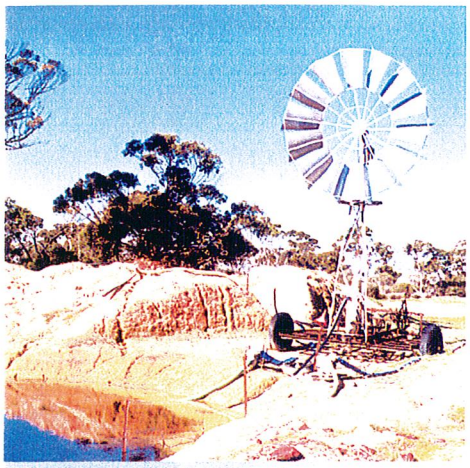

Deep Drainage in South West Western Australia

Making it work – not proving it wrong

Deep Drainage Taskforce
Report and Recommendations
to the Honourable Monty House, MLA,
Minister for Primary Industry and Fisheries

March 2000

THE GOVERNMENT OF WESTERN AUSTRALIA

CONTENTS

EXECUTIVE SUMMARY

In August 1999 the Minister for Primary Industry and Fisheries established the Deep Drainage Taskforce to develop a protocol that:

> *Coordinates deep drainage (including underground pumping of saline water and relief wells) practices within catchment areas to maximise the benefits in treating salinity and waterlogging whilst taking into account the possible negative impacts of fresh or saline water disposal.*

The scope of the Taskforce was the South-west Agricultural Region east of the Darling Scarp.

The Taskforce was established in recognition that recharge control through revegetation and high water use farming systems will slow, but not prevent the inevitable extent that will become salt affected in the medium to low rainfall areas of the Southwest Agricultural Region. Consequently, discharge management options (including deep drains, pumping of saline groundwater and relief wells) will be required, for which there is increasing interest in the rural community, ranging from farm to sub-basin in scale.

But, within the community and government there is no agreed way to assess the benefits and impacts of drainage and how they compare to recharge control mechanisms. There is also substantial frustration at perceived government inaction and negativity to drainage and concern that drainage proposals are emerging as 'stand alone', and poorly integrated with other salinity management options. All of this is creating a sense of frustration and confusion and in some cases polarisation.

In developing its recommendations the Taskforce consulted widely. A series of eight public meetings and numerous site visits were conducted throughout the wheatbelt. A wide range of groups and agencies made submissions. Discussions were held with industry groups and Agriculture Western Australia, the Department of Environmental Protection, the Water and Rivers Commission, the Department of Conservation and Land Management and the Ministry for Planning. The recommendations were developed in consultation with the State Salinity Council, the Soil and Land Conservation Council, the Commissioner for Soil and Land Conservation and the Inter-agency Drainage Steering Committee.

Recommendations

The Taskforce developed recommendations in four key areas:

1. develop a whole of government approach through a memorandum of understanding between Agriculture Western Australia, the Water and Rivers Commission, the Department of Environmental Protection and the Department of Conservation and Land Management where the roles and responsibilities of the agencies are defined in order to;

2. provide an integrated 'one stop shop' regulatory process where there is a transparent protocol between the agencies for assessing proposals against clear and specific criteria;

3. develop and extend best practice. There is a critical need to release outstanding work on the integration, design, impact management, maintenance and assessment for drains immediately to address the lack of information that is available for landholders at present. The natural resource management agencies should also enter into joint projects with other research bodies, industry and drainage proponents to design and monitor drains in order to further develop and extend best practice; and

4. support the development of integrated drainage by working with proponents of larger proposals on design and integration and providing a formal mediation process through the Agricultural Practices (Disputes) Board when agreement between various parties is not forthcoming.

Specific recommendations include:

- **Priority be placed on completing the rapid catchment assessment and catchment water management plans outlined in the State Salinity Strategy for each of the major landscapes in the wheatbelt within 12 months. This is in order to ensure that the information generated can be accessed and learned from by others working in similar landscapes.**

- **A Drainage Manager be created in the Office of the Commissioner for Soil and Land Conservation, resourced by Agriculture Western Australia. The Drainage Manager would oversee the development and implementation of a government Memorandum of Understanding on Drainage (including deep drainage, groundwater pumping and relief wells) and coordinate a proactive whole of government service. This service would consist of a *flying squad* to work with proponents of larger scale drainage projects at the earliest opportunity to develop them, facilitate opportunities for integration and assist with the regulatory process.**

- **In cases where agreement between various parties is not forthcoming, they be referred to mediation through the Agricultural Practices (Disputes) Board or a similar type of body prior to entering the regulatory process. This will require legislative amendment of the Agricultural Practices (Disputes) Act to broaden its scope to include drainage.**

- **The best practice information relating to deep drainage from the Avon Drainage Project and the Water and Rivers Commission Drainage Decision Support Brochure will be released to the public within two months.**

- **The competency of drainage project designers and constructors be considered as a criterion in the regulatory process to improve the standard of projects and encourage skill development in the industry.**

- **State government agencies, coordinated by Agriculture Western Australia, work with the Agricultural Landcare Contractors and Community Landcare Technicians Associations to further develop an Industry Code of Conduct and Industry Accreditation.**

- **In addition, the Taskforce recommends that further industry training modules on land use planning and regulatory systems need to be developed.**

- **The training requirements of government staff in the regulatory process should be reviewed as soon as possible and appropriate training should be completed within 12 months.**

- **Research projects place priority on developing criteria for landowners, industry and government to design, assess and construct drainage projects and identify suitable receival bodies.**

- **Within three months a whole of government approach is developed through a memorandum of understanding between the natural resource management agencies (Conservation and Land Management, Department of Environmental Protection, Water and Rivers Commission and Agriculture Western Australia) in order to:**

- **develop a coordinated government policy regarding deep drainage and its regulation;**
- **provide an efficient and integrated regulatory process for deep drainage proposals; and**
- **continue developing best practice packages for drainage and evaluating drainage effectiveness and impacts to assist landowners, contractors and agencies to assess the benefits and impacts of deep drainage and implement projects.**

- **The memorandum should be based on the principle of a *one-stop shop* approach to provide a clear, transparent, timely, effective and efficient process, with defined roles for the agencies and proponents. Key schedules will include:**
  - **heads of agreement and whole of government policy on drainage;**
  - **definition of roles and responsibilities for each agency and proponent in the assessment process;**
  - **clear articulation of information that proponents need to provide and assessment criteria used in the regulatory process;**
  - **role of government as a manager of land (based on a catchment approach, working with other landholders in catchment);**
  - **fast tracking for cooperative group proposals and low risk plans;**
  - **communication plan for process and assessments to proponents and community in general;**
  - **an agreed review process to update processes as new information becomes available; and**

The Hon. Dexter Davies MLC
CHAIRMAN
DEEP DRAINAGE TASKFORCE

March 2000

3 STEP CHECKLIST FOR DRAINAGE/PUMPING

STEP 1: GOOD DESIGN

How much water do you want to move?

Calculate the increase in catchment discharge of water and salt required to maintain or improve production and protect environmental and infrastructure assets.

Where will the water go?

Work out where the water and salt will go – this will require negotiation with downstream landholders and managers if it is off your property.

Finding the best way to move the water

The Common Conservation Works Used in Western Australia Bulletin provides an overview of the design, construction and risks of various types of earthworks. It is available from your local Agriculture Western Australia Office.

Have you met your duty of care?

Landholders have a duty of care to ensure that their management actions such as drainage/pumping do not lead to land degradation or other damage such as through severe erosion, flooding or environmental damage to waterways and wetlands. How will you manage this acceptably in the drainage/pumping project?

STEP 2: MAXIMISING BENEFITS

What else can I do on my place?

Consider what other practices can be implemented to complement the drainage/pumping such as:

- collection and re-use of surface water, through such actions as earthworks such as grade banks that control water above the proposed drainage or pumping site;
- Using saline land and water productively;
- Protection and management of remnant vegetation;
- Revegetation that complements the drainage/pumping by introducing native and/or exotic perennial species to increase water use;
- Improving the water use of annual crops and pastures; and
- Fencing and plantings along the drain that will take place.

What else is happening and can we work it all together?

Find out what plans and activities neighbours and agencies are implementing. Explore the opportunities to link of your effort and works together.

Maintaining the flow

Work out how and who will maintain the drainage or pumping system in the future.

STEP 3: GETTING PERMISSIONS

Dial before you dig

Telephone 1100 to find out where underground infrastructure (telecommunications, electricity, gas etc) you need to cross is and how to get in contact with the relevant agency.

Who to contact about crossing road and rail

- **State roads** – contact Jerome Goh, Senior Waterways Engineer, Main Roads WA (Ph: 9323 4461, Mobile: 0409 685 558).
- **Local roads** – contact the local Shire.
- **Rail** – contact the Planning Manager at the regional Westrail office.

Do you need to lodge a Notice of Intent to Drain (NOI)?

If you intend to drain or pump water from under the land surface because of salinity and to discharge that water onto land, into other water or into a watercourse you will need to lodge an NOI through Agriculture Western Australia at least 90 days prior to commencing work. There are provisions for a 28-day assessment period for proposals where water from drainage or pumping is contained on the property or cooperative group proposal which meet specific criteria.

If you are unsure about what information is required in an NOI or want more information contact the:

- Land Conservation Officer at your local Agriculture Western Australia office or;
- Office for the Commissioner for Soil and Land Conservation (Ph: 9368 3282)

What needs to be in an NOI?

The general provisions for what information is required in a Notice of Intent to Drain are outlined in the Commissioner for Soil and Land Conservation's March 1999 Policy No. Drain/1 *Drainage Proposals in the South West Agricultural Region of Western Australia* and include:

- clarification of a workable sub-catchment area (for cooperative group proposals);
- identification of landholder agreements;
- construction standards;
- identify receiving bodies and determine acceptability of downstream impacts;
- integration with other landcare works; and
- construction expertise.

Agreeing with neighbours

You will need agreement by the landholders involved in the drainage/pumping as well as acceptance of the project by local government and downstream landholders and managers. For a Notice of Intent to Drain this will require:

- a completed Notice of Intent from each individual whose property works are proposed;
- a statutory declaration from each landholder through whose property water from the drainage system to be constructed will run (from the commencement of the upstream works to the receiving water body);
- a letter of commitment supporting the proposal from each agency with statutory responsibilities affected by the proposal; and
- a letter from each landholder and agency detailing the level of commitment to the ongoing maintenance of the system once constructed where the project crosses property boundaries.

1. INTRODUCTION

1.1 Objective of Drainage Taskforce

The Hon. Monty House (MLA), Minister for Primary Industry and Fisheries, formed the Taskforce to develop a protocol that:

> *Coordinates deep drainage practices within catchment areas to maximise benefits in treating salinity and waterlogging whilst taking into account possible negative impacts of fresh or saline water disposal.*

The protocol provides guidelines for evaluating the impact of deep drainage at a catchment level for farmers, Land Conservation District Committees, drainage contractors, shires and government agencies. The protocol considers:

- how deep drainage can be combined as part of the landcare tool kit in a coordinated approach;
- that in most cases individual landholders cannot deal with deep drainage or pumping techniques in isolation. In most cases a whole of catchment approach is needed for the most effective operation and to minimise the impact of disposing of water; and
  - the impact of:
  - deep drains;
  - pumping of underground saline water; and
  - relief wells.

