh.gov.au
State of the Environment Reporting	http://www.deh.gov.au/soe
Australian Department of Agriculture Fisheries and Forestry	http://www.daff.gov.au
Greening Australia	http://www.greeningaustralia.org.au
National Dry-land Salinity Program	http://www.ndsp.gov.au/
Murray Darling Basin Commission	http://www.mdbc.gov.au/
CSIRO	http://www.csiro.au/
Land and Water Australia	http://www.lwa.gov.au/
Land and Water Australia- (rivers)	http://www.rivers.gov.au
Others:	
Landline ABC (try the archives)	http://abc.net.au/landline
Meat and livestock Australia	http://www.mla.com.au