

## EDUCATION, SCIENCE AND TRAINING

### SENATE LEGISLATION COMMITTEE – QUESTIONS ON NOTICE 2004-2005 BUDGET ESTIMATES HEARING

**Outcome:** CSIRO  
**Output Group:** - CSIRO

#### DEST Question No. E233\_05

Senator Carr provided in writing.

#### Question:

I refer to an article published in the *Australian Financial Review*, 4 June 2004.

- a) Can CSIRO confirm that it has received considerable funding from Murray Irrigation Ltd?
- b) How much funding has been received since 1996? How often has money been paid, and in what amounts?
- c) For what specific purposes were these funds paid to CSIRO? Please provide precise details?
- d) When the Business director of CSIRO Land and Water is quoted as saying that this money was given to CSIRO for “specific projects on MIL’s own operations and their immediate environment”, what does this mean? What is meant by MIL’s “own immediate environment”?
- e) What other, more general research has CSIRO been able to apply MIL-generated research?
- f) Was any of the research undertaken by CSIRO for MIL incorporated into any submissions by MIL to recent parliamentary inquiries addressing future water flows in the Murray River, including the one referred to in the *AFR* article?

#### Answer:

CSIRO has provided the following response.

#### *Land and Water – Murray Irrigation Ltd*

- a) CSIRO Land and Water has carried out co-investment research projects with Murray Irrigation Ltd (MIL) for a number of years, details of which are provided in response to question (b) below.
- b) Since 1996, CSIRO has carried out co-investment research projects with MIL to the value of \$1,781,372. Of this amount, the breakdown of funding has been: CSIRO - \$561,570, MIL - \$690,802, and other parties (for example Land & Water Australia) - \$529,000. Payment intervals varied between projects and details are provided in Attachment 1.
- c) In general, CSIRO research supported by MIL has been focused on solving irrigation efficiency and salinity problems within the area of operation of MIL. Details of project objectives are provided in Attachment 1.

- d) Unique hydrology and cropping practises in the MIL's area of operation combine to produce a distinct irrigation system which requires a targeted research effort. In their detail, results of research in this region are not applicable to other irrigation systems.
- e) The research methods and analysis capability developed for the research projects with MIL have been used in similar projects in other areas, especially the Coleambally Irrigation Area. A whole farm model under the name SWAGMAN® Farm has been developed in collaboration with MIL, Coleambally Irrigation and the Cooperative Research Centre for Rice. This model can consider soil, water, salt balance, crop growth, groundwater and irrigation interactions, and has been adapted and applied to other locations such as Coleambally and Murrumbidgee Irrigation Areas and in the Indus Basin through a project with the Australian Centre for International Agricultural Research. Software development of this model has been mainly supported by CRC Rice funds, while rigorous testing of model inputs and predictions has been done in collaboration with the MIL. The development of the models is the primary mechanism by which the research learning can be applied for both immediate questions, such as the MIL situation, and to new areas with similar hydrologic and irrigated situations.
- f) The MIL submission to the House of Representatives Standing Committee on Agriculture, Fisheries and Forestry inquiry into future water supplies for Australia's rural industries and communities makes no specific mention of the research undertaken by CSIRO and MIL. The MIL submission was concerned with water flow in the Murray River; in contrast, the co-investment projects are directly informative to MIL's Environment and Land and Water Management Plan sections.

**Murray Irrigation Ltd Projects undertaken by CSIRO Land and Water<sup>1</sup>**

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**Title: Determination of optimal irrigation intensity for irrigation areas**

**Project objectives:**

- Determine, with an integrated model, environmentally optimal irrigation intensity. The economic and physical impacts and tradeoffs between sustainability and profitability will be presented.
- Develop a methodology to assist irrigation authorities (public & private) develop policy to achieve improved economic and natural resource sustainability.
- Develop a methodology that allows farmers to simulate various farm development scenarios within the context of improving water use efficiency and managing salt. The methodology, incorporating water and salt auditing, will promote resource management understanding and integrates economics and water use efficiency.

**Period:**

1/7/1997-30/6/2003

**Type of project:**

Collaborative Research Project between Murray Irrigation Limited, Land and Water Australia and CSIRO Land and Water

**Initial project contract value:**

\$106K (MIL)

\$270K (L&WA)

\$190K (CLW)

**Revenue received from MIL:**

24/6/98 - \$28,558.50

16/12/98 - \$10,349

11/6/99 - \$32,298

12/5/00 - \$33,355.50

25/10/00 - \$25,000

28/1/01 - \$5,454

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**Title: Hydrologic & economic appraisal of regional groundwater & salinity management actions in the Murray Valley**

**Project objectives:**

- Hydrologic and economic evaluation of existing LWMP regional groundwater and salinity management options
- Hydrologic and economic analysis of alternative management options to achieve regional vertical and lateral recharge rates by incorporating surface water-aquifer interactions
- Provide support for ongoing implementation of SWAGMAN Farm on the basis of policy options determined from the existing project

**Period:**

1/7/03 – 30/6/06

**Type of project:**

Collaborative Research Project between Murray Irrigation Limited and CSIRO Land and Water. Australian Standard General Conditions of Contract for Engagement of Consultants AS 4122-200

**Initial project contract value:**

\$338,519 (MIL)

\$135,400 (CLW)

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<sup>1</sup> When comparing the contract value of a project and the revenue received, note that some projects are ongoing and either not all monies have been received or final payment made.