1.2 Consultation process

In developing its recommendations the group consulted widely. A tour was conducted of the wheatbelt in August/September 1999 involving eight public meetings and numerous site visits (Appendix 5.2), which were attended by more than 260 people. Twenty-two written submissions were received from government and the public (Appendix 5.4) and a wide range of documents from Western Australia and interstate were reviewed (Appendix 5.6).

Discussions have been held with industry groups and the Chief Executive Officers and staff from Agriculture Western Australia, the Department of Environmental Protection, the Water and Rivers Commission, the Department of Conservation and Land Management and the Ministry for Planning, as well as the Senior Officers' Group, State Salinity Council, Soil and Land Conservation Council (SLCC), Office of the Commissioner for Soil and Land Conservation and the Inter-agency Drainage Steering Committee (IADSC).

1.3 Geographic scope

The Taskforce confined its scope to the South-west Agricultural Area east of the Darling Scarp. It did not include the Swan Coastal Plain.

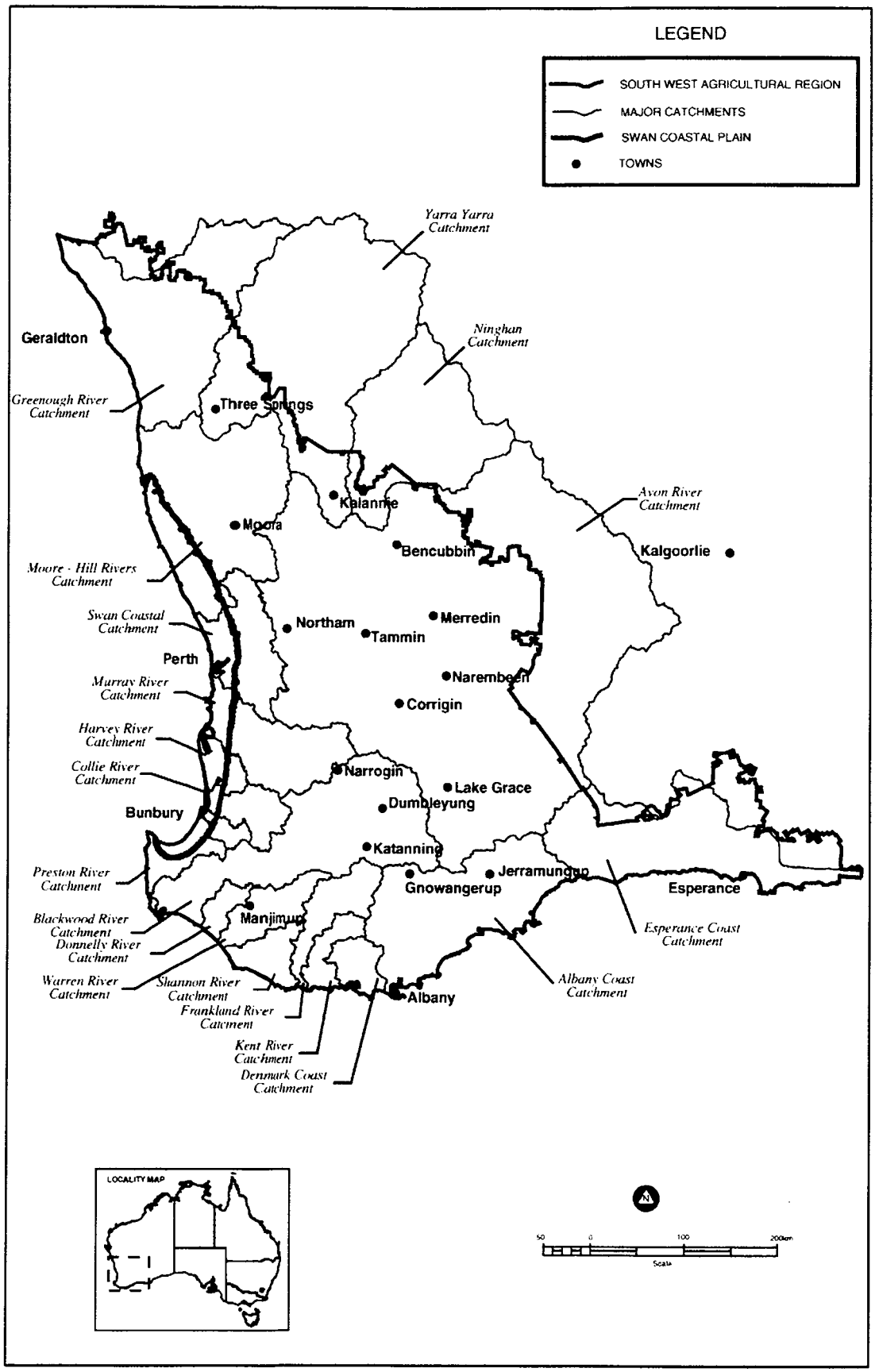

Figure 1. Major catchments in the south west agricultural zone of Western Australia.

1.4 Guiding principles

The following principles were developed to guide the Taskforce in their deliberations:

1. The wheatbelt hydrologic system is no longer pristine and we are not where we are by choice. Final and definitive solutions cannot be expected. Innovation, developing local solutions, and action learning approaches are needed.

2. Drainage and related earthworks are valid land management tools and can be a valid starting point for a wider range of landcare and wetland management works.

3. Drainage needs to be considered in a wider context than just the farm.

4. Drainage cannot be dealt with in isolation from water management.

5. Responsibility needs to be taken at the level over which the work is proposed (farm scale or catchment scale).

6. Deep drainage (including underground pumping of saline water and relief wells) is subject to regulation due to risks associated with design and off site impacts.

7. A positive approach is needed to the issue. It is about making best bet options even better, not finding fault without offering practical alternatives.

8. Guidelines and regulations will be required to set agreed directions and provide a clear and agreed basis for assessing and approving options.

9. Government and community processes should be open and transparent.

2. DRAINAGE IN WESTERN AUSTRALIA

2.1 Background to salinity and rising water tables

Soil and water salinity is a natural characteristic of the South-west Agricultural Region of Western Australian where large quantities of salt have been deposited by wind and rainfall over thousands of years. With low rainfall and high rates of evaporation there has been insufficient drainage to carry the salt away and it has accumulated in the soil profile. Indeed large areas of the wheatbelt drain into a myriad of salt lakes and seasonal watercourses, some of which are internally draining.

Land clearing and the replacement of native vegetation with lower water using agricultural systems have caused changes to the hydrology of the landscape, increasing run-off and recharge of groundwater. The increased recharge results in rising groundwater tables, which can mobilise stored salts, emerging where flow is obstructed and forced to the land surface. As groundwater comes close to the surface capillary action takes the water to the surface where it evaporates, leaving the salts behind.

While summer rainfall can generate significant surface water run-off, it generally tends to occur in winter when rainfall is higher and evaporation lower. Run-off often collects in lower points in the landscape causing waterlogged conditions. Some will percolate through the soil and recharge the groundwater systems. When the amount of water coming to the surface is substantial enough, the water and salt will flow down slope, eventually draining into waterways and wetlands.

At present it is estimated that 1.8 million hectares in the South-west Agricultural Region are affected by salinity to some extent. The rate at which further salinisation will emerge and the extent to which it will spread will vary greatly throughout the Region according to the geomorphology and hydrology of various catchments. Salinity affects water resources,

biodiversity, agricultural productivity, flood risk, infrastructure, communities and individuals. It is recognised that action is required over most of the Region and that without significant intervention the area of salt affected land could expand to six million hectares in the long term.

2.2 Drainage in salinity management

Techniques to address salinity aim to either reduce recharge by increasing water use or increase discharge/run-off, through drainage, pumping or relief wells.

Drainage is about moving water and its dissolved salts to somewhere else in the landscape in order to allow current land management practices to continue or let new ones occur. Drainage is commonly described as either:

- shallow (surface); or
- deep (sub-surface), which includes relief wells and ground water pumping.

Table 1 below summarises the major types of shallow (surface) and deep (sub surface) drainage.

Table 1. Summary of types of surface and sub-surface drainage (Hatton *et al.* 1999)

Type	Construction	Options	Use	Problems
(i) Shallow (Surface)				
V, W, spoon, raised beds, mounds etc.	Tractor (spinner, blade), grader, scraper	Many variations	Surface water control, improved leaching	Low volumes, storm damage, little water table control
Waterways, floodways, etc.	Scraper, grader, dozer	With/without walls, connected (or not) on a catchment basis	Valley floor, stream or flood control	Storm damage, little water table control, relative cost
Banks	Dozer, grader e.g. WISALTS, Keyline (and derivatives)	Level, grade, interceptor, reverse, sills, gap spreaders	Hillsides	Design and layout, workability of farm
(ii) Deep (Sub-surface)				
Deep open drains	Excavator, other specialised machinery	Open, with or without banks, (closed), +/- connected on a catchment basis	Extensive agric., valley floors	Clays, low permeability, unstable soils, run-off, velocity (erosion, deposition, silting), poor lateral connectivity, cost, disposal, storm damage
Tile drains	Trench diggers, excavators, other	With gravel, with moles, other membranes (tyres)	As above, protecting high value assets, lower water tables	As above clays, low permeability, poor lateral effect, cost, construction, expertise
Aquifer de-watering (pumping)	Drilling rig, excavator	Relief wells, syphons, single or multiple wells	Protecting high value assets, lower water tables	Low permeability, cost, disposal, energy, radial impact, water balance

2.3 Current deep drainage

During the late 1970s and early 1980s interest in saltland drainage increased in the northern wheatbelt, due in large part to some local farmers promoting deep drainage following successes on their own farms. The Department of Agriculture was involved in implementing a series of trials in the Moora and Narrogin districts in the early 1980s. (Coles *et al.* 1999).

In 1992, in response to on-going interest in drainage and concern about associated impacts, Regulation 5 concerning drainage was established under the Soil and Land Conservation Act. The regulation requires that if:

> *an owner or occupier of land proposes to drain or pump water from under the land surface because of salinity and to discharge that water onto other land, into other water or into a watercourse, the owner or occupier shall at least 90 days before commencing the drain or pumping commences, notify the Commissioner [for Soil and Land Conservation].*

This is commonly referred to as the NOI (Notice of Intent to Drain) process.

Between 1996 and 1999, 266 Notices of Intent have been lodged with the Commissioner to drain in excess of 50,000 hectares of land.

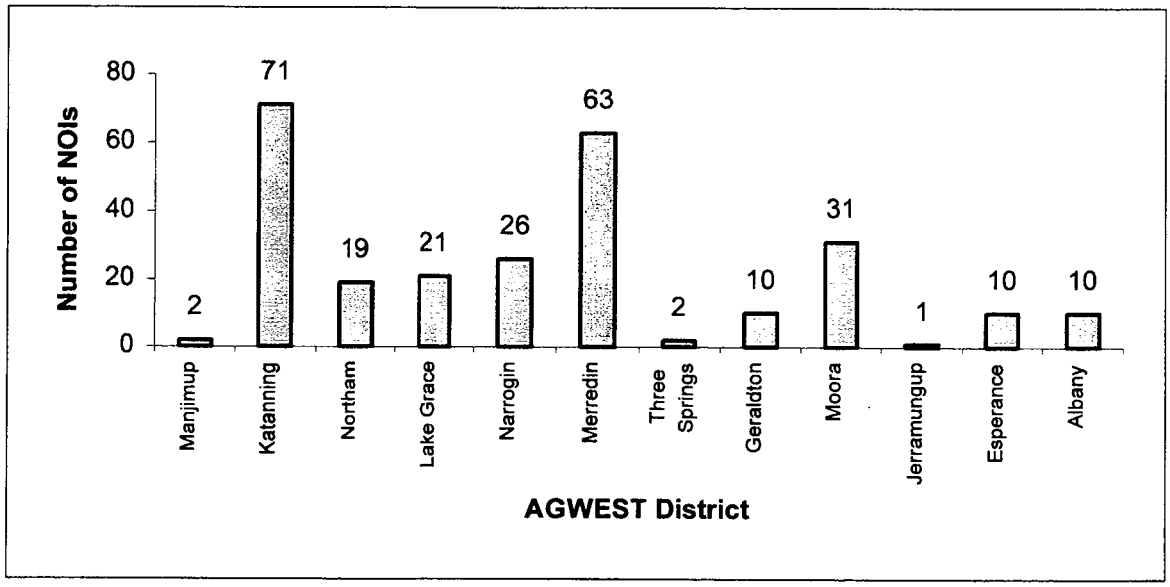

Figure 2. Notices of Intent to DrainLodged 1996-99.

Of the groundwater drains in use, excavator built, deep, open drains have proven the most popular. In recent years, their use has accelerated, with perhaps 200 to 300 kilometres per year of drains now being constructed, many without Government approval (Coles *et al.* 1999).

Table 2. Summary of the outcomes of drainage case studies from the landholders' point of view. (Coles *et al.* 1999)

Advantages	Disadvantages
• Reduced soil salinity through leaching (mainly lateral tube drains). • Reduced waterlogging and inundation period. • Increased discharge. • Increased productivity. • Effective at break of slope and in combination with other treatments. • Reclaimed marginal land. • Reduced the rate of salinity spread.	• Not cost effective. • Limited water table draw down. • Poor construction and design. • Increased saline and sediment discharge. • High maintenance costs (with few drains maintained). • Downstream flooding and inundation. • Other solutions may have been just as effective. • Spoil and drains restrict access to areas of the property. • Low gradients and hydraulic heads.

In the 1990s there have been on-going works throughout the State, including larger scale works such the Belka Valley and Narembeen in the Merredin district and Datatine and Doradine in the Katanning district. Major surface and groundwater drainage proposals have been advocated. There has also been considerable groundwater pumping of saline water with possibly up to 100 pumps being installed since 1980, of which 10 may still be in operation (R. George, pers. comm.). Currently there is on-going research into groundwater pumping being conducted at Corrigin and Kalannie.

Recently there has been interest in relief wells, with a project going on in the Gordon River. Agriculture Western Australia (Coles *et al.* 1999) conducted a review of the efficacy of deep drainage in the wheatbelt in 1999, and the landholders identified a number of advantages and disadvantages relating to drainage, which are summarised in Table 2 above.

There is also a growing interest in developing large-scale surface and groundwater arterial drainage infrastructure to remove water from the landscape, similar to the system in the South East of South Australia.

2.5 Problem defined

Drainage is about moving water and salt to a different part of the landscape so that the affected land can be effectively managed and used for whatever purpose.

Deep drainage is often not seen as a preferred tool to manage salinity because it does not address the fundamental cause of salinity (recharge), is expensive, lacks effectiveness in many situations and has high risk factors relating to associated on-site and downstream impacts.

Nevertheless, it is becoming apparent that with the amount of hydrological momentum in the system, even very significant levels of recharge reduction will be unable to prevent the continued expansion of salinity in many catchments. This means that the role of discharge management (including deep and shallow drainage) will need to be recognised and better integrated as a management tool.

As communities, government, industry and landowners recognise and act to manage salinity, four key issues are emerging in regard to drainage:

- confusion and conflict relating to integrating recharge reduction and discharge management (drainage);
- determining the efficacy of drains, groundwater pumps and relief wells and their environmental impacts;
- effectiveness of current legislation; and
- coordination of government agencies and policy.

3. ISSUES

3.1 Community conflict

Given the variety in the extent and rate at which salinity is emerging within the wheatbelt, individuals, community groups and governments will implement different combinations of landcare solutions to address salinity according to the landscape, land use, resources, ability, experience and preference.

There is a great deal of uncertainty relating to deep drainage, causing confusion and in some cases conflict, which was raised during the Deep Drainage Taskforce Tour in August-September 1999 and in submissions to the Taskforce (see Appendices).

Drainage proponents are finding it difficult to secure the agreement of all landowners (both private and government) within an area that is proposed to be drained and identify acceptable and agreed disposal points. This is especially true for larger sub-catchment and catchment scale proposals, where the number of parties involved and volume of water to be drained is greater. Despite this, most landholders involved generally support drainage proposals. There are concerns about the impact of deep drainage on downstream agricultural land, waterways, wetlands and conservation reserves as well as the cumulative impact of many drains within a larger catchment, especially with regard to flooding. Information relating to drainage, its impact and best practice is not yet widely publicly available and it is difficult to compare the benefits and impacts of drainage with other landcare practices. Finally the Notice of Intent to Drain process is perceived to be slow, cumbersome and unclear.

These uncertainties make the cooperative catchment approach, which is essential to salinity management, difficult.

3.2 Managing water, efficacy of drains and the environmental impact of saline water

There is a critical need to improve our understanding of the efficacy of drainage and managing associated environmental impacts in the wheatbelt. Processes need to be developed to understand and manage potential impacts from drainage projects, on-site (as part of the project area), off-site and possibly cumulative regional effects. The major types of potentially adverse impacts that need to be considered include:

- relocation of salt load and changes in salt balance to other land and downstream water bodies;
- increased inundation period for wetlands, low-lying farmland and infrastructure;
- increased frequency and magnitude of floods and potential cumulative regional effects;
- relocation of sediments and associated nutrients;

- damage to infrastructure due to any of the above; and
- significant loss of native species due to a combination of the above.

Currently best management practices have been collated on drainage by landholders, industry and government, through the Avon Drainage Project and the Water and Rivers Commission, and a decision support brochure is being developed. This information is not currently publicly available. In addition, an Agricultural Landcare Contractors Association and has been established and training courses on drainage are available through TAFE.

As part of developing assessment criteria for drainage, the Agricultural Landcare Contractors Association has outlined criteria for assessment and consultants have been engaged by agencies to report on use elsewhere of environmental impact assessment, tradeable quotas and cross-compliance (Regeneration Technology, 1999) and assessing impacts on receiving wetlands (Meney and Coleman, 1999, on-going). SWAMP (a catchment water balance model where the effect of various strategies can be evaluated) and other decision-making aids are currently being developed. The development of these tools and information is important in order to provide a rigorous and impartial assessment of water management options.

At present demonstrations of best practice catchment water management have been initiated in three catchments (Chowerup, Lake Toolibin and South Bodallin). In 2000, two cooperative projects will commence relating to deep drainage. One, coordinated by the Water and Rivers Commission with funding from NHT, will be based at Dumbleyung, and will look at exploring the feasibility and then implementing a multiple use corridor, which will include drainage in Zone 7 of the Blackwood catchment. The other, coordinated by CSRIO with funding from GRDC, aims to evaluate the impacts of deep drains on crop productivity and the environment at various sites in the wheatbelt, including sites at Narembeen and possibly analysing the performance of drains in the NHT project at Dumbleyung.

Still further work is required to determine the scale of impacts and how they can be managed. There is also the need to identify where drainage is suitable or unsuitable and what is occurring to make it so. This work should be conducted in partnership between contractors, landholders, agencies, and local government and research organisations.

Overall, drainage needs to be considered in the context of water management, which is best planned and implemented at a catchment scale. At this scale it is possible to agree on a catchment, based on social and biophysical boundaries, where the community (including industry, local government and state and federal government) can cooperate, negotiate, reach agreement and implement works, while also linking into regional and larger catchment strategies. Included in such an approach will be the need to identify the best water management practices for the catchment and suitable receival points for discharge from drainage. This may involve some environmental trade-offs.

At present there is considerable on-going planning of catchments at scales ranging from small sub-catchments to large river basins. But these planning approaches are variable in the extent to which they cover the catchments in the wheatbelt, the datasets available for the process, and the methods taken to develop plans for catchment water management.

For these reasons, clear and **agreed** objectives and criteria for various water management practices (including deep drainage) in order to assess the potential benefits and impacts of drainage are currently not widely available. To develop relevant objectives and criteria, it is important to draw on all information available and to incorporate new information as it becomes available. Such a process will include 'value-judgements' on social, economic and technical factors to broker balanced decisions. Some acceptance of adverse impacts may be required in order to achieve benefits from groundwater drainage.

These factors make the design, integration, balancing of impacts and benefits and regulation of deep drainage difficult for all parties. Until such planning is completed (including consideration of deep drainage options) and there are agreed objectives and criteria, deep drainage will mostly continue to emerge and be integrated on a reactive basis.

This also holds true for proposals to create large-scale drainage networks similar to the system operating in the South East of South Australia. In that region permeable aquifers and ready access to the ocean as a discharge point allowed the drainage system to be created necessary for the development of agriculture. However it did not prevent on-going degradation of the environment, including the emergence of dryland salinity in the 1980s. Currently the South East drainage system requires 'retro-fitting' and integration with other management tools to improve the environment and is managed to meet environmental and flood mitigation as well as agricultural objectives. In Western Australia proposals for large-scale drainage networks need to be assessed against other options and broader environmental, social and economic objectives for the wheatbelt.

3.3 Effectiveness of current legislation

There are numerous natural resource management, planning and other acts that are relevant to deep drainage (see Table 3 below), as well as provisions in common law.

Table 3. Legislation relevant to deep drainage[1]

• Rights in Water Irrigation Act and Proposed Amendments
• Soils and Land Conservation Act
• Waterways Conservation Act
• Water Agencies (Powers) Act
• Land Drainage Act
• Environmental Protection Act
• Environmental Protection (South-west Agricultural Zone Wetlands) Policy
• Conservation and Land Management Act
• Wildlife Conservation Act
• Town Planning and Development Act
• Aboriginal Heritage Act

The principal controls on deep drainage from agricultural land in the wheatbelt are administrative notices rather than statutory approvals. Under Regulation 5 of the Soil and Land Conservation Act there is the requirement to give a Notice of Intent (NOI) to the Commissioner of Soil and Land Conservation to drain or de-water areas because of salinity problems. This gives the Commissioner 90 days in which to issue a Soil Conservation Notice prohibiting or regulating the proposal.

This process is essentially ad hoc and reactive. Deficiencies in the act are that it tends to treat individual situations and proposals and does not adequately address the cumulative effects of many individual actions. There are also no guidelines for ecological assessment criteria or catchment-wide assessment to evaluate on-going effects, and the relationship to common law rights and obligations is unclear. Also, if the Commissioner does not issue a Notice there is no public record of relevant terms for the development of the drainage

[1] See Appendix 5.5 for description of each act relating to deep drainage.

scheme. While the majority of NOIs succeed and the Office of the Commissioner for Soil and Land Conservation responds within 90 days, there is often further negotiation required to finalise proposals.