**Revenue received from MIL:**

31/3/04 - \$68,519  
31/5/04 - \$120,000

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**Title: Groundwater management and optimisation of the Wakool-Tullakool sub-surface drainage scheme****Project objectives:**

The project will include:

- Incorporation of surface-groundwater interactions in the WTSSDS area
- Interpretation of hydrogeological properties
- Calibration and validation of model
- Optimisation of pumping costs

This research is also proposed to provide delineation of spatial benefits of pumping options.

**Period:**

2002-2004

**Type of project:**

Collaborative Research Project between Murray Irrigation Limited and CSIRO Land and Water.  
Australian Standard General Conditions of Contract for Engagement of Consultants AS 4122-200

**Initial project contract value:**

\$26,619 (MIL)  
\$10,650 (CLW)

**Revenue received from MIL:**

17/3/04 - \$20,000

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**Title: Local & regional assessment of stage 111 Wakool - Tullakool subsurface drainage scheme****Project objectives:**

The key of this study is to assess adequacy of shallow bore field designed for the proposed Stage III of WTSSDS and to explore possible alternative drainage options such as deep groundwater pumping. This study will also evaluate incremental regional benefits over time from the existing and proposed drainage schemes in the region. The extent of waterlogging and salinity protection to the agricultural land and reduced saline flows to natural streams will be quantified.

**Period:**

1/10/03- 30/4/04

**Type of project:**

Collaborative Research Project between Murray Irrigation Limited and CSIRO Land and Water.  
Australian Standard General Conditions of Contract for Engagement of Consultants AS 4122-200

**Initial project contract value:**

\$24,726 (MIL)  
\$10,000 (CLW)

**Revenue received from MIL:**

17/3/04 - \$5,000  
31/5/04 - \$10,000

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**Title: Rigorously determined water balance benchmarks for irrigated crops & pastures****Project objectives**

- To obtain and review data in the grey and published literature for determinations of deep drainage, crop water use and paddock water use for the range of irrigated crops, management practices, soils and climatic conditions experienced in Australia, and to collate those data considered to be derived from rigorous determinations.

- To carry out rigorous paddock scale water balance determinations for maize, winter cereal, annual pasture, lucerne and canola grown under good management practices
- To use the data to validate and refine models used for determining optimal irrigation intensity and net recharge management in the irrigation areas of the southern Murray-Darling Basin
- To provide a better understanding of whether there is any recharge occurring under the lucerne - through logging the watertable depth and placement of granular matrix sensors at greater depths than the current 180cm; the potential to obtain better (more complete) data sets for the lucerne paddocks.

**Period:**

2001 - 2003

**Type of project:**

Collaborative Research Project between NPIRD/L&WA/CIL/MIL

**Initial project contract value:**

\$50,000 (MIL),  
 \$234,000 (NPIRD)  
 \$25,000 (CIL)  
 \$123,600 (CLW)

**Revenue received from MIL:**

3/9/02 - \$25,542  
 22/7/04 - \$25,542

**Title: Policy options for economically sustainable & economically viable cropping patterns in the Murray Valley**

**Project objectives:**

To determine policy options for environmentally sustainable and economically viable land use in the Murray Irrigation Districts, taking into account both farm and regional scale hydrology. The project will delineate groundwater management zones and apply SWAGMAN Farm to farms within these zones to identify sustainable management options and assist policy development for the Murray Irrigation Districts.

**Period:**

1/1/01 – 30/6/03

**Type of project:**

Collaborative Research Project between Murray Irrigation Limited and CSIRO Land and Water

**Initial project contract value:**

\$229,801 (MIL)  
 \$91,920 (CLW)

**Revenue received from MIL:**

30/5/01 - \$47,982.73  
 31/7/01 - \$45,454.55  
 31/1/02 - \$45,454.55  
 30/8/02 - \$45,454.55  
 17/3/04 - \$45,454.55

**Title: Assessment of Options for the Management & Improvement of Green Gully**

**Project objectives:**

This project aims to evaluate technical efficacy and cost effectiveness of previously proposed or alternative surface and groundwater management options in the Green Gully Area. Specific aims of the project include:

- Quantification of flooding and groundwater management issues by dividing the Green Gully Area into five regions
- Review of technical and economic feasibility of previously proposed on farm and regional management options in the Green Gully area.

- Preliminary update of previous hydrologic and economic analyses with the help of recent land cover, hydrologic (both surface and groundwater) and economic data.
- Preliminary analysis of effectiveness of existing on farm practices in five regions.
- Community involvement in the selection of feasible/acceptable management options.
- In depth study of feasible/acceptable surface and groundwater management options.
- Community education on land and water management issues in the Green Gully area.

**Period:**

2002

**Type of project:**

Tender

**Initial project contract value:**

\$51,386

**Revenue received from MIL:**

31/5/02 - \$21,386

22/01/03 - \$30,000