These factors contribute to the public perception that the NOI process is cumbersome, slow and ineffective (many drainage schemes are proceeding without lodging an NOI).

Table 4. Number and outcome of Notices to Intent to Drain, 1996-97 to 1999-2000

	1999-2000 (to 31/12/99)	1998-99	1997-98	1996-97
NOIs lodged	17	62	61	86
No objections to proposals	5	23	49	50
Objections to proposals[2]	7	37	4	23
Pending	5	0	8	13
Not assessed[3]	-	2	-	-
NOIs assessments completed within 90 days[4]	100%	100%	100%	85%
NOIs lodged by groups	53%	65%	54%	37%

In response to these concerns, along with an increase in the number of groups submitting NOIs, Agriculture Western Australia revised its policy on drainage in 1999 (Commissioner for Soil and Land Conservation). This policy outlines what information and agreements proponents need to provide for the NOI to be assessed as well as providing streamlined 28-day regulatory process for proposals from cooperative group or where the discharge is kept on the property. The policy also makes provisions for a *flying squad* of Agriculture Western Australia staff to assist proponents. Since the introduction of updated policy, approval for a group proposal has not been achieved within the 28-day period mainly due to insufficient information being supplied regarding agreement between various parties.

The principal public lands and waters legislation (Conservation and Land Management Act, Wildlife Conservation Act and Waterways Conservation Act) do not enable the administering authorities to directly control drainage activities on private land that may result in harm to public lands, except possibly in proclaimed water management areas. But, while such drainage activity on private land cannot be constrained, liability for damage to public lands can lie with the person carrying out the drainage. For example, if it is established that drainage activities result in the unlawful taking of fauna or flora then the person responsible for the drainage would be liable to prosecution under the Wildlife Conservation Act.

Also, in proclaimed surface water management areas administered by the Water and Rivers Commission, drainage works would be subject to approval requirements if they obstruct, destroy or interfere with a watercourse. Outside the management areas, the Commission presently has no means of requiring approvals for drainage works (Gardner, 1999).

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2 Objections do not necessarily indicate objection to the whole proposal. They generally relate to the requirement for further information and agreements and modifications. In some cases conditions are placed on proposals through a Soil Conservation Notice (SCN).

3 Due to Notices being withdrawn or Notices being lodged for proposals that do not need to be notified under Regulation 5.

4 While all NOIs have been assessed within 90 days since 1997-98, the on-going negotiations following assessment often take longer.

Overriding all these acts is the Environmental Protection Act. Under this act when a decision making body exercises any of its statutory powers to regulate drainage (such as the Commissioner for Soil and Land Conservation in relation to a Notice of Intent to Drain), it has a duty to refer the proposal to the Environmental Protection Authority (EPA) if it is likely to have a significant environmental impact. The decision making body cannot approve the proposal until the EPA has assessed it. In this case the EPA may choose to not assess, leave the decision to the decision making body, informally assess or formally assess. The formal assessment process requires the preparation of an environmental impact statement at the cost of the proponent. To date no drainage proposal has undergone environmental impact assessment by the EPA. At present it is not clear when drainage proposals need to be referred to the EPA. Also, the EPA has not provided any guidelines or criteria to other government agencies for assessing proposals.

There is also an Environmental Protection (South-west Agricultural Zone Wetlands) Policy in respect of catchments with lakes of special conservation status. This policy is more a framework for the future coordination of inter-agency action than an immediate regime of regulation. Also, it depends very heavily on voluntary measures both to identify and protect the wetlands with special conservation status and even the relationship of its coercive measures to other statutory controls is uncertain.

The amendments proposed to the *Rights in Water and Irrigation Act* will provide for general controls on drainage. The clause saving the right to drain land will supplement the basic common law limits with a requirement that the drainage not cause harm to an ecosystem of a watercourse or wetland. Further, a general Ministerial power is proposed to make local by-laws to control drainage and flood control works.

There is also the opportunity for statutory approval of agricultural drainage in the *Town Planning and Development Act* through the imposition of development controls under Town Planning Schemes. The Ministry for Planning and rural local government authorities have generally not exercised their powers over broad-acre agricultural land use.

In summary, the need for regulation and the role of government in regulation of drainage appears to be based on management of impact. It is difficult to determine a balance between local interests and responsibilities for catchment interests (such as for nature conservation, flooding). Application of common law is not appropriate so duty of care responsibilities are not substantial, unless placed in State legislation, which would be very difficult. The legal authority for drainage is fragmented between at least five state government agencies and local government. This raises uncertainty about state and local government agency roles and responsibilities.

These deficiencies become more apparent for larger scale proposals where the roles and processes for integrating and reaching agreement within the community and government are largely being developed on a reactive basis. Some of the drainage projects being proposed are of large scale and are arterial in design. These raise major issues about environmental and infrastructure impact, cost and benefit sharing and social equity. The proposals are mostly for 'stand-alone' drainage rather than a systems approach to catchment water management (contrary to current environmental management wisdom). There is no regional strategic context for planning or assessment of such proposals.

In order to improve the situation it is critical that the relationships between the various pieces of legislation are defined and that processes be established to allow government agencies to apply them in a clear, timely and consistent manner.

3.4 Coordination of government agencies and authorities

Under the Salinity Action Plan (1998) the Western Australian Government committed to a policy of coordinated action to:

- evaluate the effectiveness of drains and to provide a best practice package to farmers;
- develop a more efficient and integrated authorisation process for drainage proposals by:
  - reviewing current procedures and legislation; and
  - proposing any changes to procedures and legislation where necessary;
- developing a whole of government agreement (memorandum of understanding) on development and implementation of this whole approach to drainage and its regulation.

Coles and George (1999) have conducted a review of the effectiveness of drains and the best practice package material (Avon Drainage Project) will be available through the Avon Catchment Network in early 2000.

There has been some reviewing of procedures and policies by various agencies.

- Agriculture Western Australia has released a revised policy (Drains 1, Commissioner for Soil and Land Conservation, 1999) that addresses issues of the authorisation process, but not off-site impacts. It does not address issues associated with major arterial drainage proposals.
- Waters and Rivers Commission has prepared a Policy Statement focussed upon off-site impacts. It is based upon principles but does not stipulate criteria.
- NPNCA has a policy that is implemented by CALM that relates specifically to public land.
- Western Australian Municipal Association supports the principles of the Water and Rivers Commission rural drainage policy statement.
- Department of Environmental Protection and Main Roads Western Australia do not have policies directly related to drainage.

Alex Gardner (1999) from the UWA Law School conducted a review of current legislation but firm proposals for changing procedures and legislation are yet to be made and agreed to. Work has also been completed on work on components of assessment criteria (e.g. Meney and Coleman, 1999).

The Inter-agency Drainage Steering Committee has developed a Project Management Framework to coordinate existing projects related to drainage and to critically review the need for further government response according to goals identified for catchment water management from the State Salinity Action Plan.

A memorandum of understanding has yet to be developed.

Another emerging issue is developing adequate skills and sufficient resources to plan and evaluate proposals. Groundwater drainage is fast becoming seen as a major tool to combat salinity. There are some initiatives to develop appropriate skills training and best practice information, but these are not in accordance with the scale of the issue. There are some agency technical staff available, but communication and technical skills are variable. Similarly, the skills of contractors are very variable. There is a need to develop planning, design and assessment procedures. Resources for this are inadequate. Government

agencies recognise that inadequate databases and resources are available for development and provision of advice for engineering options considering that the interest in drainage will substantially increase in the next few years. Each agency has differing levels of skills to deal with the issue. The response is not coordinated.

4. SOLUTIONS – THE AIM IS TO MAKE IT WORK, NOT PROVE IT WRONG

The Deep Drainage Taskforce has developed recommendations in four key areas to link in with current processes and better integrate deep drainage (including groundwater pumping and relief wells) with other landcare practices:

- working together;
- information and skills;
- research and development; and
- regulation, legislation and policy.

4.1 Working together

As various individuals, groups, local governments and state agencies become involved in drainage (including groundwater pumping and relief wells), it is critical that the principle of working together, preferably at a catchment scale, utilising each other's skills and resources for the maximum benefit is maintained. Due to the uncertainties this needs to happen in a learning approach where solutions are planned, developed, implemented and reviewed in on-going cycles and lessons from each cycle applied to the next one.

As these cycles continue to occur at various scales, from an individual property, to a sub-catchment, to a catchment, to a region, it is critical that what is learnt is passed on to others and applied to new activities.

In such a complex environment it is difficult to be prescriptive on how deep drainage should be integrated with other processes and practices. Rather the linkages and information need to be developed so that the various parties can agree how the integration can occur.

In the updated State Salinity Strategy, a rapid assessment of catchments in the South-west Agricultural Region will be conducted over the next five years to assess the salinity risk and impact and identify management strategies. There will also be a process to develop catchment water management plans, which will link in with existing planning conducted by groups and include identification and agreement from all stakeholders on what are and are not acceptable receiving points for any proposed drainage.

Recommendation 1

The Taskforce recommends that priority be placed on completing the rapid catchment assessment and catchment water management plans outlined in the State Salinity Strategy for each of the major landscapes in the wheatbelt within 12 months. This is in order to ensure that the information generated can be accessed and learned from by others working in similar landscapes.

The Taskforce has identified that projects will continue to emerge outside catchment planning processes and that the opportunity for integrating deep drainage (including groundwater pumping and relief wells) is greatest in the early development stage.

Recommendation 2

The Taskforce recommends that a Drainage Manager be created in the Office of the Commissioner for Soil and Land Conservation, resourced by Agriculture Western Australia. The Drainage Manager would oversee the development and implementation of a government Memorandum of Understanding on Drainage (including deep drainage, groundwater pumping and relief wells) and coordinate a proactive whole of government service. This service would consist of a *flying squad* to work with proponents of larger scale drainage projects at the earliest opportunity to develop them, facilitate opportunities for integration and assist with the regulatory process.

The flying squad membership would vary from case to case drawing on staff from Agriculture Western Australia, Department of Conservation and Land Management, Water and Rivers Commission and Department of Environmental Protection as well as representatives from local government, industry and landowners.

Members of the flying squad would require skills, experience and competencies in the following areas:

- mediation, conflict resolution and negotiation;
- natural resource management frameworks and processes;
- land use planning;
- farming systems;
- ecological, hydrological and riverine processes;
- water management (deep and surface drainage) best practice;
- spatial analysis and mapping.

The flying squad would report to the Senior Officers Group. Members would have specific time and resources allocated.

As various parties seek to develop and integrate deep drainage and other practices, it is recognised that consensus is not always possible and that the regulatory process is not always the best forum to resolve differences.

Recommendation 3

The Taskforce recommends that in cases where agreement between various parties is not forthcoming, they be referred to mediation through the Agricultural Practices (Disputes) Board or a similar type of body prior to entering the regulatory process. This will require legislative amendment of the Agricultural Practices (Disputes) Act to broaden its scope to include drainage.

4.2 Skills and information

There is a significant amount of information being developed for groups and individuals relating to best practice drainage, which needs to be urgently made publicly available.

Recommendation 4

The Taskforce recommends that the best practice information relating to deep drainage from the Avon Drainage Project the Water and Rivers Commission Drainage Decision Support Brochure will be released to the public within two months.

In addition, more information will become available through initiatives in the State Salinity Strategy such as Rapid Catchment Assessment and Catchment Water Management Plans and should be used to revise and update information available.

Technical training on drainage is now available through TAFE, and drainage contractors, Community Landcare Technicians and Community Landcare Coordinators should be encouraged to avail themselves of this skills development program. The emergence of the Agricultural Landcare Contractors Association is a positive step, along with the development of training opportunities through TAFE for the industry. To promote best practice in industry and higher standards of drainage project design and construction, the Taskforce recommends:

Recommendation 5

That the competency of drainage project designers and constructors be considered as a criterion in the regulatory process to improve the standard of projects and encourage skill development in the industry.

Recommendation 6

State government agencies, coordinated by Agriculture Western Australia, work with the Agricultural Landcare Contractors and Community Landcare Technicians Associations to further develop an Industry Code of Conduct and Industry Accreditation.

Recommendation 7

Further industry training modules on Land use Planning and Regulatory Systems need to be developed; and

Recommendation 8

The training requirements of government staff in the regulatory process should be reviewed as soon as possible and appropriate training should be completed within 12 months.

4.3 Research and development

Further research is required in Western Australia to:

- develop better criteria for assessing drainage by landowners, contractors and government;
- determine the benefits and impacts of deep drainage in a variety of situations; and
- refine best practices.

Further research will soon be undertaken (NHT and GRDC drainage projects, Gordon River Focus Catchment [relief wells]) in partnerships between the government, industry and community.

Recommendation 9

Given the lack of criteria for assessing drainage projects, the Taskforce recommends that research projects place priority on developing criteria for landowners, industry and government to design, assess and construct drainage projects and identify suitable receival bodies.

4.4 Regulation, legislation and policy

There is a great deal of confusion about how best to apply current legislation, and policy and regulations applying to drainage so the process is widely perceived as cumbersome.

Recommendation 10

Within three months a whole of government approach be developed through a memorandum of understanding between the natural resource management agencies (Conservation and Land Management, Department of Environmental Protection, Water and Rivers Commission and Agriculture Western Australia) in order to:

(a) develop a coordinated government policy regarding deep drainage and its regulation;

(b) provide an efficient and integrated regulatory process for deep drainage proposals; and

(c) continue developing best practice packages for drainage and evaluating drainage effectiveness and impacts to assist landowners, contractors and agencies to assess the benefits and impacts of deep drainage and implement projects.

This memorandum should also allow links to be developed with the natural resource management planning framework (regional natural resource management groups, catchment groups, LCDCs etc.) and the statutory planning system (Ministry for Planning, local government). The principle that deep drainage is subject to regulation due to risks associated with design and off-site impacts remains.

Recommendation 11

The memorandum should be based on the principle of a *one-stop shop* approach to provide a clear, transparent, timely, effective and efficient process, with defined roles for the agencies and proponents. Key schedules will include:

(a) heads of agreement and whole of government policy on drainage;

(b) definition of roles and responsibilities for each agency and proponent in the assessment process;

(c) clear articulation of information that proponents need to provide and assessment criteria used in the regulatory process;

(d) role of government as a manager of land (based on a catchment approach, working with other landholders in catchment);

(e) fast tracking for cooperative group proposals and low risk plans;

(f) communication plan for process and assessments to proponents and community in general; and

(g) an agreed review process to update processes as new information becomes available.

The heads of agreement will recognise that proposals for drainage will arise from a diverse range of initiatives within the WA community. Given that clear, defined frameworks do not exist for drainage proposals to be assessed against or integrated, a learning approach will be adopted where guidelines and assessment criteria are based on current best practice and updated as new information emerges. The proactive approach of the flying squad will facilitate the development of integrated drainage projects.

The Soil and Land Conservation Act will remain the primary regulatory mechanism for drainage. The assessment of proposals will be based on a 'one-stop shop' approach within an agreed timeframe. Water and Rivers Commission, CALM and DEP need to develop downstream impact criteria to assist assessment through the NOI process. Criteria will be developed to indicate when proposals are of sufficient magnitude to warrant assessment by the EPA. A complaints system will also be developed.

The communication strategy on drainage assessment should include:

- information regarding the assessment process and steps involved;
- provision of workshops to explain the process to landholders, shires, contractors etc.;
- summaries of proposals and explanations of decisions; and
- outline of opportunities to use enabling legislation in local situations – such as raising levies, securing easements and maintenance agreements etc.

In developing the memorandum of understanding it is recognised that decisions will not always be made with the full consensus of all the stakeholders. The negotiation between parties prior to the lodgment will be critical to moving towards agreement, which the 'flying squad' can facilitate. However, once Notices of Intent with sufficient information are lodged, the Commissioner will undertake to complete the assessment within the given timeframe. This is in recognition that full consensus is not always possible and is not sufficient justification to delay a decision being made. Also the regular updating of the guidelines will improve the basis on which decisions are made.

5. APPENDICES

Appendix 5.1 Members of Drainage Taskforce

• Dexter Davies	MLC (Chairman)
• Gordon Davidson	Dumbleyung
• Noel Dodd	Kalannie
• David Hartley	Executive Director, Sustainable Rural Development Program, Agriculture Western Australia
• Michael Georgeff	Narembeen
• Mike McFarlane	Doodlakine
• Ken Pech	Gnowangerup
• Jan Paul van Moort	Agriculture Western Australia (Executive Officer)

Appendix 5.2 Drainage Taskforce Tour Itinerary

Monday 30 August 1999

- Morning — Visit sites around Dumbleyung
- 10:30 a.m. — **Public meeting** at – Stubbs Park, **Dumbleyung**
- Afternoon — Visit sites around Gnowangerup
- 3:30 p.m. — **Public meeting** – Pech's, **North Stirling Downs**

Tuesday 31 August 1999

- Morning — Visit sites around Muntadgin, Narembeen and South Kumminin
- Afternoon — Meet with Narembeen Shire
- 2:30 p.m. — **Public meeting** – Recreation Centre, **Narembeen**
- 8:00 p.m. — **Public Meeting** – Cyril Box Pavilion, **Corrigin**

Wednesday 1 September 1999

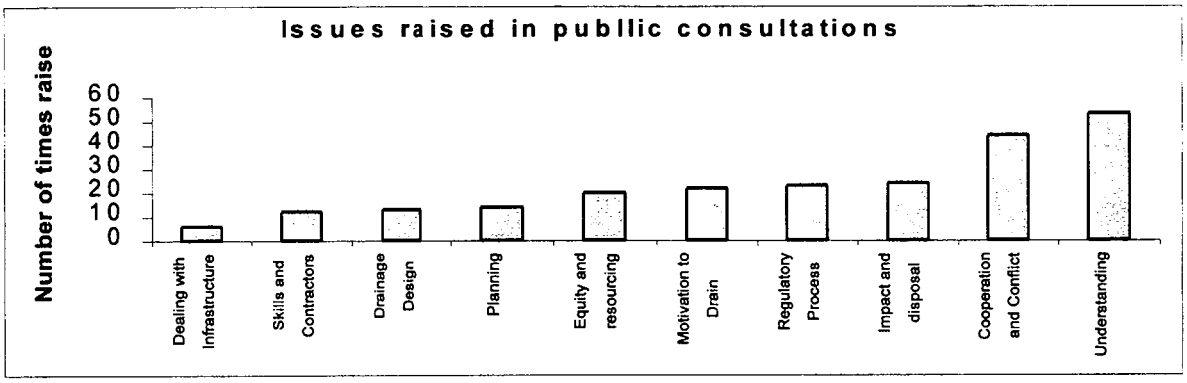
- 8:00 a.m. — **Public Meeting** - Robert Nixon's, **Kalannie**
- Morning — Visit sites around Kalannie Fly over Goodlands, Wubin and Watheroo
- Afternoon — Visit Scott's Watheroo
- 3:00 p.m. — **Public meeting** – Moora Recreation Centre, **Moora**

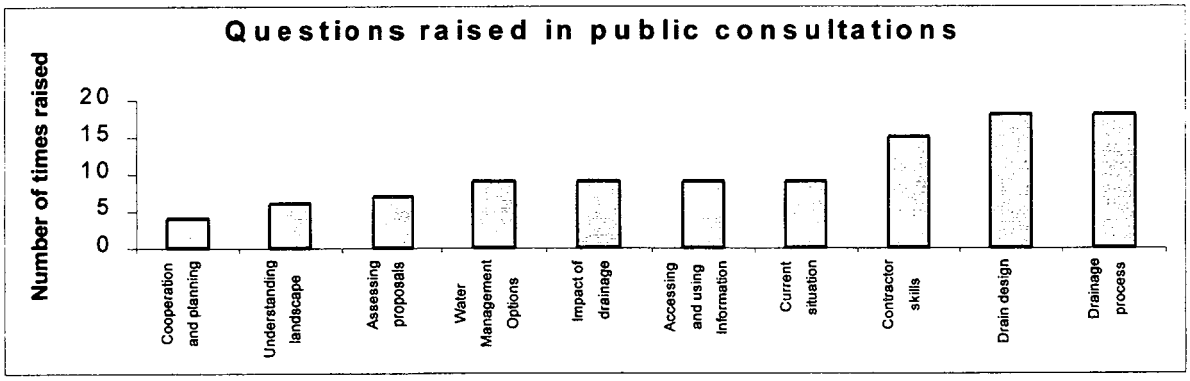
Thursday 2 September 1999

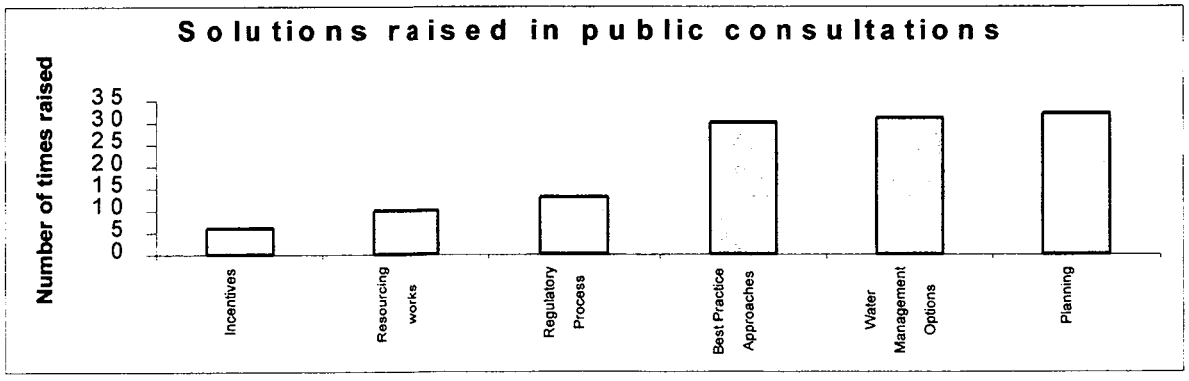
- Morning — Visit sites around Mukinbudin
- 9:30 a.m. — **Public Meeting** – Bencubbin Recreation Centre, **Bencubbin**
- Afternoon — Visit sites around Cunderdin and Wyalkatchem
- 3:30 p.m. — **Public Meeting** - Tammin Landcare Resource Centre, **Tammin**

Appendix 5.3 Summary of Issues, Solutions and Questions Raised on Tour

Public meeting	No. people attending
Dumbleyung	47
Gnowangerup	38
Narembeen	34
Corrigin	30
Kalannie	12
Moora	42
Bencubbin	16
Tammin	47
Total	**266**







Issues raised in public consultation

Skills and contractors

- There is a lack of skills in government and community relating to water management
- Are the contractors, Community Landcare Coordinators and Community Landcare Technicians sufficiently skilled?
- There needs to be a quality control or accreditation system for the contractors
- Fear that contractors may be 'selling' a biased solution

Current Process

- The NOI process is slow and cumbersome which creates a great deal of frustration.
- The process is poorly understood, as is the role of various agencies and bodies.
- The number of people and bodies who need to be consulted is daunting
- The process is perceived as being inconsistent
- The process is easy to ignore

Cooperation and conflict

- There is confusion about roles and responsibilities of everyone
- Coordination is recognised as important but seen as difficult
- Coordination needs to occur between landholders, community groups, local government, state government and various plans
- There is uncertainty about how to resolve disputes and very few processes for mediation and dispute resolution in place.
- Dispute resolution is failing when individuals and groups with divergent views are involved (e.g. agricultural vs. environmental priorities and disagreement on solutions).

Planning

- Drainage should not be dealt with in isolation
- A systematic coordinated approach is required where drainage is a management option
- There is uncertainty about which options to use where
- Most catchment and natural resource management plans do not incorporate drainage or do not deal with it well
- Many plans focus on resource definition and management options, but poor processes to enrol people in the change process
- Links to formal planning structures such Town Planning Schemes etc are poorly understood and developed
- Many efforts are just fiddling

Infrastructure

- Drainage needs to cross infrastructure
- Infrastructure can create choke points to flow
- How do you consult and coordinate with the relevant infrastructure bodies?

Drainage Design

- Planning is critical and needs to incorporate farm management, environmental and hydrology issues
- Designs will vary according to the landscape
- Maintenance is an issue

Understanding

- Landcare is like medicine. Facts have a half life of 15 years so we need to be prepared to change and innovate
- It is important to understand the landscape and the various tools that allow us to do so (e.g. using airborne geophysics information)
- There is a wide range of understanding about landscape issues and solutions – much of it wrong

Motivation

- People want to do something
- People are afraid of salt
- Drainage is implemented by those with the resources
- Drainage is attractive in a wet year
- Drainage perceived to have an immediate impact

Equity and resources

- Individuals should not have to bear the brunt of implementing solutions alone
- There needs to be funding and incentives for people
- How do we resource this?

Impact and Disposal

- Creeks and their vegetation can be severely degraded by cleaning out
- Drainage may impact on reserves
- Drainage way cause more flooding
- Cumulative impact of drainage
- Lack of defined and agreed disposal points
- Siltation

Solutions raised in public consultation

Planning

- Water management needs to be coordinated at a catchment/regional scale.
- As many people, groups, local government and agencies should join in the planning process as possible. Don't exclude people.
- Partnerships need to be developed to create and implement catchment plans.
- The plan should have a common link such as a goal to link all the partners together.
- Develop regional guidelines.

- Need to address attracting resources and sharing the cost of implementing the plans.
- Consider setting targets for, licensing or trading water discharge volumes and quality.
- Explore links to the formal planning system (Town Planning Schemes etc).

Assessment Process

- The process must be transparent with all the steps clearly identified
- Guidelines should incorporate a review process
- The assessment should include site visits
- Establish discharge protocols, including EPP wetlands
- Mediation dispute resolution mechanism – tribunal, ombudsman

Best Practice

- Quality assurance of contractors and other, including incentives to become involved
- There needs to be partnerships between government and individuals and groups to encourage innovation, trial and develop solutions
- Develop regional guidelines protocols
- Incorporate risk management
- Adopt a learning approach
- Make information available
- Market information and solutions

Options

- Pumps
- Cleaning out natural drainage lines
- Removing choke points
- Develop regional discharge waterways
- Channel to the sea
- Piping
- Staged release
- Planning
- Develop regional drainage plans based on catchment
- Use participatory approaches to enrol everyone
- Decide on options for region
- Link to other plans

Incentives

- To increase water use – reduce scheme water, incentives to hold water in landscape and then irrigate, fish farm
- Easier approval for drainage if incorporated with other practices

Resourcing

- Tax deductions for works
- Focusing R+D funds
- Government guaranteed loans for works
- Assistance to cross infrastructure
- Market benefits of drainage to funders

Questions raised in public consultation

- What water management options are there, when should they be used and what are the benefits?
- What is the best drainage design?
- How can I decide if drainage is for me?
- What is the impact of drainage and how is it best dealt with?
- What information do people need?
- What information is available and how should it be used?
- What is the current salinity scenario?
- What are the roles and responsibilities of the various agencies in drainage?
- When do you put in an NOI?
- Who assesses an NOI and how?
- What evaluation and monitoring needs to be done?
- How do you consult and mediate?
- Can local rules be established and enforced?
- How will contractor accreditation improve quality?
- How can we develop a common understanding when talking about drainage?

Appendix 5.4 Submissions to the Drainage Taskforce

- Noel Elliott, Watheroo
- P.M. & S.K. Smith, Watheroo
- Ian Gilmour, Perenjori
- Kevin Lyon, West Swan
- John Kimber, Stoneville
- Carla Swift, Nugarin
- Max Hudson, Yarra Yarra Catchment Management Group, Kalannie
- Roger Padfield & Don Cheetham, Narembeen Land Conservation District Committee, Narembeen
- Terri Lloyd, Dumbleyung
- Laurie Carmody, Esperance
- Martyn Keen, Agriculture Western Australia, Geraldton
- S.I. Tyler, Datakine Catchment Group, Katanning
- State Salinity Council (Advice by Inter-Agency Drainage Steering Committee)
- Donna Canci, Cunderdin
- Robert Nixon, Kalannie
- John Hall, Narembeen
- John McKay, Narembeen
- Ross Fidge, Narembeen
- Andrew Lee, Dumbleyung
- Ross McKenzie, Northam
- Stephen Davies, Kalannie

Appendix 5.5 Summary of Common and Statute Law relating to drainage [from Gardner (1999) and Pen *et al.* (1999)]

Common Law

'A person is liable for causing a nuisance or harm to another person in their enjoyment of the land, by an indirect and sustained interference from an unreasonable use of the land, whether that interference is intentional, negligent or accidental or in breach of 'duty of care'. Where pollution is concerned, Part III of the Environmental Protection Act preserves the common law right to prevent, control and abate pollution.

'In recent years common law has begun to develop a duty of care ethic that requires landholders to take reasonable measures to remove or reduce hazardous natural conditions that may harm their neighbours, even if not directly caused by the landholder (eg in the control of weeds). This also applies to trans-boundary land degradation.' However, the ethic relates to individual rights of neighbours and small communities of neighbours, not to the general public interest.

Under common law floodwaters are regarded as a 'common enemy'. 'A landholder is entitled to defend his/her land against the flow of floodwaters breaching the banks of the normal watercourse, even it this has the effect of diverting more of the excess flow onto another person's land and causing damage to it. In constructing flood defences, the landholder may not interfere with the channel or obstruct defined flood channels'. A landholder has no duty to maintain a flood protection barrier that benefits a neighbour and he/she has the right to restore the land to its natural form'.

Riparian rights and drainage

Landholders whose land is connected to a watercourse have a 'riparian right' to draw water, so long as it does not 'sensibly' diminish the flow. This right pertains to natural watercourses only. 'Changes to the bed and banks of a watercourse that alter its flow and cause damage to lower riparian owners **may** constitute an infringement of the riparian right'. 'It is arguable that the artificial discharge of saline water into a watercourse (whether by pumping or drainage) that changes the quality of water would be a breach of the riparian right to receive the flow of water undiminished in quality'. However, this is subject to 'reasonable drainage', which does not include water from another catchment or a major increase in flow from a natural lake.

Reforms to water law propose 'to create a power in the Minister to make local by-laws for the purpose of regulating drainage and de-watering works and flood protection works. This could override common law rights, except possibly the right to receive water of the same quality'.

'There is a duty to act reasonably in treating a drainage systems that facilitates the flow of water against the natural direction of flow'.

Common Law has had very limited previous application to the issue so principles based upon precedence are not well developed. It would only be appropriate to surface water but not groundwater issues. It would also only be applicable were there is 'reasonable understanding' of the issue. This does not apply to the drainage issue.

Statutory Law

There are a wide range of statutes which apply or could be applied to drainage. The main ones are:

Rights in Water and Irrigation Act (1914)

This Act contains provisions for controlling interference with a watercourse in a proclaimed surface water management area. It is thus an offence to obstruct, destroy or interfere with any watercourse or drain which is flowing through or over private land without the authority of the Water and Rivers Commission. Likewise on public land (Crown Land). The Act does not operate to prevent a landholder from draining any land and the right to drain is not qualified by a notion of 'sensible increase in the flow of water'.

Proposed Rights in Water and Irrigation Act Amendments

A new division of the Act (3D of Part III) provides for regional, subregional and local area management plans. The Water and Rivers Commission will develop the plans in consultation with local water resource committees and the public. These plans, which must be approved by the Minister, will guide the Commission in the management, allocation and use of water resources in the relevant areas.

The new division also contains provision for the creation (as for plans) of local by-laws that regulate the taking and use of water, drainage and dewatering and flood protection works. By-laws could 'prohibit the construction, use, alteration or removal of drainage works except under and in accordance with a licence'. These laws would have the potential to supersede the common law rights and obligations relating to drainage and flood protection.

Soil and Land Conservation Act (1945)

This act is often the first point of contact that a drainage proponent has with the has the legislative process. Under Regulation 5 of the Act there is a requirement to give a notice of intent (NOI) to the Commissioner of Soil and Land Conservation to drain or dewater areas to combat salinity. Agriculture Western Australia administers the Office of the Commissioner. The Commissioner has 90 days in which to issue a Soil Conservation Notice (SCN) which can either prohibit the proposal or regulate its implementation if it will cause degradation. Degradation includes soil erosion, salinisation, eutrophication and flooding. According to Gardner (1999) it also includes the 'removal or deterioation of natural and introduced vegetation'. This power does not control drainage, but rather controls landuse activities, such as clearing and drainage, where land degradation may result. Note that the process is not one of 'approval' but one of 'objection', the basis of which requires proof, the burden of which lies with the Commissioner, not the proponent. The determination of the Commissioner is subject to appeal to the relevant Minister.

Recent modifications (Drains 1 Policy 1999) to the NOI process outlines a process whereby group proponents can achieve a shorter assessment period for proposals made on a catchment planning basis where technical issues are addressed and consultation undertaken prior to the NOI being lodged. It also provides for a 'technical flying squad' to facilitate the process.

Waterways Conservation Act (1976)

Under this act it is an offence to discharge 'polluting matter that would impair the physical, chemical or biological condition of the waters (waterways) and associated lands within a proclaimed management area. Regulations can be made under the Act to require the approval of the Commission/Management Authority for any development or disturbance of waterways and associated lands, including the discharge of polluting matter, dredging, drainage and training. Those activities, which would ordinarily constitute an offence, would require licensing. Gardner's (1999) interpretation of the Act, however, is that the powers cannot be exercised on private land unless under a management agreement with the landholder. The Waters and Rivers Commission (supported by Crown Solicitors advice) considers that it applies to all land within the proclaimed area.

Water Agencies (Powers) Act 1984 and the Land Drainage Act 1925

This Act provides powers, to the Water Corporation and the Water and Rivers Commission, which pertain the Land Drainage Act 1925 and the Rights in Water and Irrigation Act 1914, for the provision of water services, including drainage. The land Drainage Act pertains to the Drainage Districts in coastal areas of the south-west and the Rights in Water and Irrigation Act to the irrigation districts, once again with respect to drainage. In the former case, 'no person may interfere or connect with a drain without the authority of the Minister'(approval would be sought via the Commission). In the latter case, the Commission has powers 'to remedy illegal interference with watercourses, wetlands and drains by private persons who fail to implement restoration measures directed by the Commission'.

Town Planning and Development Act

This act has the power to regulate drainage (as a development) but the State Planning Commission is currently against this Act being used for general purposes. There are other provisions under regional planning scheme arrangements for regulating future land use.

Under the Town Planning and Development Act 1928, a local planning scheme could impose a requirement to obtain an approval from Local Government for undertaking drainage. This would be done by recognising drainage as a form of development. In the Proposed Shire of Dumbleying Town Planning Scheme No. 1, there are provisions relating to drainage on rural land.

Environmental Protection Act (1986)

The Environmental Protection Act has powers to license if discharge is considered to be 'Waste'. The Environmental Protection Policy 1998 offers limited opportunity for approvals.

'Pollution is defined to mean the direct or indirect alteration of the environment to its detriment or degradation or to the detriment of any beneficial use or of a prescribed kind.' It is likely that the discharge of nutrients and salt into a watercourse or wetland by a drainage scheme could constitute the physical and chemical fouling of the environment. 'A finding that a drainage scheme was causing pollution, otherwise than in accordance with the Act, would render the landholder liable to a prosecution for pollution under Section 49 of the Act'. The CEO of the Department of Environmental Protection can issue pollution abatement notices.

It is possible that nutrients and salt carried by a drain could be deemed waste under the EP Act. However, the definition of waste in a regulatory sense pertains to 'prescribed premises' only. Broadacre farms are not prescribed.

The EP Act has primacy over other acts in relation to environmental impact. A decision making authority (DMA) exercising any of its statutory powers available to regulate drainage is under a duty to refer any drainage proposal to the EPA if it is likely to have a significant effect on the environment. The DMA cannot approve the proposal until informed that it will not be assessed or under the terms of the assessment. Determinations of the EPA, which can be formal or consist of informal advice or the mere decision to leave the decision to the DMA, are subject to appeal to the Minister of the Environment. The formal assessment process requires the preparation of an environmental impact assessment at cost to the proponent. The resultant report is subject to public review. The EPA reports on its assessment to the Minister, who determines, in consultation with the DMA, whether the proposal may proceed and under what conditions. The Commissioner

for Soil and Land Conservation does refer proposals to the EPA but has only 90 days in which to make his own decision to object or not, on land degradation grounds. The proponent may face prosecution if he/she proceeds before the EPA and the Environment Minister have made their deliberations.

Environmental Protection Policy

Under Part III of the EP Act, Environmental Protection Policies can be created. They have the force of law and can contain regulations to prevent environmental degradation. The *Environmental Protection (South-west Agricultural Zone Wetlands) Policy* creates a register for the EPA to record wetlands within the zone (voluntary for private land). The EPP identifies the activities that cause degradation of the wetlands and contains two clauses which pertain to drainage: Clause 31 prohibits the unauthorised discharge of effluent into a protected wetland; and Clause 34 prohibits the unauthorised construction or alteration of a 'water drainage system of a prescribed class'. Gardner (1999) is of the opinion that the EPP 'offers limited and vague potential to create approval requirements and a set of voluntary compliance mechanisms such as catchment strategies, but these procedures could be applied only to wetlands registered under the policy'.

Conservation and Land Management Act

The *Conservation and Land Management Act 1984* provides for the management of conservation and other reserves. While drainage activities that may impact on these reserves cannot be regulated in themselves, regulations applicable to nature reserves and national parks provide offences in relation harm caused by drainage from other land that causes pollution, interfere with water or water supplies, or the natural environment. New regulations intended to apply to all CALM Act reserves are being prepared and will include similar provisions.

Wildlife Conservation Act

Offence provisions of the *Wildlife Conservation Act 1950* would apply to drainage activities if it is established that fauna or rare flora are unlawfully taken as a result of drainage on private land, irrespective of whether the taking occurs on the land being drained or other private land. Similarly if drainage on private land results in the taking of fauna or flora on any public land, then this can be addressed under the Wildlife Conservation Act offence provisions.

Aborginal/Heritage Act

Native Title/Aboriginal Heritage acts may result in future claims for compensation due to damage caused by drainage (installed at any time) to land that becomes subject to successful native title claim.

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Appendix 5.7 Water and Rivers Commission Policy Statement on: Rural drainage for salinity management

Context

This Policy Statement relates to drainage or pumping of underground water for salinity management. Surface water management (sometimes also referred to as drainage) is important for salinity management, but is not a focus of this statement.

Intent

The Water and Rivers Commission recognises that drainage can be a useful tool in restoring the productivity of salt affected agricultural land. However, drainage must also be considered in relation to the potential for significant impacts on receiving water bodies and floodplains. Wherever possible, drainage should be used as part of a package of management measures aimed at long term sustainable land and water management.

Principles

The Commission has adopted the following principles in considering drainage proposals:

1. Potentially significant drainage proposals must be considered in a full catchment context, including integrated drainage strategies and proposals for other measures to manage water balance. In most cases, drainage should be one of a range of tools in a broader water management strategy, including vegetation management initiatives.
   (Drainage is just one tool and shouldn't be seen as a long-term fix or as a replacement for managing recharge through deep-rooted vegetation.)

2. The level of assessment of drainage proposals should take into consideration the potential risk for water resources, including possible cumulative impacts, such as for regional flooding.
   (The assessment of drainage applications by government must consider the possible downstream impacts of the proposal, for both water quality and volume.)

3. Good drainage practice will be encouraged through easily accessible advice and information, good decision making processes and demonstration of Best Practice rather than solely through regulation. Regulation will be required for non-compliance with authorisation procedures, and for where there is risk of unacceptable impacts.
   (The Commission will seek to assist landholders by providing advice on best practices in liaison with other State agencies.)

4. Discharge of saline water from proposed drainage into freshwater systems is usually considered to be unacceptable, particularly where there is a threat to identified potable water, natural diversity or amenity values. In general, the level of a contaminant in drainage water should not exceed that of the receiving water by more than 10%, unless it can be shown that there will be a longer-term net benefit to water resources.
   (Saline discharge to freshwater streams and lakes is normally unacceptable to the Commission, unless long-term water resources gain is likely.)

5. Natural waterways should not have hydraulic and ecological channel characteristics adversely altered.
   (Earthworks within streams and lakes are normally considered unacceptable by the Commission.)

6. Landholders should accept a duty of care for consequences of their drainage. *(Landholders should recognise that inappropriate actions on their property may damage 'downstream' properties or the environment.)*

7. A short term negative impact on some water resources may be acceptable in order to gain a longer term benefit.

Implementation

Drainage works for groundwater and sub-surface water management should be implemented according to integrated catchment plans that relate the drainage proposal to other water management measures.

Implementation strategies must consider impacts upon the hydrological balance and stability of channels and aim to protect important environmental, economic and social values of water resources.

This Policy Statement is the first stage of full policy development on this issue.

It has been developed to outline the position currently taken by the Water and Rivers Commission. Comment on the document to the Commission is encouraged.

Appendix 5.8 Drainage Proposals in the South West Agricultural Region of Western Australia. Commissioner for Soil and Land Conservation Policy No. Drain/1, March 1999, Agriculture Western Australia.

The objective of this policy is to encourage landholders considering drainage to reduce salinity impacts to work together in catchment groups to plan and develop proposals that are part of an integrated approach, and to provide for an improved administrative process for drainage regulations under the Soil and Land Conservation Act.

Background

The management of water is a key issue for primary producers and other rural landholders throughout Western Australia. Water is a resource that can become a problem without good management. Water ponding on the soil surface and waterlogging within the soil profile can inhibit plant growth and increase groundwater recharge.

Directing surface water along grade lines using drains, banks or raised beds may improve plant growth and reduce erosion and recharge. The excess water can either be harvested to support other farm enterprises such as aquaculture, horticulture or summer irrigation, or it can be disposed of. However, it is important to ensure disposal is undertaken in such a way that there are no adverse impacts on the environment or any downstream land, whether it be on the same property or another one.

In addition, groundwater levels may be lowered by deep drains and groundwater pumping. Well-designed and constructed drainage may modify soil conditions sufficiently to enable cropping, pasture establishment, revegetation or natural regeneration. Once again, disposal of groundwater must not adversely affect the environment or any downstream properties.

Drainage is becoming increasingly popular as a management option, particularly to assist in salinity control. However, while drains can help protect and restore the land resource, they must be compatible with best practice principles.

The objective of this policy is to encourage landholders considering drainage to reduce salinity impacts to work together in catchment groups to develop integrated approaches, with any drainage proposed being based on best practice strategies which improve productivity without adverse impacts on the environment. Landholders are also encouraged to think through and plan drainage proposals carefully before they submit them for formal regulatory appraisal. It also provides for an improved administrative process for the drainage regulations under the Soil and Land Conservation Act.

Soil and Land Conservation Regulations require landholders intending to drain or pump saline groundwater to notify the Commissioner for Soil and Land Conservation of their intentions. The aim of notification is to ensure that neighbouring landholders are given the opportunity to comment on the proposals; to allow an assessment to be carried out; and for controls to be imposed where soil erosion or significant impacts on other landholders or the environment are likely to occur.

The Western Australian Government's Salinity Action Plan recognises groundwater drainage as a control strategy for salinity, acknowledges the limitations of current drainage controls, and requires its agencies to only support drainage proposals where the impact on downstream landholders and the environment is minimal.

Therefore, this policy relates to drainage proposals that will involve drainage or pumping of water from land due to salinity problems. It does not include general land management practices such as grade banks aimed to minimise erosion or to increase the catchment area for farm dams.

Policy

It is the Agriculture Western Australia's intention to ensure:

- landholders are encouraged to work cooperatively in drainage activities
- an improved approval process for eligible drainage proposals
- improved information is provided for landholders on integrated approaches to salinity control, including 'best practice' drainage and water management.

Drainage is best considered within the context of a overall water management strategy for the catchment, agreed to by affected landholders and relevant statutory authorities, that enables the development and implementation of longer-term solutions.

It is Agriculture Western Australia's policy to facilitate the implementation of well-planned drainage proposals, while ensuring that rural properties, infrastructure and the environment are protected from adverse impacts from drainage.

Drainage is more than an agricultural issue. It can affect water resources, infrastructure such as towns, roads and railways, and areas of biological significance such as remnant vegetation, wetlands and nature reserves. Drainage has a high risk of causing damage to downstream properties and values. However, a properly planned and implemented drainage scheme has the potential to divert water to protect the infrastructure and minimise impacts on the environment.

The potential cumulative impact of drainage is important and needs detailed consideration. Catchment hydrology has altered significantly since the land in the South West Agricultural Region was cleared for agriculture. Some forms of drainage works have the potential to further alter catchment hydrological characteristics in some types of catchment, for instance by reducing flood detention capacity and increasing flood frequency. In other catchments, drainage may have relatively insignificant off-site impacts.

Principles

- Management of surface and sub-surface water through constructed drainage is recognised as one of the legitimate tools available to fight salinity, waterlogging and inundation, although increased use of water through vegetation or farming systems remains the preferred option.
- Landholders need to understand that they have a duty of care to ensure their management actions do not lead to land degradation or other damage, such as through severe erosion, flooding or environmental damage to wetlands and waterways.
- Drainage proposals are best developed and implemented on a sub-catchment or catchment basis, with the involvement and agreement of all landholders, including local government, other infrastructure managers, and reserve managers.
- Drainage proposals are only acceptable where it can be demonstrated, to a reasonable degree, that downstream impacts are either positive or minimal, or that the overall benefits to the community of the scheme significantly outweigh the impacts.
- Given the severity of hydrological changes already occurring, and the urgent need for action by landholders and groups, Government will work cooperatively with landholders on water management programs including drainage, with regulation only used as a last resort.

- Drainage proposals should demonstrate that they are part of an overall strategy to deal with the fundamental causes of the water management problems; and that it will be 'environmentally friendly' and not contribute to land degradation such as downstream salinisation, erosion or siltation in the long-term.

In addition to these principles, the Commissioner for Soil and Land Conservation is committed to providing a greater level of public information, and will provide a written explanation of his decisions on drainage proposals to local groups and relevant agencies.

Drainage design

Effective drainage design takes into account slope, soil type, climate and hydrology, and minimises the risk of downstream effects, including flooding, erosion, sedimentation, salinity and eutrophication.

The potential for damage to other properties or reserves may make off-site disposal of water unacceptable. Landholders have a duty of care to ensure their management actions do not degrade other private or public assets.

In some instances, water may be discharged into natural streams and salt lake systems if it can be demonstrated that the discharge will cause no significant environmental impacts, and that the discharge has the approval of all potentially affected landholders.

Another option for disposal is storage in on site dams, if fresh, or in carefully sited, designed, constructed and managed evaporation basins. It may be possible to use this saline water for other purposes such as aquaculture.

The construction of drains within waterways to modify streamflow characteristics will be unacceptable in most cases, although it is recognised that in some situations maintenance of natural channels may be required.

Drainage proposals should be designed according to the following process:

1. The proposal should be developed on a co-operative group basis

2. The changes in catchment discharge of salt and water that would be required to maintain or improve production and protect environmental and infrastructure assets should be calculated

3. Water management options for the different areas in the catchment should be evaluated and the most appropriate selected in order to meet both short and long-term catchment discharge targets

4. The cumulative impacts (for example regional flooding, salt and nutrient loads) of all drainage proposals in the catchment should be considered

5. All impacts of the drainage proposal on the environment downstream (eg nature reserves, wetlands, remnant vegetation, surface and groundwater) should be considered, and it should be demonstrated that these impacts will be minimised, monitored and remediated if necessary.

Expert advice on water resources management

A small group of skilled staff has been formed by Agriculture Western Australia to respond quickly to requests from landholder groups for information and advice on catchment water management. The agency staff will spend time on site, discussing proposals with the landholder group, and provide advice and assistance on the best options for water management in that specific area.

Additional support will be given to the training of staff, landcare coordinators and landholders in drainage design and construction techniques.

Protection of downstream landholders, assets and the environment

A general function of the Commissioner of Soil and Land Conservation is the prevention and mitigation of land degradation. In considering drainage proposals, the Commissioner will continue to assess the likelihood of adverse impacts on other land. Existing procedures requiring the acceptance of at least two immediate downstream neighbours will remain. In addition, landholders have a common law duty of care to take reasonable measures to ensure that their activities do not cause foreseeable harm to their neighbours.

Administrative process

A regulation established in 1992 under the Soil and Land Conservation Act requires landholders to notify the Commissioner of Soil and Land Conservation in writing at least 90 days before draining or pumping commences if a landholder 'proposes to drain or pump water from under the land surface because of the salinity of the land or the water'. A penalty of up to $2000 applies to a person who fails to notify.

Drainage proposals will be considered by the Commissioner of Soil and Land Conservation and applicants will be advised within the 90-day period whether there is any objection to their proposal. However, the assessment period will be reduced to a maximum of 28 days under the following circumstances:

- Group proposals that meet agreed standards, and where the necessary consultation is undertaken before the proposal is submitted; and
- Notices of Intention to drain from individual landholders where water from drainage or pumping operations is retained on their property safely (for example, in evaporation basins).

In both cases proposals need to demonstrate:

- that a consistently high standard of design and construction will be undertaken;
- that downstream impacts will be minimal; and
- there is acceptance of the proposals by local government and downstream landholders and managers.

1. Group proposals

- The proposal must come from landholders joined by a common drainage system covering the area above a readily identifiable discharge point or receiving water body capable of safely assimilating any extra flow and its constituent chemicals from the drainage works, such as where one waterway reaches a larger stream or a salt lake.
- Documentation must be provided that demonstrates the proposal has the agreement of all landholders directly affected by the proposal, including the relevant local government authorities and agencies such as CALM, Water and Rivers Commission, Main Roads Western Australia, and Westrail.
- Documentation must be provided showing a maintenance agreement between landholders.
- A self assessment checklist must be completed which demonstrates minimal risk of adverse downstream impacts; and

- The group must agree that earthworks are to follow defined broad 'low-risk' categories, as set out in the best practice manuals.

2. Evaporation basins

Evaporation basins can be an effective tool for managing groundwater drainage and pumping, and have the potential to largely eliminate adverse downstream environmental impacts if properly designed, constructed and managed. The Commissioner will provide a 28 day turnaround in processing and approval of Notices of Intent to drain from individual landholders where water from drainage or pumping operations is retained on their properties, and the evaporation basins meet the best practice design and construction standards which prevent undue accession to the watertable.

Public notification

The Commissioner for Soil and Land Conservation will provide a printed explanation of his decision on each Notification of Intent to drain.

This will be distributed to relevant local landholder groups, Land Conservation District Committees, local government authorities, and key government agencies. It will also be available for inspection at the relevant Agriculture Western Australia District Office.

Compliance

The Commissioner will take action where actions by landholders have or may cause land degradation. Under the Soil and Land Conservation Act the Commissioner is empowered to issue a Soil Conservation Notice where this is required to prevent land degradation.

Landholders are required to carry out any works set out in the notice, or have such works carried out by the Commissioner at their expense. Soil Conservation Notices are likely to be issued where earthworks may lead to land degradation. A penalty of up to $3000 applies to a person in breach of a Notice.

Continuous improvement

Agriculture Western Australia will give priority to evaluating the ongoing performance and impacts of different drainage practices so as to improve further technical development of the best practice guidelines.

This will include on-site evaluations of drainage works approved under the powers of the Commissioner of Soil and Land Conservation, and of sites where less intrusive techniques, such as surface water management and strategic revegetation, have been used.

A sample of the works constructed with approval given under the streamlined administrative procedures will be reviewed by the Commissioner to determine how effective the streamlined administrative procedures are in ensuring high quality works, minimising delays, assisting groups and protecting downstream interests.

Endorsed by:

David Hartley
COMMISSIONER FOR SOIL AND LAND CONSERVATION

Andrew Watson
DEPUTY COMMISSIONER FOR SOIL AND LAND CONSERVATION

15 March 1999

Appendix 5.9 National Parks and Nature Conservation Agency Drainage Policy

Background

Because of salinity and waterlogging in properties adjoining land vested in the National Parks and Nature Conservation Agency (NPNCA) suggestions have been made to discharge water into vested land. For this reason drainage is increasingly and issue, and if difficulties are not resolved can lead to neighbour-to-neighbour problems. The following document sets out some of the issues and policies for dealing with them.

- Conservation reserves are often located in discharge areas and wetlands in such reserves, including streams and associated vegetation are particularly vulnerable. A 1993 survey has recorded the dominant class of vegetation in wetlands to be 'dead trees' (Halse, 1993).

- Off-site effects which may lead to problems in reserves include altered surface hydrology (changes in the quantity and timing of water draining into the reserved land), altered groundwater flow (changes in mean water table levels and altered seasonal patterns), and altered water quality (increased nutrients, salt, silt and metal ions).

- The water, nutrients and silt which are lost from farmland are the very products essential for the maintenance of farm productivity.

- Drains or pumps can be used where appropriate to reduce both waterlogging and salinity in agricultural land; sites are required into which the water can be discharged or diverted through.

- Drainage or pumping can be an appropriate activity within a reserve (or farmland), especially in the short term, while longer term solutions are being devised and implemented; for example on waterlogged sites it ma be necessary to undertake some drainage in order to establish trees, and trees may be useful to dewater agricultural or reserved lands.

- The Department of Conservation and Land Management (CALM) and the NPCA support the concept that maximum water use in situ should be a goal for sustainable agriculture.

Acts

Drainage may be controlled under several acts and regulations including;

- The Soil and Land Conservation Act and Regulations (which control soil conservation, drainage, and catchment clearing and encourage good farming practices).

- The CALM Act and Wildlife Conservation Act (which deal respectively with certain reserved lands and with conservation on all land tenures irrespective of vestings in the NPNCA or the Lands and Forest Commission). Some Wildlife Conservation Regulations apply specifically to nature reserves.

- The Rights in Water and Irrigation Act (which deals with all aspects of drainage).

- The Environmental Protection Act

Policies

Proposals to alter drainage into lands vested in the NPNCA deemed necessary for the management of that reserve are brought to the attention of the NPNCA by CALM, under either the terms of a management plan or as necessary operations. Relevant proposals on adjoining land are taken to the NPNCA by a referral either by the Department of Agriculture or by the Environmental Protection Authority.

The NPNCA will evaluate proposals for drainage affecting vested land and:

1. Where deemed to be beneficial or neutral to the values of the reserve, the proposals may be supported;

2. Where deemed detrimental to these values, the proposal will be opposed;

3. Where a short term detrimental effect is the offset by a long-term gain, the proposal may be supported.

- The NPNCA position in each case will be communicated to the proponents and where appropriate to the Department of Agriculture, the Water Authority, the Environmental Protection Authority, Department of Environmental Protection of the Minister for Environment.

- If approved, construction may occur under the provisions of the CALM Act relating to any necessary or compatible operations or management plan.

- Proposals for evaluation by the NPNCA should normally:

- Be prepared by an interdisciplinary group
  - Involve the relevant Land Conservation District Committee (LCDC)
  - Be based on a catchment approach
  - Address impacts on the conservation values of the vested land and of the receiving environment
  - Evaluate a range of alternate solutions
  - Consider environmental as well as economic values
  - Consider long term as well as short term options
  - Consider maintenance as well as construction costs
  - Fairly allocate costs between the beneficiaries
  - Be based on proper engineering design
  - Evaluate effects on existing infrastructure, e.g. culverts

- The NPNCA will encourage the adoption os agricultural methods which increase the in situ use of water and so minimise downstream loss of nutrients, silt, salt and water.

- The NPNCA and CALM will continue to evaluate their roles in protecting the conservation values of unvested lands, and encourage cooperation with other agencies in finding catchment wide solutions to drainage problems.

Reference

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